

**3.2.2. Teachers having research projects for 2016-17,  
2017-18, 2018-19, 2019-20 & 2020-21**



**3.2.2. Percentage of teachers having research projects during the last five years**

Academic Year	2020-21	2019-20	2018-19	2017-18	2016-17
Number of Teachers	13	5	5	8	1

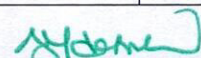


**PRINCIPAL  
PRINCIPAL  
SREE VIDYANIKETHAN ENGINEERING COLLEGE  
(AUTONOMOUS)  
Sree Sainath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.**



**2020-21**

Sl No	Name of the Principal Investigator/ Co Investigator (if applicable)	Department of Principal Investigator/ Co Investigator	Title of the Project	Name of the Funding agency	Funds provided (INR in lakhs)	Page Nos
1	Dr. T Devaraju	Electrical and Electronics Engineering	Science Technology and Innovation (STI) Hub	Department of Science and Technology (DST/SEED/STI)	361.30	1-26
2	Dr. M S Sujatha (Co-PI)	Electrical and Electronics Engineering				
3	Dr. C Madhusudhana Rao (Co-PI)	Computer Science and Systems Engineering				
4	Dr. K C Varaprasad (Co-PI)	Mechanical Engineering				
5	Dr. Yasmine Begum (Co-PI)	Electronics and Instrumentation Engineering				
6	Dr. M MKesavulu (Co-PI)	Basic Sciences & Humanities				
7	Dr. G Harikrishnan (Co-PI)	Electrical and Electronics Engineering				
8	Dr. R. L Krupakaran (Co-PI)	Mechanical Engineering				
9	Mr. K. Leleedhar Rao (Co-PI)	Electrical and Electronics Engineering				
10	E. Sujatha (PI) Scientist	Electronics and Communication Engineering	VLSI Design and FPGA Implementation of Optimized Turbo coding Scheme for Advanced Wireless Comm Systems	Department of Science and Technology (DST-WoS-A)	3.645	27-35
11	Dr.N Padmaja (Mentor Scientist)		Electronics and Communication Engineering	AICTE IDEA (Idea Development Evaluation & Application) LAB	Funded by AICTE	113.96
12	Dr. B.M Satish (Principal & Chief Mentor)	Mechanical Engineering		AICTE IDEA (Idea Development Evaluation & Application) LAB	AICTE	113.96
13	Dr. A K Damodaram (Co-coordinator)	Mechanical Engineering				

  
**PRINCIPAL**



**2019-20**

Sl No	Name of the Principal Investigator/ Co Investigator (if applicable)	Department of Principal Investigator/ Co Investigator	Title of the Project	Name of the Funding agency	Funds provided (INR in lakhs)	Page Nos
1	Dr. K Ayyappa Swamy (PI)	Electronics and Instrumentation Engineering	Frequency Modulated Hearing Aid for Elderly with Hearing Disability	Department of Science and Technology (DST)	11.00	46-55
2	Dr. N Padmaja (Co-PI)	Electronics and Communication Engineering				
3.	Dr.V.R.Anitha (PI)	Electronics and Communication Engineering	Design and Development of Micro Cantilever based Biosensor for Early Detection of High Risk Human Papilloma Virus	Department of Science and Technology (DST)	4.650	56-71
4.	Dr. G. Sasi Kumar (PI)	Computer Science and Systems Engineering	Intelligent System to classify Human Brain Signals for finding Brain Diseases	Department of Science and Technology (DST)	12.35806	72-82
5.	Dr. M. Naresh Babu (Co-PI)					



**PRINCIPAL  
PRINCIPAL  
SREE VIDYANIKETHAN ENGINEERING COLLEGE  
(AUTONOMOUS)  
Sree Sainath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.**



**2018-19**

Sl No	Name of the Principal Investigator/ Co Investigator (if applicable)	Department of Principal Investigator/ Co Investigator	Title of the Project	Name of the Funding agency	Funds provided (INR in lakhs)	Page Nos
1	Dr.V.R.Anitha (PI)	Electronics and Communication Engineering	Design and Development of Micro Cantilever based Biosensor for Early Detection of High Risk Human Papilloma Virus	Department of Science and Technology (DST)	20.10	85-89
2	E. Sujatha (PI) Scientist)	Electronics and Communication Engineering	VLSI Design and FPGA Implementation of Optimized Turbo coding Scheme for Advanced Wireless Communication Systems	Department of Science and Technology (DST-WoS)	9.775	90-94
3	Dr.N Padmaja (Mentor Scientist)	Electronics and Communication Engineering				
4	Dr. K. Ramani (PI)	Information Technology	Fast Content based Search, Navigation and Retrieval System for e- Learning	University Grants Commission (UGC)	0.18	95-107
5	MS. P. Dhanalakshmi (PI)	Computer Science and Systems Engineering	Development of Mathematical Model for the Prediction of Customer Behavior in Online Databases	University Grants Commission (UGC)	0.18	108-110

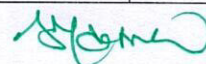


**PRINCIPAL**  
**PRINCIPAL**  
**SREE VIDYANIKETHAN ENGINEERING COLLEGE**  
**(AUTONOMOUS)**  
Sree Sainath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.



**2017-18**

Sl No	Name of the Principal Investigator/ Co Investigator (if applicable)	Department of Principal Investigator/ Co Investigator	Title of the Project	Name of the Funding agency	Funds provided (INR in lakhs)	Page Nos
1	Dr. K Ayyappa Swamy (PI) &	Electronics and Instrumentation Engineering (PI) &	Frequency Modulated Hearing Aid for Elderly with Hearing Disability	Department of Science and Technology (DST)	23.30452 +	112-113
2	Dr. N Padmaja (Co-PI)	Electronics and Communication Engineering (Co-PI)				
3	Dr. G. Sasiskumar (PI)	Computer Science and Systems Engineering	Intelligent System to classify Human Brain Signals for finding Brain Diseases	Department of Science and Technology (DST)	9.066	114-121
4	Dr. M. NareshBabu (Co-PI)					
5	MS. P. Dhanalakshmi (PI)	Computer Science and Systems Engineering	Development of Mathematical Model for the Prediction of Customer Behavior in Online Databases	University Grants Commission (UGC)	1.725	122-124
6	Dr. K. Ramani (PI)	Information Technology	Fast Content based Search, Navigation and Retrieval System for e- Learning	University Grants Commission (UGC)	3.725	125-128
7	Dr. Rasheed Syed (PI)	Basic Sciences & Humanities Chemistry	Synthesis of Biologically Active Substituted Triazoles and Tetrazoles	University Grants Commission (UGC)	1.30	129-131
8	Dr. B. Palakshi Reddy (PI)	Basic Sciences & Humanities Chemistry	Synthesis of Ni Nanoparticles using Polyphenols and its Application in Conversion of Bispidinols	University Grants Commission (UGC)	1.65	132-134



**PRINCIPAL**  
**PRINCIPAL**  
**SREE VIDYANIKETHAN ENGINEERING COLLEGE**  
**(AUTONOMOUS)**  
Sree Sainath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.



**2016-17**

Sl No	Name of the Principal Investigator/ Co Investigator (if applicable)	Department of Principal Investigator/ Co Investigator	Title of the Project	Name of the Funding agency	Funds provided (INR in lakhs)	Page Nos
1	Dr. N Padmaja (PI)	Electronics and Communication Engineering	MST Radar Signal Processing using Empirical Mode Decomposition and Hilbert Huang Transform	Indian Space Research Organization (ISRO-RESPOND)	5.860	136-146



**PRINCIPAL  
PRINCIPAL  
SREE VIDYANIKETHAN ENGINEERING COLLEGE  
(AUTONOMOUS)  
Sree Sainath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.**



**2020-21**



332  
①

**Dr. Konga Gopikrishna**  
**Scientist – 'F'**  
**Science for Equity Empowerment and Development Division**  
**E – Mail: k.gopikrishna@nic.in, Tele: 011 26590298**

**DST/SEED/SCSP/STI/2020/376**

**26.03.2021**

**BY E-MAIL**

Sub: Financial Assistance for the project titled "Science Technology and Innovation STI Hub in Chandragiri Mandal, Chittoor District, Andhra Pradesh State for the Socioeconomic Development of Scheduled Caste SC and Scheduled Tribe ST Communities".

Dear Sir,

This is to inform that the above mentioned project proposal has been approved at a total cost of Rs.3,61,30,086/- (Rs.1,52,65,010/- for general component and Rs.2,08,65,076/- for capital component) for a period of 36 months with DST's financial support restricted to Rs.3,07,30,086/- (Rs.1,28,65,010/- for general component and Rs.1,78,65,076/- for capital component). The Host Institute shall contribute the remaining amount of Rs.54,00,000/- (Rs.24,00,000/- general component and Rs. 30,00,000/- under capital component – construction costs). It is also proposed to release an amount of Rs.2,22,01,876/- (Rs.46,36,800/- for general component and Rs.1,75,65,076/- as capital component) as first installment of project implementation subject to the following conditions.

- a. Letter of consent to take up the project at the above cost.
- b. Submission of bond on non judicial stamp paper.
- c. An undertaking from the Organization/Institute/Principal Investigator that it has not obtained financial assistance from any other department of the Central/State Governments for this project or a similar project and the Institute is not blacklisted.
- d. Procurement of equipment as per General Financial Rules 2017.
- e. The institute will maintain separate audited account for the project and the entire amount of grant will be kept in an interest bearing bank account. For Grants released during F.Y. 2017-18 and onwards, all interests and other earnings, against released Grant shall be remitted to Consolidated Fund of India (through Non-Tax Receipt Portal (NTRP), i.e., www.bharatkosh.gov.in), immediately after finalization of accounts, as it shall not be adjusted towards future release of grant. A certificate to this effect shall have to be submitted along with Statement of Expenditure/Utilization Certificate for considering subsequent release of grant/closure of project accounts.
- f. The permanent assets/equipment procured if any, in the project should be used by the intended beneficiaries even after completion of project tenure. Retention of equipment if any for further research may be requested and such retention is subject to approval of competent authority.
- g. A declaration that the project implementing agency shall employ the-EAT sub module.
- h. Registration in the NGO Darpan Portal of NITI Ayog.
- i. The equipment will be procured through GEMS wherever applicable.

2. Kindly send us the bond on non judicial stamp paper for the above mentioned amount as per the enclosed format. You are also advised to send us a resolution signed by all members of your Executive Committee authorizing the signatory to execute the bond on their behalf for this project and inform on whose name the financial transactions would be made. The format for bond is enclosed.



3. As per the Ministry of Finance, Department of Expenditure OM No. 7 (1) E.Coord/2012 dated 14<sup>th</sup> November 2012 (enclosed), the release of the grant will be subject to declaration by the Organization/ Principal Investigator (s) that

(i) All Utilization Certificates due for rendition, for grant in aid released by the Central Government in respect of all the schemes/programmes/projects of a Ministry/Department of Government of India have been submitted for all the projects implemented (completed) by the Organization/ Principal Investigator (s) and Up to date Utilization Certificates have been submitted for grant in aid released by the Central Government in respect of all the schemes/programmes/projects of a Ministry/Department of Government of India in case of ongoing projects

4. Further, in order to release the grant, you have to register your agency under "Public Financial Management System (PFMS)". The bank details should be added to the scheme "Innovation Technology Development and Deployment" (1819) as well as to the Scheme Science and Technological Institutional and Human Capacity Building (1817).

5. The Unique ID of your organisation registered under NGO Darpan Portal of NITI Ayog should be linked/added with your agency already registered under PFMS.

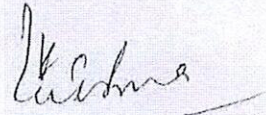
6. The release of the grant would be through electronic transfer of funds (RTGS). You are requested to provide the following details for facilitating e-payments.

- a. Account Holders /Organization name (or) designation
- b. Name of the bank
- c. Bank Account Number
- d. IFSC Code
- e. MICR Code

It would be appreciated if you can send us a photocopy of a cancelled cheque, which has all the requisite details. The bank details in the photocopy of the cancelled cheque should match with the details given during CPSMS registration.

Enclosures: As above

Yours sincerely



(Konga Gopikrishna)

To,

Dr. Devaraju Thangellamudi  
Sree Vidyanikethan Engineering College  
Sree Sainath Nagar A. Rangampet, Tirupati - 517102,  
Andhra Pradesh



## PART I: EXECUTIVE SUMMARY

### 1. Project Title

Science Technology and Innovation (STI) Hub in Chandragiri Mandal, Chittoor District, Andhra Pradesh State for the Socioeconomic Development of Scheduled Caste (SC) and Scheduled Tribe (ST) communities.

### 2. Name of the Institution & Address

Sree Vidyanikethan Engineering College (SVEC)  
Sree Sainath Nagar, Tirupati, Andhra Pradesh 517102

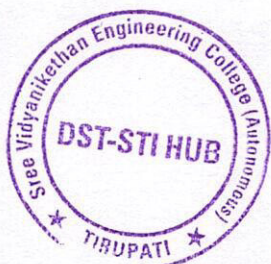
### 3. Details of the Project Team

Dr. T. Devaraju (Principal Investigator), SVEC, Tirupati  
Dr. M. S. Sujatha (Co-Investigator), SVEC, Tirupati  
Dr. C. Madhusudhana Rao (Co-Investigator), SVEC, Tirupati  
Dr. K. C. Varaprasad (Co-Investigator), SVEC, Tirupati  
Dr. Yasmin Begum (Co-Investigator), SVEC, Tirupati  
Dr. M. M. Kesavulu (Co-Investigator), SVEC, Tirupati  
Dr. G. Harikrishnan (Co-Investigator), SVEC, Tirupati  
Dr. R. L. Krupakaran (Co-Investigator), SVEC, Tirupati  
Mr. K. Leleedhar Rao (Co-Investigator), SVEC, Tirupati

### 4. Project Area Profile:

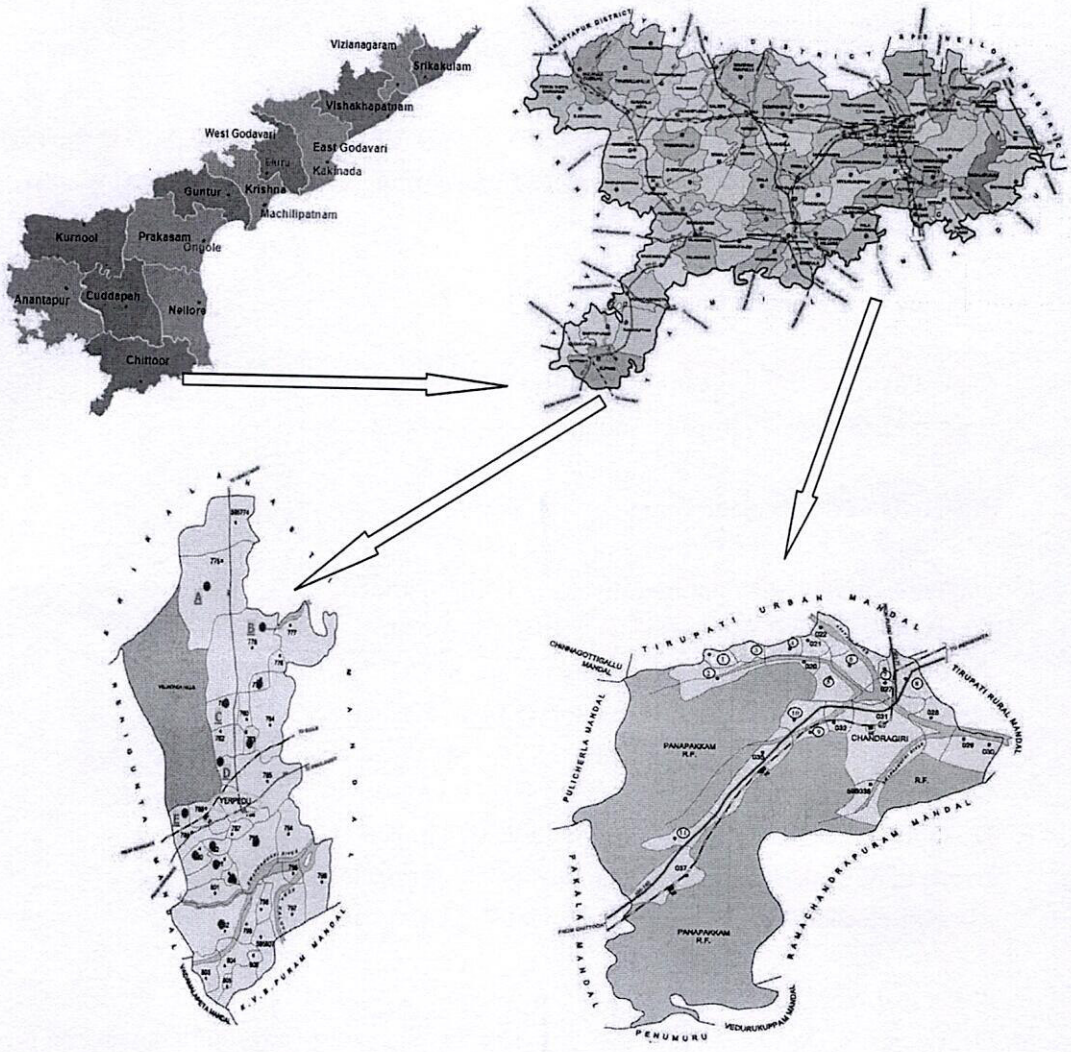
- (a) Demographic Details (give details of the geographical area covered, climate, land use & cropping patterns, availability of natural resources & raw materials, availability of special skills/trades, etc.)

**Details of Project Area:** Chittoor district is a part of the Rayalaseema region of Andhra Pradesh State and occupies an area of 15,359 sq. km. The district is bounded by Anantapur District to the northwest, Cuddapah District to the north, Nellore District to the northeast, Krishnagiri District, Vellore District, and Tiruvallur District of Tamil Nadu state to the south, and Kolar District of Karnataka state to the west. Chittoor district lies extreme south of the Andhra Pradesh state approximately between 12°37' - 14°08' north latitudes and 78°03' - 79°55' east longitudes. Administratively the district is divided into 3 Revenue Divisions, which are further sub-divided into 66 Revenue Mandals/blocks. **The project will be implemented in the villages of Chandragiri and Yerpedu Mandals of Chittoor district.** The location of the Chittoor district in the political map of Andhra Pradesh along with the maps of Chandragiri and Yerpedu Mandals is given below.



*Dwa*  
Prof. Dr. T. DEVARAJU  
PRINCIPAL INVESTIGATOR  
Science Technology and Innovation Hub  
Sree Vidyanikethan Engineering College  
(Autonomous)  
A.Rangampet, Chittoor (Dist.)-517 102, A.P., India





(Maps are of Andhra Pradesh State, Chittoor District, Chandragiri Mandal, and Yerpedu Mandal in a clockwise direction. Map is not to scale, the colors are arbitrary)

The project interventions will be disseminated and deployed in 11 villages in Chandragiri Mandal (for SC population) and 5 villages in Yerpedu Mandal (for ST population). The details are elaborated under 4 (c).

**Climate:** Chandragiri has a tropical savanna climate. It is warm every month with both wet and dry seasons. The average annual temperature for Chandragiri is 33° degrees and there is about 248 mm of rain in a year. It is dry for 282 days a year with an average humidity of 42%. The climatic pattern in Yerpedu Mandal is also tropical and the variation in the precipitation between the driest and wettest months is 223 mm. During the year, the average temperatures vary by 9.1 °C. In winter, there is much less rainfall



  
**Prof. Dr. T. DEVARAJU**  
 PRINCIPAL INVESTIGATOR  
 Science Technology and Innovation Hub  
 Sree Vidyanikethan Engineering College  
 (Autonomous)  
 A.Rangampet, Chittoor (Dist.)-517 102, A.P., India.





## 16. Details of Principal Investigator, Co Investigators and Affiliation

<b>i. Principal Investigator</b>	
Name	<b>Dr. Thangellamudi Devaraju</b>
Sex and Date of Birth	Male , 02-08-1970
Highest Qualification and Expertise	Ph. D
Designation	Professor
Department	Electrical and Electronics Engineering
Institute/University	Sree Vidyanikethan Engineering College
Complete Address with Pin Code	A. Rangampet, Chandragiri Mandal Chittoor district, Andhra Pradesh-517102
Telephone and Fax Numbers	08772504888
Mobile Number	9490049586
E – Mail	devaraj@vidyanikethan.edu
<b>ii. Co-Investigator (1)</b>	
Name	<b>Dr. M. S. Sujatha</b>
Sex and Date of Birth	Female, 30-05-1967
Highest Qualification and Expertise	Ph. D
Designation	Professor
Department	Electrical and Electronics Engineering
Institute/University	Sree Vidyanikethan Engineering College
Complete Address with Pin Code	A.Rangampet, Chandragiri Mandal Chittoor district, Andhra Pradesh-517102
Telephone and Fax Numbers	08772504888
Mobile Number	9441381878
E – Mail	sujatha.ms@vidyanikethan.edu
<b>iii. Co-Investigator (2)</b>	
Name	<b>Dr. C.Madhusudhana Rao</b>
Sex and Date of Birth	Male:24-08-1968
Highest Qualification and Expertise	Ph. D
Designation	Professor
Department	Computer Science and Electronics
Institute/University	Sree Vidyanikethan Engineering College
Complete Address with Pin Code	A.Rangampet, Chandragiri Mandal Chittoor district, Andhra Pradesh-517102
Telephone and Fax Numbers	08772504888
Mobile Number	9959990001
E – Mail	hod_csse@vidyanikethan.edu



  
**Prof. Dr. T. DEVARAJU**  
 PRINCIPAL INVESTIGATOR  
 Science Technology and Innovation Hub  
 Sree Vidyanikethan Engineering College  
 (Autonomous)  
 A.Rangampet, Chittoor (Dist.)-517 102, A.P., India.



<b>iii. Co-Investigator (3)</b>	
Name	<b>Dr. K. C. Varaprasad</b>
Sex and Date of Birth	Male:29-03-1977
Highest Qualification and Expertise	Ph. D
Designation	Professor
Department	Mechanical Engineering
Institute/University	Sree Vidyanikethan Engineering College
Complete Address with Pin Code	A. Rangampet, Chandragiri Mandal Chittoor district, Andhra Pradesh-517102
Telephone and Fax Numbers	08772504888
Mobile Number	9440459660
E – Mail	hod_mechanical@vidyanikethan.edu
<b>iv. Co-Investigator (4)</b>	
Name	<b>Dr. A. Yasmine Begum</b>
Sex and Date of Birth	Female, 16-03-1983
Highest Qualification and Expertise	Ph. D
Designation	Associate Professor
Department	Electronics & Instrumentation Engineering
Institute/University	Sree Vidyanikethan Engineering College
Complete Address with Pin Code	A. Rangampet, Chandragiri Mandal Chittoor district, Andhra Pradesh-517102
Telephone and Fax Numbers	08772504888
Mobile Number	8142982006
E – Mail	a.yasminebegum@vidyanikethan.edu
<b>v. Co-Investigator (5)</b>	
Name	<b>Dr. M. M. Kesavulu</b>
Sex and Date of Birth	Male, 25-07-1970
Highest Qualification and Expertise	Ph.D., Bio Chemistry
Designation	Associate Professor
Department	Basic Sciences & Humanities
Institute/University	Sree Vidyanikethan Engineering College
Complete Address with Pin Code	A. Rangampet, Chandragiri Mandal Chittoor district, Andhra Pradesh-517102
Telephone and Fax Numbers	08772504888
Mobile Number	9490181365
E – Mail	kesavulu.mm@vidyanikethan.edu
<b>vi. Co-Investigator (6)</b>	
Name	<b>Dr. G. Hari Krishnan</b>
Sex and Date of Birth	Male, 21.08.1978



Dwe

Page | 20

**Prof. Dr. T. DEVARAJU**  
PRINCIPAL INVESTIGATOR  
Science Technology and Innovation Hub  
Sree Vidyanikethan Engineering College  
(Autonomous)  
A.Rangampet, Chittoor (Dist.)-517 102, A.P., India.




Highest Qualification and Expertise	Ph. D
Designation	Associate Professor
Department	Electrical and Electronics Engineering
Institute/University	Sree Vidyanikethan Engineering College
Complete Address with Pin Code	A. Rangampet, Chandragiri Mandal Chittoor district, Andhra Pradesh-517102
Telephone and Fax Numbers	08772504888
Mobile Number	9994789165
E – Mail	gharishnan@vidyanikethan.edu
<b>vii. Co-Investigator (7)</b>	
Name	<b>Dr. R. L. Krupakaran</b>
Sex and Date of Birth	Male , 10-05-1977
Highest Qualification and Expertise	Ph. D
Designation	Associate Professor
Department	Mechanical Engineering
Institute/University	Sree Vidyanikethan Engineering College
Complete Address with Pin Code	A. Rangampet, Chandragiri Mandal Chittoor district, Andhra Pradesh-517102
Telephone and Fax Numbers	08772504888
Mobile Number	9000379558
E – Mail	krupakaran@vidyanikethan.edu
<b>viii. Co-Investigator (8)</b>	
Name	<b>Mr. K. Leleedhar Rao</b>
Sex and Date of Birth	Male , 12.07.1984
Highest Qualification and Expertise	M. Tech
Designation	Assistant Professor
Department	Electrical and Electronics Engineering
Institute/University	Sree Vidyanikethan Engineering College
Complete Address with Pin Code	A. Rangampet, Chandragiri Mandal Chittoor district, Andhra Pradesh-517102
Telephone and Fax Numbers	08772504888
Mobile Number	9290290410
E – Mail	leleedher.k@vidyanikethan.edu

**17. Details of ongoing/completed projects of the investigator(s)/Institute during the last 5 years**

Sl. No.	Name of the project and Reference Number	Funding Agency	Cost and Duration	Status
1.	Frequency Modulated hearing	DST	Rs. 54.13	On going



  
**Prof. Dr. T. DEVARAJU**  
 PRINCIPAL INVESTIGATOR  
 Science Technology and Innovation Hub  
 Sree Vidyanikethan Engineering College  
 (Autonomous)  
 A.Rangampet, Chittoor (Dist.)-517 102, A.P., India.

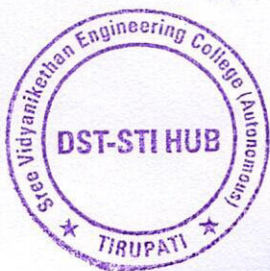



8 9

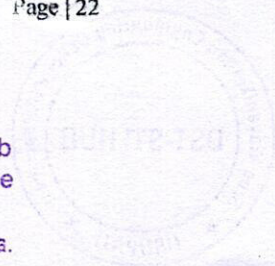
	aid for elderly with hearing disability SEED/TIDE/015/2017		Lakh 3years	
2.	Design and Development of Micro Cantilever Based Biosensor for Early detection of High Risk Human Papilloma Virus DST/BDTD/EAG/2016	DST	Rs. 40.00 Lakh 3 years	On going
3.	Investigations on gravity wave simulations in the lower atmosphere during disturbed weather conditions PDF/2016/002267	DST- SERB	Rs. 28.80 Lakh 3 years	On going
4.	Intelligent system to classify Human Brain signals SR/CSRI/370/2016	DST	Rs. 28.06 Lakh 3yrs	On going
5.	Fast Content based search Navigation and Retrieval System for e-Learning 4-4/2015-16(MRP/UGC-SERO)	UGC-SERO	Rs. 3.95 Lakh	Completed
6.	Development Of Mathematical Model for the prediction of customer Behavior in Online Databases 4-4/2015-16(MRP/UGC-SERO)	UGC-SERO	Rs. 1.95 Lakh	Completed
7.	Synthesis of Biologically active substituted trizoles and tetrazoles MRP-6437/16(SERO/UGC)	UGC-SERO	Rs. 1.8 Lakh	Completed
8.	Top Gate Field Effect Transistors for Electronics and Gas Sensing Application where Channel Functionalized by Catalyst Metal to Improve the Sensitivity,(Pt, Pd and AU/AlGaIn/GaN/Al2O3)	INUP IITB, Bombay	Rs. 15.00 Lakh	Completed
9.	Identification of Suitable Precursor to Grow Highly Vertically Aligned ZnO Nanorods by Hydrothermal Method on SiO2/Si Substrate	INUP IITB, Bombay	Rs. 2.5 Lakh	Completed
10.	Study of Gate Thickness Effect on Gas Sensing and UV Detection Properties of Top Gate Thin Film Transistor	INUP IITB, Bombay	Rs. 10.00 Lakh	Completed
11.	Kinetics for Phase-transfer catalytic addition of Di-	UGC-SERO	Rs. 2.7 Lakh	Completed

Page 22

Page | 22



  
**Prof. Dr. T. DEVARAJU**  
 PRINCIPAL INVESTIGATOR  
 Science Technology and Innovation Hub  
 Sree Vidyanikethan Engineering College  
 (Autonomous)  
 A.Rangampet, Chittoor (Dist.)-517 102, A.P., India.





than in summer. The average annual temperature is 28.8 °C. About 1057 mm of precipitation falls annually.

**Land Use:** The major land use/land cover categories (2015 - 16) that have been identified in the district are Built-Up land (416.05 sq km), Agricultural land (7810.94 sq km), Forest (4259.90 sq km), Wastelands (1943.84 sq km) and Water Bodies (719.97 sq km). The major portion of the district is covered by red soils with portions of alluvial soil in Chittoor and Bangarupalem erstwhile taluks. According to an assessment made based on village records, 57% of the soils of the district are red loamy and 34% red sandy. The remaining 9% is covered by Black Clay (3%), Black Loamy (2%), Black Sandy (1%), and Red Clay (3%). In the district, 29.83% of the geographical area is covered by forest while it is 22.58% in the state. **The comparatively larger area under forest denotes the scope for development and establishment of forest-based industries.** The percentage of barren and uncultivable land in the district is 10.19% which is higher than the state average of 7.43% which **offers potential livelihood activities in non-farm livelihood activities.**

**Cropping Pattern:** The proportion of the population engaged in agriculture in the Chittoor district (63.96%) is slightly lower in comparison with Andhra Pradesh (62.16 percent) **indicating the relative backwardness of the district in the state.** The relatively lower proportion of the workforce engaged in the household industry of the district (3.72%) in comparison with (4.71%) the state proportion, **is an index of its backwardness.** The proportion of other workers in the district also reinforces the conclusion that the **Chittoor district is economically backward.** The net area sown in the district is a mere 23.47% of the total area of land as against 36.67% in Andhra Pradesh, **implying a potential for extending the area under cultivation with the expansion of irrigation facilities and techniques of dryland farming.** Paddy, Ragi, Groundnut, and Sugar Cane are major crops grown in the area Apart from Agriculture, Land utility in the Chittoor district is taken by Horticulture. A total of 1, 96, 815.745 ha is cultivated under horticulture (Fresh fruits 115017.245 ha, Vegetables 595 577 ha, Plantations 3399 ha, Spices 8875 ha, Floriculture 9396.5 Ha, Aromatic and Medicinal plants 1155 ha). In this category, a total of 11507 .25 ha is irrigated with an annual production of 2090216.64 MT in which Mango plantations rank high with a cultivable area of 990291 ha, and a total yield of 1390077 MT during 2017-18.

**Irrigation:** No perennial rivers are flowing in the district. Some minor rivers flowing in the district are 1. Palar, 2. Papagni, 3. Pincha, 4. Ponni, 5. Arani, 6. Swarnamukhi, 7. Bahuda, 8. Kalyani, 9. Kusasthali, 10. Nagari and 11. Koundinya. These are non-perennial in nature and remain dry for a major part of the year. Percentage of net irrigated area to the net area sown in the Chittoor district is 41.51% whereas in the state it is 41.79%. Percentage of gross irrigated area to the net area sown in Chittoor is 53.77% and it is 57.15% in the state. Percentage of net area sown to the total geographical area is 23.47%



  
**Prof. Dr. T. DEVARAJU**  
PRINCIPAL INVESTIGATOR  
Science Technology and Innovation Hub  
Sree Vidyanikethan Engineering College  
(Autonomous)  
A.Rangampet, Chittoor (Dist.)-517 102, A.P., India.



10 10


in the district and 36.67% in the state. Percentage of net irrigated area to total geographical area is 9.74% in the district whereas it is 15.32% in the state. Percentage of gross irrigated area to the total geographical area is only 12.62% in the district and it is 20.96% in the state. The above figures indicate that **most of the area is not under irrigation in the district. So, proper irrigation development activities are to be taken up to bring huge areas under irrigation in the district.**

**Availability of Raw Materials:** Chittoor district is famous for exporting mango pulp and canned fruits. Mango is the major horticultural crop of Chittoor District with an average of 119539 Acres crop and producing 358617 Metric Tonnes per Annum. There are 48 Fruit processing Industries in the Small & Medium scale sector manufacturing fruit pulp with a total capacity of 10000 Metric Tonnes per annum. **There is scope for more units with aseptic packing-which is export-oriented.** Tomato is grown in abundance in the district with an average of 35,000 acres producing 3 to 4 lakh Metric Tons Per Annum. At present, about 6000 Metric Tonnes are being processed in the existing Fruit Processing industries. **Apart from this, there is scope for Tomato processing units for making Tomato Sauce, Ketchup, etc.** Papaya is grown with an average of 300 to 400 Acres and producing 5000 Metric Tonnes to 6000 Metric Tonnes. Existing fruit processing units are processing papaya partly making papaya pulp. **The mango processing units produce large amounts of mango peels and mango kernels, which largely remained unutilized. There exists potential in setting up units for the extraction of oil from mango kernel, which can be used in varnishes, soaps, etc. Similarly, mango peels can be dried and converted into a protein additive for cattle feed.** Tamarind is available in plenty with an average of 12000 acres and producing 15000 Metric Tonnes. **There is good scope for Tamarind processing units for making exportable concentrates, juices, and Starch units from seed.** Chittoor district has occupied a prominent place in the State in setting up of Fruit Canning Industries. The district has 39 Small Scale Fruit Canning units and 3 Large and Medium Scale Industries. Chittoor District is well known for Granite and minor occurrences of other minerals like Iron Ore, Gold, Barytes, and Steatite, etc. At present, there are 714 Quarry leases for Granite, Dimensional Stones, Quartz, Road Metal, and Building Stone and Gravel. The mineral deposits are surface and sub-surface, and open cast mining is taking place in Chittoor District. Based on the mineral resources available in the district, several mineral-based industries have been established in Chittoor District.

**Availability of Special (Traditional) Skills:** The tribes of Chandragiri reserve forest (Chandragiri and Yerpedu Mandal) have immense traditional medicinal knowledge. However, these are not yet fully documented and scientifically validated for/or with the Phytochemical and Ethnobotanical database to indicate their high medicinal significance.



Page 4

  
**Prof. Dr. T. DEVARAJU**  
PRINCIPAL INVESTIGATOR  
Science Technology and Innovation Hub  
Sree Vidyanikethan Engineering College  
(Autonomous)  
A.Rangampet, Chittoor (Dist.)-517 102, A.P.



Thus there is the **abundant availability of raw materials for setting up agro/horticulture based food processing units**. The current units don't meet the export requirements also. There is a **requirement for skilled youth for mineral and agro-processing industries**. There is also a **good scope for developing dryland agriculture and other multi-cropping technologies** in addition to the **processing of waste generated from agro and food processing technologies by developing relevant and specific technologies**. Under the ambit of the STI Hub, the present interventions are aimed to scientifically document and validate the information on medicinal plants used by tribes in the Chandragiri reserve forest area. **Hence the STI Hub will be an effort in the direction of developing and disseminating such technologies for improving socio-economic conditions of SC and ST population and to put natural resources of the region into economic production units with marginal inputs by enhancing the knowledge and upgrading the skills of the SC/ST Communities.**

**(b) Socioeconomic Status (details of social conditions, current occupations of the target beneficiaries, present average annual income, availability of basic amenities and facilities, etc.)**

The Chittoor district is one of the drought-prone districts in Andhra Pradesh. The total population of the district is 41,74, 064 of which SC population is 7,85,760 (18.8%) and ST population 1,59,165 (3.8%). The majority of the Scheduled Caste and Scheduled Tribe families in the target area eke out their livelihoods from Agriculture – mostly as agricultural laborers and some from farming operations. The land holding, if present is marginal to small, many of which were assigned lands given by NABARD. Allied occupations like small-scale Piggery, Sheep & Goat Rearing (Buffaloes and Cows), Poultry, etc. also provide a livelihood to a substantial number of SCs. Many landless SCs have migrated to urban and semi-urban areas finding jobs as construction laborers and some are involved in granite quarries and food processing industries. Owing to small landholdings, though there is a demand for horticulture crops produced by SC/ST, they are unable to approach the large industries with small yield and hence are forced to sell their horticultural produce to middlemen thus getting very small margins. The SC/ST people lack technical skills to operate types of machinery and hence also find it difficult to get jobs in fruit pulp and canning industries and many SMSE's through there is a need for manpower with such skill sets.

Low household income (approximately Rs.36000/- per family per annum) less access to education, child labor, child marriages, malnutrition, and limited access to health facilities, persist today. Many studies revealed that there are many irregularities found in the implementation of the MGNREGA program. The weaker sections such as Scheduled Castes (SC) and Scheduled Tribes (ST) are not provided with minimum working days under this program as stipulated in the guidelines of the program



*D.V.L.*

**Prof. Dr. T. DEVARAJU**  
**PRINCIPAL INVESTIGATOR**  
 Science Technology and Innovation Hub  
 Sree Vidyanikethan Engineering College  
 (Autonomous)  
 A.Rangampet, Chittoor (Dist.)-517 102, A.P., India.



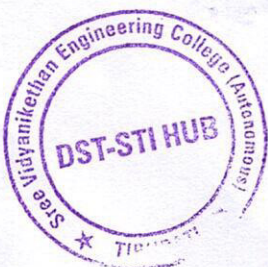
As reported in MGNREGA impact on income and employment of Scheduled Castes /Scheduled Tribes: A study in Chittoor District of Andhra Pradesh (Dr. M Sateeshnadha Reddy and Dr. P Surya Kumar revealed that out of 186372 households provided employment opportunities during 2015-16 only 4.13 percent of households belong to the ST community and 32.97 percent of households belongs to the SC community. From the data, the man-days of all communities through MGNREGA were recorded averagely 110.82, of these ST community man-days were recorded averagely 4.13 man-days and SC community man-days were recorded averagely 34.85 days generated respectively. An insight on how caste is still prevalent, with the government having no qualms in declaring a certain pocket in a village to be a place (Hrijanawada) for 'Harijans' (a name given by Gandhi to the Scheduled Caste people, which was later rejected and replaced with 'Dalit') or existence of Girijanawada for Tribal population depicts the status and plight of these communities in these days of the modern world and necessitate science and technological interventions for the holistic development of SC and ST communities.


**(c) Target Beneficiaries (type of target beneficiaries total size of target group(s), % of SC/ST of the total population in project area, etc.)**

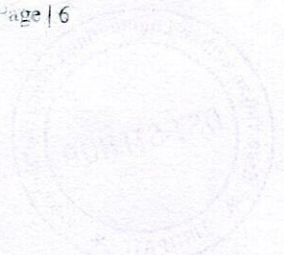
The total population of the District as per the 2011 census is 41.70 lakhs. The density of population per sq. km, is 275. The decadal growth rate of population in the district was 11.33 percent. The rural population accounts for 29.41 lakhs i.e., 70.53 percent and the urban population accounts for 12.28 lakhs i.e, 29.47 percent. The Scheduled Castes Population is 7.02 lakhs and Scheduled Tribe population is 1.28 lakhs forming 16.83 percent and 3.06 percent of the total population respectively. The Agricultural laborers are 4.47 lakhs. The literate Population in Chittoor district is 27.11 lakhs, forming 72.36 percent of the total population. The selected 11 villages (Bheemavaram, Chinnaramapuram, Ithepalli, KalroadPalle, KondreddyKhadriga, Kotala, Mamandur, Mittapalem, Narasinga Puram, Ramireddi Palle and Sesha Puram) of Chadragiri Mandal account for approximately 33.69 % SC population out of total population. In Yerpedu Mandal, all the selected five villages viz Penumallem, Penugaddem, Mallemadugu, Musali Padu and Kukkalagunta comprise of 100% ST population. The village wise details of selected beneficiaries are given under Sl. No.13.

**5. Nature of the Project (you may tick all the relevant options)**

Technology development (new technology, new product/process)	✓
Adaptive R&D (Location Specific Research & Technology Development including Technology modification/modulation/ optimization, up/down scaling of existing systems, technology adaption/adoption etc)	✓
Technology transfer (field trials, demonstrations & transfer of technology)	✓



  
**Prof. Dr. T. DEVARAJU**  
 PRINCIPAL INVESTIGATOR  
 Science Technology and Innovation Hub  
 Sree Vidyanikethan Engineering College  
 (Autonomous)  
 A.Rangampet, Chittoor (Dist.)-517 102, A.P., India.



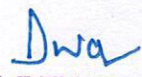


Technology dissemination (Replication of successful models, dissemination of available technology for solution of identified problem, demo and training etc.)	✓
---	---

6. Give the details/list of technologies

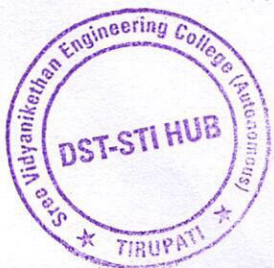
Sl. No.	Technologies (Interventions)	Justification
1.	Post-Harvest Processing Technologies <ul style="list-style-type: none"> <li>o Extraction of Fruit Pulp</li> <li>o Jaggery Making and Value Added Products</li> <li>o Extraction of oil from Mango Kernel</li> </ul>	<ul style="list-style-type: none"> <li>o Mango is the major horticultural crop of Chittoor District with an average of 1, 19, 539 acres crop and producing 3, 58, 617 Metric Tonnes per Annum. There are 48 Fruit processing Industries in the Small &amp; Medium scale sector manufacturing fruit pulp with a total capacity of 10000 Metric Tonnes per annum. There is scope for more units with aseptic packing-which is export-oriented for making ice creams, juice-based foods, and jellies.</li> <li>o Papaya is grown with an average of 300 to 400 Acres and producing 5000 to 6000 Metric Tonnes. The existing units are less and there is a huge demand for papaya pulp and canned papaya which is also export-oriented.</li> <li>o The Chittoor district has occupied a prominent place in the State in setting up of Fruit Canning Industries. The district has 39 Small Scale Fruit Canning units and 3 Large and Medium Scale Industries</li> <li>o Sugar Cane is the major cash crop in the area. Chittoor district is famous for its Jaggery having consistent color throughout the year.</li> <li>o Jaggery has a well-established market even in a rural area. As part of this enterprise value-added nutritious products will also be produced as there is good demand for these products in rural as well as urban areas</li> </ul>




  
**Prof. Dr. T. DEVARAJU**  
 PRINCIPAL INVESTIGATOR  
 Science Technology and Innovation Hub  
 Sree Vidyanikethan Engineering College  
 (Autonomous)  
 A.Rangampet, Chittoor (Dist.)-517 102, A.P., India.



		<ul style="list-style-type: none"> <li>○ The mango processing units produce a large amount of mango peels and mango kernels, which largely remained unutilized. There exists potential in setting up units for the extraction of oil from mango kernel, which can be used in varnishes, soaps etc. Similarly, mango peels can be dried and converted into protein additive for cattle feed.</li> </ul> <p><b>The small landholdings and less production by the farmers doesn't allow them to directly sell their produce to the fruit pulping and canning industries. Hence there is a need to build small scale social enterprises around these interventions for meeting the demand and arrest the post-harvest losses faced by these small farmers</b></p>
2.	Skill Development and Capacity Building of SC Youth	<ul style="list-style-type: none"> <li>○ Huge requirement of skilled manpower in food processing industries, engineering and mineral industry</li> <li>○ Inadequate technical knowledge of local manpower on service and maintenance of machineries.</li> <li>○ Lack of skilled technician for service and maintenance of the components of the machineries.</li> <li>○ Most of the SMEs do not have clarity about emerging technologies</li> <li>○ Problems encountered during assembling and dismantling of cutting tools due to lack of technical skills.</li> <li>○ Inadequate product quality and standards and Limited facilities for testing and research.</li> </ul> <p><b>Lack of testing facilities for raw materials, Dependence on imports for diamond-tipped tools, lack of skilled manpower calls for interventions in skill development, and</b></p>

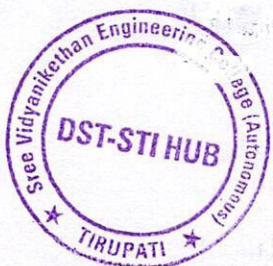


  
**Prof. Dr. T. DEVARAJU**  
 PRINCIPAL INVESTIGATOR  
 Science Technology and Innovation Hub  
 Sree Vidyanikethan Engineering College  
 (Autonomous)  
 A.Rangampet, Chittoor (Dist.)-517 102, A.P., India.





		<p><b>capacity building of youth for catering the requirement in the major manufacturing clusters like fruit processing, power loom, bus body building and granite industry.</b></p>
3.	<p>Location specific agri-horticulture technologies (dry land agriculture)</p> <ul style="list-style-type: none"> <li>○ Raising of Community Nurseries (Tulasi, Beetel leaves and flowers)</li> <li>○ Vegetable Gardens for Nutritional Security</li> <li>○ crop and soil based Bio-fertilizer production</li> </ul>	<ul style="list-style-type: none"> <li>○ The red sandy and loamy soils are potential soils for flowering plants and vegetable crops which doesn't require much root strength and water. Plentiful availability of waste fallow lands down the foot hills</li> <li>○ There is a huge demand for flowers as the place is in vicinity of major pilgrimage centers like Tirupati (60 km), Kaanipaakam (10 Km), Kalahasti (100 km) etc.</li> </ul> <p><b>The net area sown in the district is a mere 23.47% of the total area of land as against 36.67% in Andhra Pradesh, implying a potential for extending the area under cultivation with the expansion of irrigation facilities and techniques of dry land farming</b></p>
4.	<p>Identification, Scientific Validation Documentation of the Ethnomedicinal practices</p>	<ul style="list-style-type: none"> <li>○ Though there are Ethnomedicinal studies on medicinal plants used by Yanadi tribe of Chandragiri reserve forest area, there is no record of traditional medicinal knowledge of villages in Yerpedu Mandal so far</li> <li>○ The present study is aimed to document the information on medicinal plants used by tribes in this area and compare it with those of in Chandragiri reserve forest area.</li> <li>○ The correlation of ethnomedicinal uses with Dr. Duke's Phytochemical and Ethnobotanical database will indicate and confirm high medicinal significance as claimed by the local people of the area.</li> <li>○ These types of ethnomedicinal studies play an important role for the conservation and</li> </ul>



  
**Prof. Dr. T. DEVARAJU**  
**PRINCIPAL INVESTIGATOR**  
**Science Technology and Innovation Hub**  
**Sree Vidyanikethan Engineering College**  
**(Autonomous)**  
 A.Rangampet, Chittoor (Dist.)-517 102 A.P. India

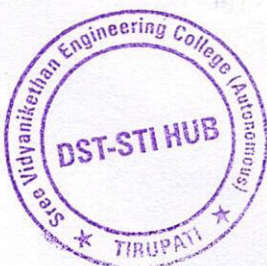


		<p>documentation of sustainable use and importance of medicinal knowledge of this tribal population of Yerpedu Mandal.</p> <p><b>Scientific validation and documentation is much needed to understand the importance of traditional/alternate practices that have been potential in the therapy of different ailments and also it is imminent to preserve the rich native knowledge of the community.</b></p>
--	--	---

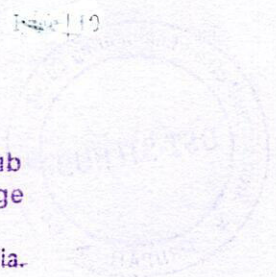
**7. Importance of the proposed Technologies (Interventions) in the context of current status (livelihoods, health, socioeconomic status etc)**

Majority of the Scheduled Caste and Scheduled Tribe families in the target area eke out their livelihoods from Agriculture – mostly as agricultural laborers and some from farming operations. The land holding, if present are marginal to small. The present interventions in post-harvest processing technologies will pave a way for the SC communities to have their own production units with enhanced skills and technological units. The small and marginal farmers who hitherto suffer losses due to unreached markets and big processing units can now have meaningful interventions that arrest post-harvest losses and will have sustainable income which will be almost double their existing income. SC communities who are into occupations like small-scale Piggery, Sheep & Goat Rearing (Buffaloes and Cows), Poultry etc and also take up the alternate income generation activities proposed under the STI Hub. Many landless SCs will now have the option of improving their skills in different areas of food processing, ancillary engineering operation, granite industry, etc through the interventions proposed under the STI Hub. Given the implementing agency having collaboration with Siemens, Dassault, and Andhra Pradesh Skill Development Council, the SC youth will get an opportunity to expose to the training s given by Siemen, Dassault, etc and will get an opportunity to participate in the recruitment drives. This skill development will also enable them to get jobs in nearby industries, arrest the migration and well as also provide opportunity for placement in reputed industries in other regions.

There is also a good scope for developing dryland agriculture and other multi cropping technologies in addition to processing of waste generated from agro and food processing technologies by developing relevant and specific technologies. The proposed interventions will also augment the income generation activities.



  
**Prof. Dr. T. DEVARAJU**  
 PRINCIPAL INVESTIGATOR  
 Science Technology and Innovation Hub  
 Sree Vidyanikethan Engineering College  
 (Autonomous)  
 A.Rangampet, Chittoor (Dist.)-517 102.,A.P., India.





The district is well known for ethnomedicinal practices. The medicinal knowledge on herbal treatments is passed from generation to generation from their ancestors. Nowadays lack of interest among younger generations to carry out the same is due to attraction towards modern medicine. These target area has high abundance of flora and disappearance traditional healers dwindling rapidly. Hence this is the right time to document at least the remaining knowledge of the tribes of the district. It is also proposed to document the medicinal knowledge of Yanadi tribe, explore and support their medicinal significance to compare their claims with Dr. Duke's phytochemical and ethnobotanical database.

The proposed interventions will create greater access to resources, education, health, infrastructure and other minimum requirements and will diverse the livelihood options and improve the socio-economic conditions of the SC/ST population. The proposed STI Hub will provide awareness, education, skill development, training, mentoring and handholding services to the SC population of Chandragiri and Yerpedu blocks to adopt alternative livelihoods and practice simple livelihood technologies to ease physical labour, remove drudgery and create self-employment through individual/group entrepreneurship and family micro-business.

**8. Science & Technology component/Innovativeness/Novelty of the project.**

The technologies selected for development/optimization/downscaling are dependent on the requirements of the target area. The bulky and industrial-scale equipment used fruit processing, pulping and canning units will be downscaled to the requirement of small scale enterprises. The technologies like solar drying, jaggery making will be optimized to meet the requirements of target area and small production units.

The proposed mango pulp extraction machine is small when compared to existing large scale mango pulp industries and large in terms of existing small scale mango pulp extraction machines. It consists of two feeding hoppers, chopping shaft with spikes, screw conveyor housed in a cylindrical barrel, cake outlet, juice outlet and main frame. The technical details are described in Part II of the project proposal.

For the target area, a Diffused Solar Reflector (DSR) Unit is proposed based on the climatic conditions of the area. As an intervention to the existing STD technology, a Diffused Solar Reflector unit is introduced in between the tunnels or at the extremities. A solar diffuser diffuses the multidirectional recipient suns radiant energy onto the parabolic trough reflector through the filler trays, which reflects it to strike the inclined glazing, which will be further reflected on to the filler trays.

- o DSR unit improves the penetration of solar irradiation through the filler trays and reduces the drying time.



*Dr. T. Devaraju*

**Prof. Dr. T. DEVARAJU**  
PRINCIPAL INVESTIGATOR  
Science Technology and Innovation Hub  
Sree Vidyanikethan Engineering College  
(Autonomous)  
A.Rangampet, Chittoor (Dist.)-517 102, A.P., India.





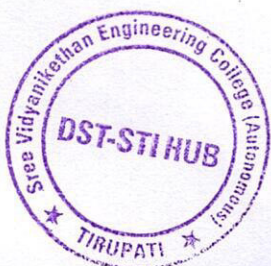
- The suspected products in the neighborhood of contamination can be filled in the filler trays to attain quick drying.
- The DSR can also be installed as a separate micro-unit.

Two new methods for jaggery preparation are proposed. The technical details are given in Part II. The brief details and advantages are given below

**Method I:** the use of solar energy in the supply of partial or full amount of the heat required in the first and second stages of jaggery preparation. Combustion efficiency of the open earth furnace can be increased by using preheated air in place of atmospheric air and bagasse with low moisture content at the inlet to the furnace. Solar collectors and solar driers can be used as a source of heat in the jaggery preparation. Sugarcane juice can be heated to its boiling temperature using solar collectors and then send to the boiling pan for jaggery preparation. The solar drier can be used to preheat the air supplied to the furnace and remove the moisture content from the bagasse which enhances the combustion efficiency. The extent to which either the sugarcane juice or inlet air is preheated will be dependent on the performance of the solar collector or solar drier. If the sugarcane juice is preheated close to its boiling temperature, then there will be a maximum percentage gain in the dry bagasse saved. Similarly, if the air inlet temperature is more than 120 degrees Centigrade then the gain in the dry bagasse saved is higher.

**Method II:** The extracted juice from the sugarcane is taken for boiling and the juice is boiled in open pans. These pans are made up of iron sheets and are 230 to 280 cm in diameter and about 50 cm deep. Generally, the bagasse is used as a fuel. The usage of bagasse as a fuel in the jaggery extraction which emits rich amount of flue gas which will affect the environment and which gives lower combustion efficiency. To overcome this problem, the proposed method is useful in the production of steam by using renewable energy source like solar energy. The solar concentric collectors are used to produce steam to heat the jaggery. Initially generated steam will be stored in the thermal storage, this steam is allowed in the concentric pan through control valve, where the required flow rate of steam is controlled. The temperature of the steam will be 200 to 250 degrees Centigrade which is more sufficient to prepare the jaggery. After steam rejects heat to pan then steam becomes condensing. This condensed water will be recirculated to solar concentrator. Alternative to the suggested method, whenever the solar energy does not meet the required temperature to prepare the jaggery then conventional heat energy (dried bagasse) is used to prepare the jaggery.

Crop and soil based bio-fertilizer production process involve isolation of efficient living microbial cultures from soil from roots of crops like groundnut, sugarcane from Chandragiri Mandal for preparation of mother culture. This mother culture applied to plant seeds or soil, can colonize the rhizosphere or the interior of the host plant and then



  
**Prof. Dr. T. DEVARAJU**  
 PRINCIPAL INVESTIGATOR  
 Science Technology and Innovation Hub  
 Sree Vidyanikethan Engineering College  
 (Autonomous)  
 A.Rangampet, Chittoor (Dist.)-517 102, A.P., India.

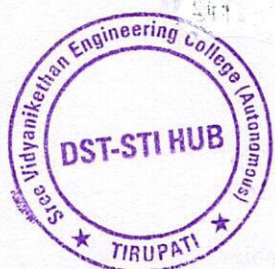



promote plant growth by increasing the availability, supply, or uptake of primary nutrients to the host. Moreover, in contrast to chemical fertilizers, bio fertilizers are more accessible to marginal and small farmers in Chandragiri block. For dry land agriculture, the drainage and subsurface drainage patterns near the foot hills will be studied and nurseries will be raised in the water holding areas of the foot hills. Slope pattern studies will be taken up with the help of Remote Sensing and GIS techniques and if needed, bore wells will be drilled based on the drainage patterns. Different agri-horticulture methods will be studied and the most appropriate method will be taken for interventions to increase the productivity.

The implementing Institution along with the other Knowledge Institutions with their local presence will provide hand holding, institutional delivery mechanisms, facilitate forward and backward linkages, micro financing for self-help groups taking up alternate livelihood options through utilization of local natural resources. The STI Hub will be an effort in the direction of developing and disseminating such technologies which will reduce drudgery, improve health and economic condition of SC population. If successful, this model can be tried out in other under developed zones of Rayalaseema Region of Andhra Pradesh. The technological interventions proposed for the STI Hub had been selected keeping in view of the availability of raw material in the region itself. The interventions are location specific, based on the optimum utilization of natural resources available in abundant in the region.

#### 9. Expected Deliverables (5-6 clear cut deliverables)

- An STI Hub with improvised postharvest processing technologies (location specific) and choice of other alternate livelihood options based on science and technical inputs.
- Social enterprises around the interventions proposed for meeting the demand and arrest the post-harvest losses faced by the small and marginal SC/ST farmers
- Environment-friendly technologies with less carbon emissions - the technologies deployed use raw material available locally. The natural resources being available are put to judicious utilization.
- Decentralized infrastructure and services.
- Digital technology to establish the connection between markets and farmers for microenterprise development. Development of customized ICT tools
- Creation of skilled manpower and technicians to cater the local requirements.
- Capacity building of SC/ST population in emerging tools and technologies thereby improving employment opportunities
- Scientific capacity building of local small NGOs
- Identification, Documentation and Scientific Validation of ethnomedicinal practices of Yanadi tribe, explore and support their medicinal significance to compare (phytochemical and ethnobotanical database)



  
**Prof. Dr. T. DEVARAJU**  
 PRINCIPAL INVESTIGATOR  
 Science Technology and Innovation Hub  
 Sree Vidyanikethan Engineering College  
 (Autonomous)  
 A.Rangampet, Chittoor (Dist.)-517 102, A.P., India.



**10. Expected benefits to the target groups/population (5-6 clear cut deliverables)**

- Diversification of livelihood options
- Sustainable income generation (envisaged that the proposed interventions will be double that of the current income)
- Increase the household income thereby increasing the per capita of the village.
- Greater access to resources, education, health, infrastructure, and other minimum requirements
- Due to an increase in household income due to the activities, there will be an improvement in living conditions (Quality of Life) also.
- Increase in knowledge of people, improvement in skill and capacity building

**11. Please give a detailed business plan/enterprise model/sustainability of the project.**

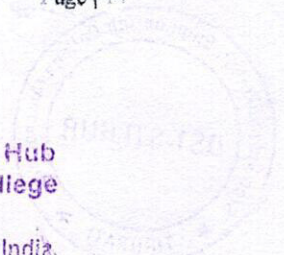
The technologies that will be deployed in the project area use raw material that is abundantly available in the district. The interventions are planned in such a way that none of the by products or ancillary products go waste. They are in turn put into use in some or other forms. There is a convergence of diversified technologies in the target area. The raw material used is renewable. Also, the livelihoods chosen are the potential livelihood options reported by the MSME – Development Institute (Ministry of MSME, Govt. of India,), the Commissioner of Industries, and the District Industries Center. There is the abundant availability of raw materials for setting up agro/horticulture based food processing units. The current units don't meet the export requirements also. Hence the STI Hub will be an effort in the direction of developing and disseminating such technologies for improving the socio-economic condition of SC communities and to put abundant natural resources of the region into economic production units with marginal inputs.

**Suggested plan of action for utilization of the outcome expected from the project:**

The proposed STI Hub speeds-up the development of social enterprises through startup-support services and resources one of the proposed objectives. The model creates jobs, strengthen the local economies by developing and adopting location-specific technologies. There will be holistic development of the SC Communities in the two major domains namely, human (knowledge, skill development, and access to resources) development and economic development (job opportunities and creation of social enterprises) thereby improving the quality of life. The STI Hub provides an environment that allows the SC communities to take an active role in building their enterprises, skill development, and capacity building leading to the creation of employment opportunities, through multiplier effects and income generation, in turn benefiting the economic growth of the society at par with the individual growth. The technological interventions proposed



*Dme*  
**Prof. Dr. T. DEVARAJU**  
PRINCIPAL INVESTIGATOR  
Science Technology and Innovation Hub  
Sree Vidyanikethan Engineering College  
(Autonomous)  
A.Rangampet, Chittoor (Dist.)-517 102, A.P., India.





for the STI Hub had been selected keeping given the availability of raw material in the region itself. The interventions are location specific, based on the optimum utilization of natural resources available in abundance in the region. The STI Hub will be an effort in the direction of developing and disseminating such technologies which will reduce drudgery, improve health and economic condition of SC population. If successful, this model can be tried out in other under developed zones of Rayalaseema Region of Andhra Pradesh and in areas of similar agro-ecological conditions.

## 12. Details of the beneficiaries (direct and indirect)

11 villages in Chandragiri Mandal are selected for interventions. The selected villages account for 33.7% SC population. In Yerpedu Mandal, all the selected villages (hamlets/Thanda) consist of 100% ST as per 2011 Census. The details are given below

### SC and ST Population in Chandragiri Mandal

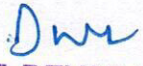
Sl. No	Name of the Villages in Chandragiri Block	SC		ST		Total SC/ST Population	Total Population	
		M	F	M	F		M	F
1	Bheemavaram	191	191	0	0	382	447	461
2	Chinnaramapuram	81	79	22	17	199	265	210
3	Ithepalli	266	279	100	82	727	901	875
4	KalroadPalle	267	257	191	160	875	922	782
5	KReddy Khadriga	116	114	127	126	483	357	321
6	Kotala	243	275	30	36	584	783	885
7	Mamandur	46	53	10	10	119	168	152
8	Mittapalem	618	632	139	119	1508	1674	1681
9	Narasinga Puram	257	265	41	34	597	818	921
10	RamireddiPalle	198	235	99	106	638	651	659
11	Sesha Puram	224	209	14	14	461	604	585

Source: Census 2011 and data collected from local Grama Sachivalayam

### ST Population in Yerpedu Mandal

Sl. No	Name of the Village (Yerpedu Block)	Male	Female	Total
1.	Bathinaih Colony	310	340	650
2.	Musalipedu	235	225	460
3.	Chinnabbagunta	120	125	245
4.	Elakamitta	130	137	267
5.	Sivagiri Colony	275	265	540



  
**Prof. Dr. T. DEVARAJU**  
 PRINCIPAL INVESTIGATOR  
 Science Technology and Innovation Hub  
 Sree Vidyanikethan Engineering College  
 (Autonomous)  
 A.Rangampet, Chittoor (Dist.)-517 102, A.P., India.



6.	Payal Center	165	160	325
7.	Gundlakandriga	155	140	295
8.	Kukkalagunta	235	225	460
9.	Penumallam	40	37	77
10.	Penugaddam	175	165	340
11.	Chaitanapuram	377	396	773
12.	Indiranagar	200	205	405
13.	Annaswamipalli	165	160	325
14.	Mallimadugu	50	47	97
<b>Total ST Population (100 %)</b>		<b>2632</b>	<b>2627</b>	<b>5259</b>

Source: Census 2011 and data collected from local Grama Sachivalayam

### 13. Details of Collaborators

#### I. Knowledge Institutions

<i>Sl. No.</i>	<i>Name and address of the Collaborator</i>	<i>Purpose</i>
1.	Dr. Ramanjaneya Reddy, Officer on Special Duty New and Renewable Energy Development Corporation Sri Venkateswara University campus Tirupati, Andhra Pradesh	Post-Harvest Processing Technologies (Solar technologies). For technical advice, scale-up, etc.
2.	Mr. T. B. Jagadeeswar Reddy, Project Director New and Renewable Energy Development Corporation 10-161, Gandhi Road, Chittoor-517 001	
3.	Dr K V Sucharitha, Associate Professor Department of Home Science, SreeVenkateswara University, Tirupati.	Post-Harvest Processing (Food Processing Technologies)
4.	Dr V Murugesan, Associate Professor Department of Pharmaceutical Chemistry Sree Vidyanikethan College of Pharmacy	Analysis of bioactive compounds, Identification of plant species, Scientific Validation and documentation of ethnomedicinal practices
5.	Dr B Easwari, Assistant Professor Department of Bio-Chemistry Sree Vidyanikethan College of Pharmacy	
6.	Dr K Madhava Chetty, Assistant Professor Department of Botany SreeVenkateswara University, Tirupati.	
7.	Dr K. Ramana	Dryland Agriculture and



*Dr*  
**Prof. Dr. T. DEVARAJU**  
 PRINCIPAL INVESTIGATOR  
 Science Technology and Innovation Hub  
 Sree Vidyanikethan Engineering College  
 (Autonomous)  
 A.Rangampet, Chittoor (Dist.)-517 102, A.P., India.



	Department of Agricultural Engineering, S. V Agricultural College, Tirupati.	Agro-horti practices
8.	Regional Agriculture Research Center, Tirupati – 517502, Andhra Pradesh.	

## 2. Industry

<i>Sl. No.</i>	<i>Collaborator</i>	<i>Purpose</i>
1.	Sri Varsha Foods India Ltd, S.N.Puram, Puttur Road, Renigunta Tirupati-517 520	Technology support and Buy back arrangements – fruit pulp and other processed foods
2.	Dr. Dharaneeswara Devi Reddy Managing & Technical Director Micco Labs, Tirupati, Andhra Pradesh.	Technical guidance in efficient Culture preparation and bio fertilizers


3. Public Private Partnerships (MoU between Andhra Pradesh State Skill Development Corporation (APSSDC), Government of Andhra Pradesh, Sree Vidyanikethan Engineering College (SVCE), APSSDC-Siemens Project, APSSDC –Dassault Systems Project)

<i>Sl. No.</i>	<i>Collaborator</i>	<i>Purpose</i>
1.	Andhra Pradesh State Skill Development Corporation No. 78, 3rd floor, Info sight Building, Paathuru Road Junction, Survey No. 2 NH 16 Service Rd, Tadepalli, Andhra Pradesh – 522501.	Skill Development and Certification, Creation of Job Opportunities. Tailor made courses for local requirements and certification.
2.	APSSDC-Siemens Project, Andhra Pradesh	
3.	APSSDC –Dassault Systems Project, Andhra Pradesh	

## 4. Community Based Organizations (NGOs)

<i>Sl. No.</i>	<i>Collaborator</i>	<i>Purpose</i>
1.	Pragathi Srinivasapuram, Tiruchanoor Tirupati -517 501, Andhra Pradesh.	For reaching the beneficiaries and outreach activities, surveys, need and gap analysis, scouting of existing technologies. Connecting communities.
2.	SWOMCS	



  
**Prof. Dr. T. DEVARAJU**  
 PRINCIPAL INVESTIGATOR  
 Science Technology and Innovation Hub  
 Sree Vidyanikethan Engineering College  
 (Autonomous)  
 A.Rangampet, Chittoor. (Dist.)-517 102, A.P., India.



	Chandragiri, Tirupati, Andhra Pradesh.	For dissemination and deployment of developed technologies and interventions.
3.	RashtriyaSeva Samithi (RASS) Airport Bye Pass Road, Tirupati-517501 Andhra Pradesh.	

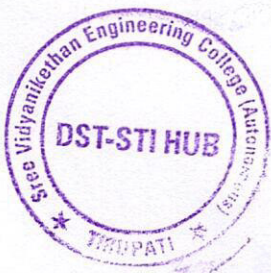
14. Duration (months): 36 months


15. Budget Summary: Rs. 649.33 Lakhs

Recurring Cost: Rs. 214.13 Lakhs

Non-Recurring cost: Rs. 435.20 Lakhs

Sl. No	Item	Budget(Rs. in lakhs)			
		1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	Total
<b>A</b>	<b>Recurring</b>				
1	Manpower	26.76	26.76	26.76	80.28
2	Consumables	18.40	15.98	15.45	49.83
3	Travel	5	5	5	15
4	Field testing, Demo/ Training expenses	7.36	7.36	7.36	22.08
5	Contingencies and other costs	8	8	0.94	16.94
6	Institutional Overheads	5	5	5	15
7	Review meetings	5	5	5	15
	<b>Total A</b>	<b>75.52</b>	<b>73.1</b>	<b>65.51</b>	<b>214.13</b>
<b>B</b>	<b>Non- Recurring</b>				
1	Permanent Equipment	234.68	0	0	234.68
2	Fabrication of prototype equipment	10	2	1	13
3	Construction of work shed/structures	187.52	0	0	187.52
	<b>Total B</b>	<b>432.20</b>	<b>2</b>	<b>1</b>	<b>435.20</b>
	<b>Grand Total (A+B)</b>	<b>504.99</b>	<b>72.77</b>	<b>71.57</b>	<b>649.33</b>



  
**Prof. Dr. T. DEVARAJU**  
 PRINCIPAL INVESTIGATOR  
 Science Technology and Innovation Hub  
 Sree Vidyanikethan Engineering College  
 (Autonomous)  
 A.Rangampet, Chittoor (Dist.)-517 102, A.P., India

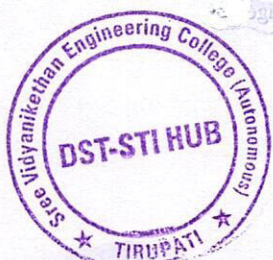


	chlorocorbene to imine under the influence of Ultra sound conditions 4-4/2015-16(MRP/UGC-SERO)			
12.	Synthesis of Ni Nanoparticles using Polyphenols and its application in conversion of Bispidinones to Bispidinols 4-4/2015-16(MRP/UGC-SERO)	UGC-SERO	Rs. 2.2 Lakh	Completed
13.	Ez News: An Application to Provide News Articles as Per Individual Preferences MRP-6177/15 (SERO/UGC)	UGC-SERO	Rs. 0.6 Lakh	Completed
14.	Insilico and Experimental Studies to understand the mechanism of action of Resistin DBT/MST/2015	DBT	Rs. 8.66 Lakh	Completed
15.	MST Radar Signal Processing using Empirical Mode Decomposition and Hilbert Haung Transform ISRO/RES/2/398/2014-15	ISRO-RESPOND	Rs. 16.74 Lakh	Completed
16.	Design and fabrication considerations of MEMS based device for omni dimensional harvesting of mechanical vibration energy	INUP IITB, Bombay	Rs. 7.2 Lakh	Completed
17.	Investigation of Cu <sub>2</sub> ZnSnS <sub>4</sub> thin films as layer in thin film hetro junction solar MRP-4594/14 (SERO/UGC)	UGC (SERO)	Rs. 4.47 Lakh	Completed
18.	Studies on Synthesis of novel phosphonate neucloside prodrugs and their biological applications MRP-4595/14 (SERO/UGC)	UGC (SERO)	Rs. 4.15 Lakh	Completed

18. Expected Output and Outcomes (please refer to tentative indicators given in Annexure VII, select indicators relevant to your project, you may also add other indicators specific to your project)

(a) Output Indicators

Sl. No.	Indicator
1	Technologies/ techniques/ tools deployed ( <i>existing technologies</i> )
2	Technologies modulated and deployed ( <i>adaptive R&amp;D</i> )
3	Technologies field tested ( <i>new and modulated technologies</i> )
4	Technologies ready for transfer
5	Reports/Manuals generated



  
**Prof. Dr. T. DEVARAJU**  
 PRINCIPAL INVESTIGATOR  
 Science Technology and Innovation Hub  
 Sree Vidyanikethan Engineering College  
 (Autonomous)  
 A.Rangampet, Chittoor (Dist.)-517 102, A.P., India.

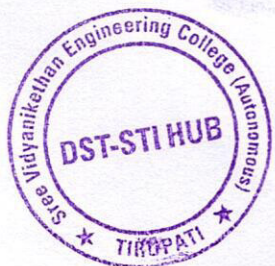




6	Patents ( <i>applied/granted</i> ) if any
7	Paper published, if any Popular articles, awareness leaflets, pamphlets developed and published
8	Short duration user friendly video/photo gallery produced using available handy cameras for technology popularization
9	Beneficiaries covered under the Project (Numbers with gender wise percentages: District wise, age groups wise)
10	New SHGs/CIGs/TAG's formed under the Project and how many are all women SHG
11	Existing SHGs/CIGs/TAG's strengthened under the Project
12	Agriculture Land Covered for project interventions
13	FPOs formed under the Project
14	Awareness Programmes Conducted with number of male and female participants
15	Training Programmes Conducted with number of male and female participants
16	Skill Development Programmes conducted with number of male and female participants
17	Manpower trained- total with gender wise percentages
18	Youth employed- total with gender wise percentages
19	Common Facility, village community Centers/ Rural science and technology translation and dissemination hub (new or upgraded) /Permanent Structures/Common Resources Created
20	Beneficiaries directly using the facilities created
21	Beneficiaries indirectly using the facilities created
22	HHs( <i>households</i> ) involved

(b) Outcome Indicators

Sl. No.	Indicator
1	Access to Clean and Safe Drinking Water ( <i>give number of households and total population benefited</i> )
2	Access to Clean Energy – including cooking and electricity ( <i>give number of households and total population benefited</i> )
3	Access to Health care facilities/Improved Nutrition ( <i>give number of households and total population benefited</i> )
4	Access to other infrastructure ( <i>give number of households and total population benefited</i> )
5	Access to financial institutions ( <i>give number of households</i> )
6	Livelihood Diversification (No of livelihoods options generated under the project – Farm and Non-Farm, and Service delivery)



Dwr

Prof. Dr. T. DEVARAJU  
PRINCIPAL INVESTIGATOR  
Science Technology and Innovation Hub  
Sriee Vidyankethan Engineering College  
(Autonomous)  
A.Rangampet, Chittoor (Dist.)-517 102, A.P., India.



(27)  
(27)

No. SR/WOS-A/ET-72/2017  
Government of India  
Ministry of Science & Technology  
Department of Science & Technology  
(KIRAN DIVISION)

Technology Bhawan  
New Mehrauli Road  
New Delhi-110016  
Dated- 21.08.2020

**ORDER**

Sub: Financial approval of the project under Women Scientist Scheme A (WOS-A) entitled "**VLSI design and implementation of optimized turbo channel coding system for advanced wireless communication systems**" under the guidance of Ms. Sujatha Elukuru, Department of Electronics Communications Engineering, Sree Vidyanikethan Engineering College, Sri Sainatha Nagar A, Rangampet, Tirupati-517102, AP.

In continuation of this Department's sanction letter of even number dated 08.08.2018, sanction of the President is hereby accorded to the payment of **Rs.3,64,500/-** (Rupees Three Lakh Sixty Four Thousand Five Hundred only) as Second installment to the Principal, **Sree Vidyanikethan Engineering College, Sri Sainatha Nagar A, Rangampet, Tirupati-517102, AP** for implementation of the said project during the current financial year.

2. The revised fellowship w.e.f. 01.04.2019 including HRA of PI shall be released from the sanctioned budget.
3. This sanction is subject to the condition that the grantee organisation will furnish to the Department of Science & technology, financial year wise Utilization Certificate (UC) in the proforma prescribed as per GFR 2017 and audited statement of expenditure (SE) along with up to date progress report at the end of each financial year duly reflecting the interest earned / accrued on the grants received under the project. This is also subject to the condition of submission of the final statement of expenditure, utilization certificate and project completion report within one year from the scheduled date of completion of the project.
4. The grantee organisation will have to enter & upload the Utilization Certificate in the PFMS portal besides sending it in physical form to this Division. The subsequent/final installment will be released only after confirmation of the acceptance of the UC by the Division and entry of previous Utilization Certificate in the PFMS.
5. The Grantee Institute (GI) will maintain separate audited as per GFR 2017 Rule 230 (8) account for the project and the entire amount of grant will be kept in an interest bearing bank account. For Grants released during FY 2020-21 and onwards interest and other earnings, against released Grant shall be remitted to Consolidated Fund of India, immediately after finalization of accounts, as it shall not be adjusted towards future release of Grant. A certificate to this effect shall have to be submitted along with statement of expenditure/utilization certificate for considering subsequent release of grant/closure of project accounts. GI should also follow Rule 230(17) of GFR 2017 concerning to reservation of SC/ST/OBC, if applicable.
6. DST reserves sole rights on the assets created out of grants. Assets acquired wholly or substantially out of government grants (except those declared as obsolete and unserviceable or condemned in accordance with the procedure laid down in GFR 2017), shall not be disposed of without obtaining the prior approval of DST.
7. Principal investigator under Women Scientist Scheme is not permitted to withdraw any emoluments/ salary/fellowship from any other project either supported by DST or by any other funding agency.
8. The account of the grantee organisation shall be open to inspection by the sanctioning authority and audit (both by C& AG of India and Internal Audit by the Principal Accounts Office of the DST), whenever the organisation is called upon to do so, as laid down under Rule 236(1) of General Financial Rules 2017.
9. Due acknowledgement of technical support / financial assistance resulting from this project grant should mandatorily be highlighted by the grantee organisation in bold letters in all publications / media releases as well as in the opening paragraphs of their Annual Reports during and after the completion of the project.
10. Principal Investigator (PI) is directed to acknowledge "research grant" in all publications emerging out of this particular project. For example, "author acknowledge Department of Science & Technology, Government of India for financial support vide reference no.....under Women Scientist Scheme to carry out this work". Also she is advised to be either 'first' or 'corresponding' author in all publications.

Contd..p/-



11 The expenditure involved is debitable to Demand No 87, Department of Science & Technology for the year 2020-21

3425 Other Scientific Research (Major Head)  
60 Others (Sub-Major Head)  
**60.200 Assistance to other Scientific Bodies (Minor Head)**  
68 Science and Technology Institutional and Human Capacity Building (Sub Head)  
01 Disha Programme for Women in Science  
68.01.31 **Grants-in-aid General for the year 2020-21 (Voted)**  
(Previous Disha Programme for Women in Science 3425 60.200.55.01.31)

12 The amount of **Rs.3,64,500/-** (Rupees Three Lakh Sixty Four Thousand Five Hundred only) will be drawn by the Drawing and Disbursing Officer, DST and will be disbursed to the **Principal, Sree Vidyanikethan Engineering College, Sri Sainatha Nagar A, Rangampet, Tirupati-517102, AP.** The bank details for electronic transfer of funds through RTGS are given below

Institute Name	Sree Vidyanikethan Engineering College
Bank Name	Andhra Bank
Account Number	154010100108293
Branch	SVEC Extbsub
IFSC Code	ANDB0001540

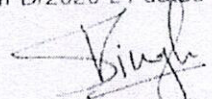
13 Host Institute is registered under NGO Darpan Portal & unique ID- **AP/2016/0113056.**

14 Goods (consumables/equipment) available in **GeM** portal are to be procured mandatorily online through Gem only

16 The project continuation beyond 31.03.2021 will be subject to appraisal and approval of the continuation of the Scheme under which these projects are funded as approved by DoE vide their OM No.42(02)/PF-II/20 dated 06.08.2020

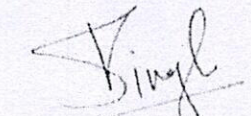
15 As per Rule 234 of GFR 2017, this sanction has been entered at S No. 263 in the register of grants maintained in the Division for scheme (KIRAN WOS-A)

16 This issues with the concurrence of IFD Vide their Concurrence Dy No C/1298/IFD/2020-21 dated 10.08.2020

  
(Vandana Singh)  
Scientist-E

Copy forwarded for information and necessary action to:-

- 1 The Director of Audit (CW & M-II), AGCR Building, IP Estate, New Delhi-110 002.
- 2 Copy with two spare copies of the sanction to the Drawing & Disbursing Officer, DST, Cash Section
- 3 The Principal, Sree Vidyanikethan Engineering College, Sri Sainatha Nagar A, Rangampet, Tirupati-517102, AP
- 4 Ms. Sujatha Elukuru, Department of Electronics Communications Engineering, Sree Vidyanikethan Engineering College, Sri Sainatha Nagar A, Rangampet, Tirupati-517102, AP
- 5 Pay & Accounts Officer, DST, New Delhi
- 6 IFD, DST, New Delhi
- 7 Sanction Folder

  
(Vandana Singh)  
Scientist-E



## ANNUAL PROGRESS REPORT

<b>1. Project Title:</b> "VLSI Design and FPGA Implementation of Optimized Turbo coding scheme for Advanced Wireless Communication Systems."	<b>Reference No:</b> SR/WOS-A/ET-72/2017(G)
<b>2. PI (Name &amp; Address):</b> Ms. E. Sujatha Dept. of ECE, Sree Vidyanikethan Engineering College (Autonomous), A. Rangampet, Near Tirupati- 517102.	<b>Date of Birth:</b> 03 <sup>rd</sup> June, 1984
<b>3. Mentor (Name &amp; Address):</b> Dr. N. Padmaja, Professor, Dept of. ECE, Sree Vidyanikethan Engineering College (Autonomous), A. Rangampet, Near Tirupati- 517102.	<b>Date of Birth:</b> 24 <sup>th</sup> June, 1976
<b>4. Date of Start:</b> August 20 <sup>th</sup> 2018	<b>Total Cost of Project:</b> @Rs. 15,70,000/- (Fifteen Lakh Seventy Thousand Rupees Only)
<b>5. Date of Completion:</b> November 19 <sup>th</sup> 2021	<b>Expenditure as on Dt. 31-03-2021</b> @ Rs. 11,70,809.16/- (Eleven Lakhs Seventy Thousand Eight Hundred Nine rupees and Sixteen pise only.)

*N.P.J. Mentor*

**Dr. N. PADMAJA, M.Tech., Ph.D.**  
**PROFESSOR**  
 Dept. of Electronics & Communications  
 SREE VIDYANIKETHAN ENGG. COLLEGE  
 A.RANGAMPET-517 102 (Chittoor Dt.)



**6. Approved Objectives of the Project :**

**The Objectives of the project approved are**

- i) Design and simulation of Contention-free Quadratic Permutation Polynomial (QPP) Interleaver.
- ii) VLSI Design and Performance evaluation of Turbo Encoder with QPP interleaver.
- iii) FPGA verification of simulation results of Proposed Turbo Encoder.
- iv) Development and evaluation of Radix-4 Parallel Decoder algorithm for high throughput Turbo decoder.
- v) VLSI Design and implementation of Radix-4 Parallel Turbo Decoder along with QPP interleaver/de-interleaver.
- vi) FPGA verification of complete Turbo Decoder simulation results.

**7. Methodology :**

**The methodology is outlined as follows:**

**1. Literature Survey:**

The existing channel coding schemes and state of the art design features for LTE standard communication systems. Various VLSI architectural designs for Encoder, Interleaver and Decoder for modern communication systems

**a) Encoder:**

- i) Logic Gate implementation
- ii) Finite State Machine implementation

In the above implementation methods, finite state machine (FSM) method is chosen to reduce the computational complexity and silicon area.

**b) Interleaver / De-Interleaver:**

- i) Odd -Even Interleaver
- ii) Random interleaver
- iii) Pseudo random Interleaver
- iv) QPP Interleaver

Interleaver is a key component in the turbo encoder and decoder, to Shuffle and de-shuffle the data in the iterative processing. QPP interleaver is chosen for turbo coding schemes per the 3GPP LTE technical specifications group radio access network; Evolved- Universal Terrestrial Radio Access (E-UTRA); Multiplexing and channel coding (Release-13, 2016).

**c) Decoder:**

**I. Decoder- Algorithm perspective:**

- i) Map algorithm
- ii) Log-Map Algorithm
- iii) Max-Log Map algorithm



## **II. Decoder- Design Perspective:**

- i) Radix-2 Parallel Window SISO decoder Architecture
- ii) Radix-4 Parallel Window SISO decoder Architecture

In the above algorithmic and architectural methods, Max-Log-Map algorithm is chosen based on literature survey done for high throughput and maximum accuracy of data transmission, then the Radix-4 highly parallel window technique for SISO decoder implementation is chosen to reduce the latency and to improve the throughput.

### **2. Algorithm Development and its Evaluation in MAT lab.**

Evaluation of Finite state machine based turbo encoder with Quadratic permutation polynomial (QPP) Developing Identified high performance decoder algorithm i.e. Max-Log-MAP algorithm (J.P Woodard, 2000 and S.Talakoub et. Al, 2007) and introducing architectural improvements to achieve LTE-A standard throughput of 1Gbps and excess 1Gbps.

### **3. FPGA Simulation & Implementation of Encoder and Decoder:**

The functional simulation will be carried out by writing hardware description language (HDL) for the developed VLSI design of the MAT lab evaluated Turbo encoder with memory based QPP interleaver and the developed Max-Log-MAP algorithm structured high throughput parallel turbo decoder, using Model sim-Mentor graphics HDL simulation tool. Then, the synthesis version of encoder and decoder will be carried out by using Xilinx ISE design tool, where identified optimizations techniques in architectural level, pipelining, parallel processing and folding techniques, will be applied.

### **4. Experimental Set-up:**

To verify the obtained simulation results, two FPGA evaluation boards, each at transmitter and receiver side respectively along with individual RF Evaluation boards.

### **5. Study and Comparison:**

FPGA simulation and implementation results will be compared for the validation of high throughput turbo encoder, high throughput parallel decoder and its decoding Algorithm.

## **8. Summary of Progress:**

**The work is being progressed on**

- Design of Parallel QPP interleaver design for parallel decoding process is going on, by the completion of parallel QPP interleaver, this will be integrated into the parallel decoder structure for high speed parallel decoding.
- Turbo encoder with reconfigurable contention free QPP interleaver has been designed and implemented on Xilinx VIVADO 14.2 tool.
- Two types of interleavers namely, LUT based interleaver and On-the-Fly IAG QPP interleaver has been designed and implemented on Xilinx VIVADO 14.2 tool. FPGA Verification of these results on the board yet to be conducted.
- Design of Turbo decoder with contention free QPP interleaver has been done and this design is to be further improved for parallel structure.

*N.P.J.* Mentor

**Dr. N. PADMAJA, M.Tech., Ph.D.**  
**PROFESSOR**  
 Dept. of Electronics & Communications  
 SREE VIDYANIKETHAN ENGG. COLLEGE  
 A.RANGAMPET-517 102 (Chittoor Dt.)



**9. Research work which remains to be done under the project (for on-going project):**  
**The remaining research work to be done under the project is**  
 i) VLSI Design and implementation of Radix-4 Parallel Turbo Decoder along with parallel QPP interleaver/de-interleaver.  
 ii) FPGA verification of complete Turbo Decoder

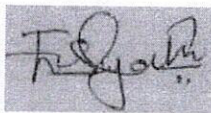
**10. List of Publications from this Project (including title, author(s), journals & year(s))**  
**(A) Papers published only in cited Journals (SCI)**  
 i) **Title: "Simplified on-the-fly IAG QPP interleaver for turbo channel coding scheme"**  
**Publication:** International Journal of Recent Technology and Engineering (IJRTE)  
 ISSN: 2277-3878, Volume-8 Issue-3, September 2019 (Scopus)  
**(B) Papers published in Conference Proceedings etc.**  
 i) **Title: "Performance improvement of Turbo Decoder using VLSI Optimization Techniques"**  
**Conference Details:** IEEE sponsored International Conference on Vision Towards Emerging Trends in Communication and Networking (ViTECoN)  
**Venue:** Vellore Institute of Technology (VIT), Vellore, Tamilnadu, India.  
**Dates of Conference:** 30-31 March 2019  
**Publication:** IEEE Digital Library, 978-1-5386-9353-7/19/\$31.00 ©2019 IEEE.

**11. Patents filed/ to be filed:**  
 -No-

Equipments Procured (Model and Make)					
S No	Sanctioned List	Procured (Yes/ No) Model & make	Cost (Rs in lakhs)	Working (Yes/ No)	Utilisation Rate (%)
01	Laptop	Yes-Procured Model & Make: Dell Inspiron, i5 processor 7 <sup>th</sup> Gen, 8GB DDR4 RAM, 1TB HDD,2GB	49,500-00	Yes	100%



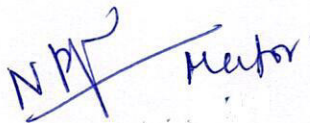
02	FPGA Evaluation Kit (2 Qty)	Graphic card, 15.6" Display <b>Yes-Procured</b> <b>Model &amp; make:</b> Zed board Zynq-7000 ARM/ FPGA SoC Development Board <b>Make:</b> XILINX	1,29,800-00	Yes	100%
03	RF Agile Transceiver (2 Qty)	<b>Yes-Procured</b> <b>Model &amp; make:</b> AD-FMCOMMS3-EBZ <b>Make:</b> ANALOG DEVICES	1,81,720-00	Yes	100%



Signature of PI: Sujatha Elukuru

Date: 16.06.2021

Place: A.Rangampet



**Dr. N. PADMAJA, M.Tech., Ph.D.**  
**PROFESSOR**  
**Dept. of Electronics & Communications**  
**SREE VIDYANIKETHAN ENGG. COLLEGE**  
**A.RANGAMPET-517 102 (Chittoor Dt.)**



GFR 12 - A  
[(See Rule 238 (1))]FORM OF UTILIZATION CERTIFICATE  
FOR AUTONOMOUS BODIES OF THE GRANTEE ORGANIZATIONUTILIZATION CERTIFICATE FOR THE YEAR 2018-19 in respect of Recurring  
GRANTS-IN-AID/SALARIES

1. Name of the Scheme : **Women Scientist Scheme (WOS-A)**
2. WOS-A Reference No: **SR/WOS-A/ET-72/2017(G)**
3. Principal Investigator: **Ms. Sujatha Elukuru**
4. Whether recurring or non-recurring grants: **Recurring**
5. Grants position at the beginning of the Financial year
  - (i) Cash in Hand/Bank: **Nil**
  - (ii) Unadjusted advances
  - (iii) Total: **Nil**
6. Details of grants received, expenditure incurred and closing balances: (Actuals)

Unspent Balances of Grants received years [figure as at Sl. No. 3 (iii)]	Interest Earned thereon	Interest deposited back to the Government	Grant received during the year			Total Available funds (1+2-3+4)	Expenditure incurred	Closing Balances (5-6)
			Sanction No. (i)	Date (ii)	Amount (iii)			
1	2	3	4			5	6	7
0.00	16,218.00	0.00	SR/WOS-A/ET-72/2017(G)	08.08.2018	6,27,500.00	6,43,718.00	5,91,043.00	52,675.00

## Component wise utilization of grants:

Grant-in-aid- General	Grant-in-aid- Salary	Total
1,35,559.00	4,55,484.00	5,91,043.00

## Details of grants position at the end of the year

- (i) Cash in Hand/Bank: 52,291/-
- (ii) Unadjusted Advances: 384/-
- (iii) Total: 52,675/-

*[Signature]*  
Signature of PI

Date: 1/7/19

*[Signature]*  
Signature

B. Ravi Sekhar  
Name. Chief Finance Officer

(FINANCE & ADMINISTRATION)

SREE VIDYANIKETHAN EDUCATIONAL TRUST  
Sree Sainath Nagar, A. RANGAMPET-517 102  
Chittoor (Dist), A.P.

*[Signature]*  
(Dr. P. C. KRISHNA MACHARY)  
Signature 31/07/2019

Name..... Head of the Organization  
(With seal)

Date PRINCIPAL  
SREE VIDYANIKETHAN ENGINEERING COLLEGE  
(AUTONOMOUS)  
Sree Sainath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.



GFR 12 - A  
[(See Rule 238 (1))]FORM OF UTILIZATION CERTIFICATE  
FOR AUTONOMOUS BODIES OF THE GRANTEE ORGANIZATIONUTILIZATION CERTIFICATE FOR THE YEAR 2018-19 in respect of Non-Recurring  
CREATION OF CAPITAL ASSETS

1. Name of the Scheme : Women Scientist Scheme (WOS-A)  
2. WOS-A Reference No: SR/WOS-A/ET-72/2017(G)  
3. Principal Investigator: Ms. Sujatha Elukuru  
4. Whether recurring or non-recurring grants: Non-recurring  
5. Grants position at the beginning of the Financial year  
(i) Cash in Hand/Bank: Nil  
(ii) Unadjusted advances: Nil  
(iii) Total: Nil  
6. Details of grants received, expenditure incurred and closing balances: (Actuals)

Unspent Balances of Grants received years [figure as at Sl. No. 3 (iii)]	Interest Earned thereon	Interest deposited back to the Government	Grant received during the year			Total Available funds (1+2-3+4)	Expenditure incurred	Closing Balances (5-6)
			Sanction No. (i)	Date (ii)	Amount (iii)			
1	2	3.	4			5	6	7
Nil	Nil	Nil	SR/WOS-A/ET-72/2017(G)	08.08.2018	3,50,000.00	3,50,000.00	3,50,000.00	Nil

## Component wise utilization of grants:

Grant-in-aid-creation of capital assets	Total
3,50,000.00	3,50,000.00

## Details of grants position at the end of the year

- (i) Cash in Hand/Bank: Nil  
(ii) Unadjusted Advances: Nil  
(iii) Total: Nil

*[Signature]*  
Signature of PI

Date 31/07/19

*[Signature]*  
Signature  
B. Ravi Sekhar  
Name... DIRECTOR

(FINANCE & ADMINISTRATION)  
SREE VIDYANIKETHAN EDUCATIONAL TRUST  
Sree Sainath Nagar, A. RANGAMPET-517 102  
Chittoor (Dist), A.P.

*[Signature]*  
(Dr. P. C. KRISHNA MACHARY)  
Signature

Name..... Head of the Organisation

(With seal)  
Date 31/7/2019  
PRINCIPAL  
SREE VIDYANIKETHAN ENGINEERING COLLEGE  
(AUTONOMOUS)  
Sree Sainath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.





Phone : 011-26131577 - 78, 80  
011-29581000  
Website : www.aicte-india.org

अखिल भारतीय तकनीकी शिक्षा परिषद्  
( भारत सरकार का एक सांविधिक निकाय )  
( मानव संसाधन विकास मंत्रालय, भारत सरकार )  
नेल्सन मंडेला मार्ग, वसंत कुंज, नई दिल्ली-110070

ALL INDIA COUNCIL FOR TECHNICAL EDUCATION  
(A Statutory Body of the Govt. of India)  
(Ministry of Human Resource Development, Govt. of India)  
Nelson Mandela Marg, Vasant Kunj, New Delhi-110070

F. No. AICTE/IDC/IDEA202000217/2021

Dated - 17.06.2021

To

THE PRINCIPAL/DIRECTOR  
SREE VIDYANIKETHAN ENGINEERING COLLEGE  
(PID - 1-4287165)  
SREE SAINATH NAGAR, A.RANGAMPET, CHANDRAGIRI MANDAL, CHITTOOR,  
A.RANGAMPET, 517102, Andhra Pradesh.

Sub: AICTE-IDEA Lab Project Offer/ Acceptance Letter (AQIS ID -IDEA202000217).

Madam 'Sir.

We are pleased to inform that your institution is selected for establishing an AICTE IDEA Lab with following budget and fund flow.

Total Project Cost, Rs. (in lakh)	Contribution, Rs. (in lakh)					
	AICTE			Industry /Institute		
	NR	R	Total	NR	R	Total
113.96	37.98	15.00	52.98	37.98	23.00	60.98

[NR- Non-Recurring Expenditure, R- Recurring Expenditure]

AICTE shall be, as per scheme document, releasing 80% of its contribution as first instalment, only after matching grant (80% of contribution from industry/ institution) is deposited in an exclusive Bank Account of AICTE IDEA Lab and proof submitted to us. Further it may be noted that your institution had agreed to contribute Rs. 5.32 Lakh for IDEA Lab project over and above the amount towards sustenance of IDEA Lab beyond 2 years. You must honour this commitment and ensure this flow of funds, to be eligible for grants from AICTE in future.

We would also like to recall among other things the following towards smooth initiation of project.

- Your institution must provide a built-up and furnished space of at least 3000 sq. ft. to house the IDEA Lab (2000 sq ft for Lab & 1000 sq ft for student activities).
- Your institution should open a separate bank account for this project within a week and the same be intimated to us through the Mandate Form (enclosed). This is required for issuing Sanction Order from our end.
- Your institution must abide by Terms and Conditions provided in the Scheme Document (accessible from our website).
- The institution must observe Code of Conduct for AICTE-IDEA Lab, given in Scheme Document.
- The logo of AICTE IDEA Lab can be used by the institution as long as it has a valid Extension of Approval (EoA).

We will shortly be organising an online awareness programme for selected institute to detail the subsequent steps toward effective implementation of the project.

We look forward to an Acceptance Letter (giving reference to this offer letter) within a week and hope that the institute will implement the prestigious project with all sincerity and commitment.

Dr. Padmaja, ECE  
AICTE-IDEA - Co-ord. for needful  
17/6/21

Yours sincerely

Dr. Neeraj Saxena  
Adviser - II (IDC)





## **AICTE IDEA LAB PROJECT**

Project Title : AICTE IDEA (Idea Development Evaluation and Application) LAB

Ref No./App No. : AICTE/IDC/IDEA202000217/2021

Funding Agency/Department : AICTE

Name of the Chief Mentor : Dr B.M. Satish  
Principal,  
Sree Vidyanikethan Engineering  
College, Tirupati -517102 .  
Andhra Pradesh

Name of the Coordinator : Dr. N.Padmaja  
Professor,  
Department of Electronics and  
Communication Engineering,  
Sree Vidyanikethan Engineering  
College, Tirupati -517102 .  
Andhra Pradesh

Name of the Co-coordinator : Dr. A.K. Damodaram  
Professor,  
Department of Mechanical  
Engineering,  
Sree Vidyanikethan Engineering  
College, Tirupati -517102 .

Project Duration : 2 Years

Project Cost (in Rs.) : Rs.113.96 Lakhs/-

Sanction Year : 17-06-2021



## About AICTE IDEA LAB :

Sree Vidyanikethan Engineering College (Autonomous) has been selected for establishing AICTE- IDEA (Idea Development, Evaluation & Application) Lab on the campus with a funding of Rs 1.13 Crores from AICTE, Host institute and Industry on 12th June, 2021.

AICTE selected only 49 institutions after scrutinizing eligibility criterion by evaluating several key performance indices of the institutions across the country to establish AICTE- IDEA lab on the Campus.

The lab shall ideally remain open 24X7, shall equip all the required facilities, tools and consumables to support translation of idea into prototype development or development of a solution for a problem.

### VISION

To transform technical education by empowering young minds with cutting edge tools, processes and skills.

### MISSION

- Establish a national network promoting new age learning.
- Provide a platform to experiment with ideas for qualitative change in life of Compatriots.
- Create a vibrant mentor network for enhancing capabilities of young minds.
- Support and catalyse multidisciplinary education and research.

### OBJECTIVES

- Encourage students for application of Science, Technology Engineering and Mathematics (STEM) fundamentals towards enhanced hands-on experience, learning by doing and even product visualization.
- Empower students and faculty to “engage, explore, experience, express and excel”, addressing the need of new age learning.



- Provide a common facility with all the required facilities, tools and consumables under one roof to support translation of idea into prototype development.
- Organize FDPs, workshops, training and ideation sessions, boot-camps, competitions, Internships with industry, Professional skilling programs, awareness workshops for industry etc. for students and faculty.

*N.P.P.*  
(Co-ordinator)

Dr N.Padmaja  
Professor  
Department of ECE  
Sree Vidyanikethan Engg College

**Dr. N. PADMAJA, M.Tech., Ph.D.**  
**PROFESSOR**  
Dept. of Electronics & Communications  
**SREE VIDYANIKETHAN ENGG. COLLEGE**  
A.RANGAMPET-517 102 (Chittoor Dt.)



UNION BANK OF INDIA  
SRI VIDYA NIKETHAN  
ETIRUPATHI  
CHITTOR DIST, ANDHRA PRADESH  
PHONE: 0877-2247949

10 40

TO:  
M/S THE PRINCIPAL SVEC AICTE IDEA LAB  
0  
O,C/O SVEC  
CHITTOOR-517102  
ANDHRA PRADESH, INDIA  
Village : 596021 -Arepalle

DATE: 21-10-2021

CUST ID : 613163116

STATEMENT OF ACCOUNT FOR THE PERIOD FROM 24-06-2021 to 20-10-2021 SBGEN-A/C NO: 154012010000121 SB GENERAL (SB GENERAL) INR

DATE	PARTICULARS	CHQ.NO.	WITHDRAWALS	DEPOSITS	BALANCE
					0
24-06-2021	BY CASH			1,000.00	1,000.00Cr
05-07-2021	154012010000121: Int. Pd: 24-06-2021 to 30-06-2021			1.00	1,001.00Cr
22-09-2021	SRI VIDYANIKETAN EDUCATIONAL TRUST			48,78,500.00	48,79,501.00Cr
04-10-2021	154012010000121: Int. Pd: 01-07-2021 to 30-09-2021			3,616.00	48,83,117.00Cr
07-10-2021	NEFT: AICTE SBIN321280750473			42,38,400.00	91,21,517.00Cr
	UTR Number	SBIN321280750473			
	Sender Account	000005511320022			
	Sender IFSC	SBIN0050203			
	Sender Bank	STATE BANK OF INDIA			
	Sender Branch	SHASTRI BHAVAN NEW DELHI			
Cumulative Totals:			0	91,21,517.00	91,21,517.00Cr

The Min. Balance Requirement in (Rural Br.) For SB Account is Rs 100 (without Cheque book) and Rs 250/- (with Cheque book)

Unless constituent notifies the bank immediately of any discrepancy found by him in his statement of Account, it will be taken that he has found the account correct.

FASTEST MODE OF FUNDS REMITTANCE-RTGS (UNION BULLET).  
IFSC/MICR code for SRI VIDYA NIKETHAN is UBIN0815403/517026061

Contact all India toll Free no. 1800 22 22 44 for your account related queries / services

Manager

IFSC/MICR code for SRI VIDYA NIKETHAN is  
15401, powappsrv5, RE710985

PAGE: 1



No. SVEC/Circular/AICTE IDEA Lab/2021

Dt.:04-08-2021

**CIRCULAR**

Sub.: Constitution of AICTE IDEA Lab Committee-reg.

\*\*\*

The AICTE IDEA LAB Committee is constituted by the following members.

**Steering Committee**

Name	Designation
Dr. P. Giridhara Reddy	Director (A & R)
Mr. B. Ravi Sekhar	Director (F & A)
Dr. B. M. Satish	Principal, Chief Mentor (AICTE Idea Lab)
Dr. T. Nageswara Prasad	Vice-Principal
Dr. S. Hema Chandra	Dean, Industry relations
Dr. N. Padmaja	Coordinator (AICTE Idea Lab)
Dr. A. K.Damodaram	Co-Coordinator (AICTE Idea Lab)
Mr. B. Vishnu Vardhan Naidu	Organizing Secretary

**Organizing Committee**

Name of the Faculty	Designation	Department
Dr. T. V .S. Gowtham Prasad	Associate Professor	ECE
Dr. M. Sakthivel	Associate Professor	CSE
Dr. E. Sophiya	Assistant Professor	CSSE
Mr. C. Ravindra Murthy	Assistant Professor	EIE
Mr. Ch. SreenuBabu	Assistant Professor	IT
Mr. V. Prem Kumar	Assistant Professor	CE
Mr. Prem Kumar Deepak	Assistant Professor	CSE
Ms G Sandhya	Assistant Professor	ECE
Mr. S. Jayachandra	Assistant Professor	EEE
Mr. G. Om Suraj	Assistant Professor	EEE

*(Signature)*

**PRINCIPAL**

**Copy to:** Vice Principal; **Deans :** Academics, Examinations, Training & Placement, IIIC;  
**HODs:** CSE, CSSE, IT, EEE, ECE, EIE, CE, ME, BS&H  
Members of AICTE Idea Lab;  
EA to Chairman; SAO; ARO, SWO, CAO, Director (A&R) SVEC, Director (F&A), Advisor, SVET.



**PRESCRIBED LIST OF ACTIVITIES FOR AICTE IDEA LAB**

Sl No.	Event & Duration	Target & Batch size	Objective & Justification	Frequency/ Numbers	Cost per Event	Total cost per Year
1.	FDP (06 Days)	Faculty (20)	Faculty needs to be trained on equipment, to be able to guide students and conduct events - including those from other institutions	Twice a year	75000	150000
2.	Skilling Programs (06 Days)	Students (20-30)	Training in areas like electrical and electronics fabrication, embedded systems design. Embedded programming, 3D printing, robotics, welding, IOT, Machine learning, AI, bio-engineering, biomedical etc	One per quarter	50000	200000
3.	Bootcamps (12 Days)	Faculty (05-10)	Training of faculty (including those from other institutions, spread over few weeks, continuing at workplaces, if required)	Twice a year	10000	20000
4.	Ideation workshops (03-05 Days)	Students (30-40)	To generate ideas on which students can work in the IDEA Lab, including field visits	Once in three months	30000	120000
5.	Awareness Workshops for Industry (02 Days)	Industry participants (5-10)	Publicizing IDEA Lab among industries, to encourage them to use the facilities	Once in three months	10000	40000
6.	Internships (2 to 6 months)	Students (15-20)	For hands-on training as part of their course-work during summer and winter vacations. Internships based on industry problems should be preferred	As per curriculum.	50000	50000




7.	Professional Skilling Programs (12 Days)	ITI students or class 10/12 pass students (5-10)	For hands-on training as part of their course-work during summer and winter vacations. Internships based on industry problems should be preferred.	Once in a quarter	20000	80000
8.	School Teachers Awareness Program (06 Days)	Teachers of nearby schools	Demonstration and providing hands-on experience of facilities	Twice a year (during school vacations)	20000	40000
9.	Projects by School students	Students identified by schools (10-15)	Opportunity for school students to do projects	Once a year (as per convenience)	20000	20000
10.	Open Day for school students (one day)	Students (class XI-XII) nominated by schools (25-30)	Exposure to facilities in IDEA Lab to ignite their minds (on Science Day/Technology Day/Teachers Day/Engineers Day)	Once a year (as per convenience)	15000	15000
11.	Participation in annual technical exhibitions	Nationwide IDEAs	Technical exhibition set for example, TechFEST, Mind SPARK etc. organized by renowned Institutions/Industries to showcase activities/products/prototypes developed in IDEAs	Once in a year	20000	20000
12.	Newsletter	Nationwide IDEAs	To disseminate information to all the labs about activities of other labs, technology issues, any	Monthly/ Bi-monthly	5000	10000



		interesting development etc.			
13.	Webpage	All stakeholders	For web-presence of IDEALab, and showcasing itself before the stakeholders and other IDEALabs	Weekly/Bi-weekly updation	5000
14.	Annual conference/symposium of fall IDEALabs	All IDEALabs, DIY labs or similar labs across the nation/outside the national also	To promote active interaction, showcase of lab activities, promote collaboration at national and international levels	Once in a year	100000
				TOTAL	Rs.4, 30,000
					Rs.8,75,000

Students and faculty from other colleges should be encouraged for using the facilities  
 \*Events calendar shall have to be drawn ensuring that timings for different groups do not clash and are also convenient.  
 \*Visit to IDEALab in batches, should be included in the Student Induction Program

  
 DR. N. PADMAJA, M.Tech., Ph.D.  
 PROFESSOR & Communications  
 Dept. of Electronics & Communications  
 SREE VIDYANIKETHAN ENG. COLLEGE  
 A.RANGAMPET-517 102 (Chittoor Dt.)



**2019-20**



416  
AG

**No. SEED/TIDE/015/2017**  
**Government of India**  
**Department of Science and Technology**  
**Science for Equity, Empowerment and Development Division**

Technology Bhavan  
New Mehrauli Road  
New Delhi – 110 016.

28<sup>th</sup> August 2019

O R D E R

Sub: Financial assistance for the project "Frequency modulated hearing aid for elderly with hearing disability" under the guidance of Dr. Kondru Ayyappa Swamy, Department of Electronics and Instrumentation Engineering, Sree Vidyanikethan Engineering College, Sri Sainath Nagar, Chandragiri Mandal, Chittoor District – 517 102, Andhra Pradesh.

Sanction of the President is accorded to revise the salary of two Junior Research Fellows from Rs.25,000/- + 10% HRA to Rs.31,000/- + 8% HRA per month for a period of 20 months and 15 days (1<sup>st</sup> January 2019 to 15<sup>th</sup> September 2020), thereby revising the total cost of the project from Rs.54,13,237/- to Rs.56,58,417/-.

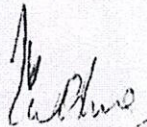
2. In continuation of this Department's sanction order of even number dated 13.03.2018 sanction of the President is also accorded for the payment of a sum of Rs.11,00,000/- (Rupees Eleven Lakh Only) to Sree Vidyanikethan Engineering College, Sri Sainath Nagar, Chandragiri Mandal, Chittoor District – 517 102, Andhra Pradesh being the 2<sup>nd</sup> installment of financial assistance for the said project.

3. This sanction is subject to the condition that the grantee organisation will furnish to the Department of Science & Technology, financial year wise Utilization Certificate (UC) in the proforma prescribed as per GFR 2017 and audited statement of expenditure (SE) along with up to date progress report at the end of each financial year duly reflecting the interest earned / accrued on the grants received under the project. This is also subject to the condition of submission of the final statement of expenditure, utilization certificate and project completion report within one year from the scheduled date of completion of the project.

4. The grantee organisation will have to enter & upload the Utilization Certificate in the PFMS portal besides sending it in physical form to this Division. The subsequent/final installment will be released only after confirmation of the acceptance of the UC by the Division and entry of previous Utilization Certificate in the PFMS.

5. If the grant has been released under capital head through separate sanction order under the same project for purchase of equipment(s), separate SE/UC has to be furnished for the released Capital head grant

6. The grant-in-aid being released is subject to the condition that  
(a) a transparent procurement procedure in line with the Provisions of General Financial Rules 2017 will be followed by the Institute/Organisation under the appropriate rules of the grantee organisation while procuring capital assets sanctioned for the above mentioned





project and a certificate to this effect will be submitted by the Grantee organisation immediately on receipt of the grant:

(b) While submitting Utilization Certificate/Statement of Expenditure, the organization has to ensure submission of supporting documentary evidences with regard to purchase of equipment/capital assets as per the provisions of GFR 2017. Subsequent release of grants under the project shall be considered only on receipt of the said documents.

7. The grantee organization will maintain separate audited account for the project and the entire amount of grant will be kept in an interest bearing bank account. For Grants released during F.Y. 2017-18 and onwards, all interests and other earnings, against released Grant shall be remitted to Consolidated Fund of India, immediately after finalization of accounts, as it shall not be adjusted towards future release of grant. A certificate to this effect shall have to be submitted along with Statement of Expenditure/Utilization Certificate for considering subsequent release of grant/closure of project accounts.

8. DST reserves sole rights on the assets created out of grants. Assets acquired wholly or substantially out of government grants (except those declared as obsolete and unserviceable or condemned in accordance with the procedure laid down in GFR 2017), shall not be disposed of without obtaining the prior approval of DST.

9. The account of the grantee organization shall be open to inspection by the sanctioning authority and audit (both by C&AG of India and Internal Audit by the Principal Accounts Office of the DST), whenever the organisation is called upon to do so, as laid down under Rule 236(1) of General Financial Rules 2017.

10. Due acknowledgement of technical support / financial assistance resulting from this project grant should mandatorily be highlighted by the grantee organisation in bold letters in all publications / media releases as well as in the opening paragraphs of their Annual Reports during and after the completion of the project.

11. Failure to comply with the terms and conditions of the Bond will entail full refund with interest in terms of Rule 231 (2) of GFR 2017.

12. The NGO was registered at the NGO Darpan Portal and the Unique Id is AP/2016/0113056.

13. The expenditure involved will be debitible to Demand No.86

Major Head 3425	-	Other Scientific Research
60	-	Others
60.200	-	Assistance to Other Scientific Bodies
70	-	Innovation Technology Development and Deployment
70.00.31	-	Grant-in-aid (General) for the year 2019 – 2020

(Previous: Science and Society programmes -3425.60.200.08.11.31)

14. An amount of Rs.11,00,000/- (Rupees Eleven Lakh Only) will be drawn by the Drawing and Disbursing Officer, DST and will disburse it to The Principal, Sree Vidyanikethan Engineering College, Sri Sainath Nagar, Chandragiri Mandal, Chittoor District – 517 102, Andhra Pradesh. The Bank Details for Electronic transfer of Funds through RTGS are given below.



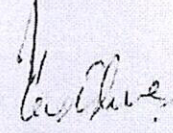
418 48

1. Name of the Account Holder: The Principal, SVEC DST Fist Programe
2. Name of the Bank: Andhra Bank, SVEC Branch, Tirupati
3. Bank Account number: 154010100040865
4. IFSC Code: ANDB0001540
5. MICR Code: 517011007

15. The component Authority has also approved to carry forward an unspent amount of Rs.4,21,060/- under general component and Rs. 10,87,500/- under capital component from FY 2018-2019 to 2019-2020.

16. As per Rule 234 of GFR 2017, this sanction has been entered at Sl. No. 75 in the register of grants maintained in the Division for the scheme (Innovation Technology Development and Deployment).

17. This issues with the concurrence of IFD Vide their Concurrence Diary No. C/2474/IFD/2019-2020 dated 27/08/2019.



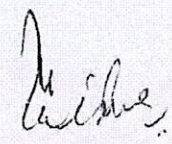
(Konga Gopikrishna)  
Scientist - 'E'  
Tel. No. 26590298

To

The Pay and Accounts Officer  
Department of Science and Technology  
New Delhi.

Copy for information and necessary order to:

1. Cash Section (2 copies) for making the payment to the grantee.
2. Account Section.
3. Director of Audit, (Scientific Deptt.) AGCR Building, New Delhi - 110 002.
4. Sanction Folder
5. Head (SEED)
6. Dr. Kondru Ayyappa Swamy, Department of Electronics and Instrumentation Engineering, Sree Vidyanikethan Engineering College, Sri Sainath Nagar, Chandragiri Mandal, Chittoor District - 517 102, Andhra Pradesh
7. The Principal, Sree Vidyanikethan Engineering College, Sri Sainath Nagar, Chandragiri Mandal, Chittoor District - 517 102, Andhra Pradesh



(Konga Gopikrishna)  
Scientist - 'E'  
Tel. No. 26590298





# SREE VIDYANIKETHAN ENGINEERING COLLEGE (AUTONOMOUS)

Sree Sainath Nagar, Tirupati - 517 102

Department of Electronics and Instrumentation Engineering

## Details of the Project

<b>Title of the Project</b>	:	<b>Frequency Modulated Hearing Aid for Elderly with Hearing Disability</b>
<b>Name of the Funding Agency</b>	:	<b>Technology Interventions for Disabled Elderly (TIDE),</b> Department of Science and Technology (DST), Government of India
<b>Sanction Order No.</b>	:	<b>SEED/TIDE/015/2017/G</b> dated 13.03.2018
<b>Name of the Principal Investigator</b>	:	<b>Mr. K. Ayyappa Swamy,</b> Assistant Professor, Department of Electronics and Instrumentation Engineering, Sree Vidyanikethan Engineering College.
<b>Name of the Co- Principal Investigator</b>	:	<b>Dr. N. Padmaja,</b> Professor, Department of Electronics and Communication Engineering, Sree Vidyanikethan Engineering College.
<b>Project Duration</b>	:	<b>2 years and 6 months (2018-2021)</b>
<b>Sanctioned Fund for the Project</b>	:	<b>RS.56,58,417/-</b>
<b>Name of the Junior Research Fellow 1</b>	:	Samuda Prathima
<b>Name of the Junior Research Fellow 2</b>	:	C Sushma
<b>Name of the Audiologist</b>	:	G Sailaja

*NTP*  
*CO-PI*  
**Dr. N. PADMAJA, M.Tech., Ph.D.**  
**PROFESSOR**  
Dept. of Electronics & Communications  
**SREE VIDYANIKETHAN ENGG. COLLEGE**  
A.RANGAMPET-517 102 (Chittoor Dt.)

*KAS*  
Principal Investigator  
Asst. prof.  
Dept. of EIE  
SVEC



**Mr. K. Ayyappa Swamy, EIE**

1.	<b>Project Title</b> :	<b>Frequency Modulated Hearing Aid for Elderly with Hearing Disability</b>
2.	<b>Funding Agency</b> :	<b>Technology Interventions for Disabled Elderly (TIDE),</b> Department of Science and Technology (DST), Government of India
3.	<b>Amount Sanctioned</b> :	RS.56,58,417/-
4.	<b>Duration of the Project</b> :	2 years and 6 months (2018-2021)
5.	<b>Objectives of the Project :</b>	<ul style="list-style-type: none"> <li>• Design and Develop new algorithms for sensorineural hearing loss and conductive hearing Loss.</li> <li>• Application of the algorithm to develop a prototype.</li> <li>• Testing and validating the prototype in real-time.</li> <li>• Development of a very low cost device on the bases of the above finding.</li> <li>• Transfer of technology.</li> </ul>
6.	<b>Technology Involved :</b>	<p>In this project, classification of audio frequencies is done by using Digital filters and those audio signals of particular frequencies are subjected for suitable and automatic gain adjustment. A digital filter would be designed to filter selective frequencies needed to be amplified. Also signal de-noising based on soft thresholding techniques is used for reducing noise. Further, these audio signals are fed to an adjustable gain amplifier for selective and sensitive amplification. Signal processing aspects are performed using signal processing toolbox in MATLAB and LabVIEW.</p> <p>In this project we are going to use reconfigurable filter banks which will improves the auditive performance with limited number of uniform filter banks as well as reduce the power consumption and cost.</p>
7.	<b>Applications/Outcomes :</b>	<ul style="list-style-type: none"> <li>• Prototype of the model.</li> <li>• New Innovative method.</li> <li>• Product design, development and Prototype.</li> <li>• IPR and Patents.</li> <li>• Very low cost.</li> <li>• Easy to use and operate.</li> <li>• Adapted to all frequencies of hearing losses.</li> </ul>

  
**Dr. N. PADMAJA**, M.Tech., Ph.D.  
 PROFESSOR  
 Dept. of Electronics & Communications  
 SREE VIDYANIKETHAN ENGG. COLLEGE  
 A.RANGAMPET-517 102 (Chittoor Dt.)

KAS  
 Asst. prof.  
 Dept. of EIE  
 SVEC



- Comfortably used for long durations.
- Re-programmable device (A user will not have to buy a separate device if his/her hearing ability fluctuates over a period of time)

~~NA~~  
CO-PI

**Dr. N. PADMAJA, M.Tech., Ph.D.**  
**PROFESSOR**  
Dept. of Electronics & Communications  
SREE VIDYANIKETHAN ENGG. COLLEGE  
A.RANGAMPET-517 102 (Chittoor Dt.)

~~RA~~  
Principal Investigator  
Asst. prof.  
Dept. of EIE  
SVEC



52

# 1. Title of the Project: Frequency Modulated Hearing Aid for Elderly with Hearing Disability"

## 2. Problem Identification and Definition.

- a. Conductive and Sensorineural hearing losses are the most common type of permanent hearing loss, and most of the time it cannot be helped by medical intervention. Regular hearing aids which are available in the market amplify all the frequencies present in the audio signal. This is not suitable for elderly people who have sensorineural hearing loss for particular frequencies of audio signals.
- b. This type of hearing loss is seen mainly in elderly people. This loss may also occur from injuries, exposure to loud noises, diabetes, ototoxic medication, heredity, and a variety of diseases.
- c. Persons who are facing this type of problem are not able to hear audio signals of particular frequencies. There is a need to amplify only those frequencies rather than all audio frequencies which creates irritation and pain to the elderly people when used for long time.

## 3. Suggested solution(s) and alternatives - Outline your idea or solution you plan to develop.

The main idea of the proposed project is to implement a hearing aid which will acquire audio signals from an input transducer, process those signals and are further fed to the output transducer. Processing steps involves noise reduction, speech enhancement, sound classification and gain adjustment. Noise reduction is to filter unwanted frequencies like frequencies related to impulse noise, environment noise etc. Speech enhancement is to improve the quality of the audio signal. Sound classification is to differentiate the various frequencies of the audio signals based on the audiogram of the elderly people with Conductive and Sensorineural hearing loss. Gain adjustment using automatic gain control is used to amplify selective frequencies based on audiogram results very sensitively. Thus the proposed method provides solution to elderly people suffering from conductive and sensorineural hearing losses and enable them to use this device comfortably for long durations.

## 4. Objectives of the project (should be brief, specific and quantifiable).

- Design and develop new algorithms for sensorineural hearing loss and conductive hearing Loss.
- Application of the algorithm to develop a prototype model.
- Testing and validating the prototype in real-time.
- Development of a device on the basis of the above findings.
- Transfer of technology.



53

**5. Review of status of Research and Development in the subject/** Summary of earlier efforts made to address the problem and existing technological gaps etc.

Lot of technical contributions are available in the literature in the area of hearing aid but the most relevant articles are presented here which support the furtherance of the status.

*Thus it can be observed that practical approach to design a device which incorporates signal classification, noise reduction, amplification of selective frequencies for hearing impaired is lacking. The device with all these provisions based on the audiometry of elder people suffering from conductive and sensorineural hearing losses is very essential, so that they can use the hearing aid comfortably for long durations. Hence this work of design and developing a device which is very useful for elderly is proposed in this project.*

**6. Expertise available with the proposed investigating group/institution in the subject of the project.**

In addition to the PI and Co-PI, the following are the expertise available for Medical and biological information on ear, ailments, diagnosis and remediation. The audiologist is involved in experimental verification, testing and validation of the proposed prototype model.

**Dr. B. Harinath**  
M.B.B.S, M.S, DLO (ENT)  
Retired Principal and Professor of ENT,  
S V Medical College,  
Tirupati,  
Andhra Pradesh, India.

**Dr. Sudesh Sivarasu,**  
Senior Lecturer,  
Department of Bio-medical Engineering,  
University of Cape Town,  
Rondebosch,  
Cape Town, 7700,  
South Africa.

**Ms. B. Bindu,**  
Audiologist,  
Tirupathi.

**Collaboration** with **Shri.Nachiketa Rout**, HOD, Dept. of Speech, Hearing & Communication, National Institute for Empowerment of Persons with Multiple Disabilities (Divyangjan)(NIEPMD), Chennai.



**7. Methodology and Work Plan.**

a. State the methodology in a sequence of clearly defined steps leading to achievement of the project objectives

**Phase I (0-5 months):**

- ✓ Intensive literature survey and a theoretical study will be conducted in order to study the characteristics of proposed hearing aid.
- ✓ Procurement of related software and equipment.
- ✓ Recruitment of staff.
- ✓ Creation of data base (audiogram results and audio signals).

**Phase II (5-10 months) :**

- ✓ Analyzing and processing of audio signals.
- ✓ Designing digital filters for noise reduction.
- ✓ Improving quality of the signal by various speech enhancement algorithms.

**Phase III (10-15 months) :**

- ✓ Frequency classification based on audiogram results.
- ✓ Gain adjustment to amplify selective frequencies of audio signals.

**Phase IV (15-20 months) :**

- ✓ Developing algorithms using MATLAB.
- ✓ Experimental verification of the simulated results.
- ✓ Testing for different data sets of audiogram results.

**Phase V (20-25 months) :**

- ✓ Device fabrication.
- ✓ Qualitative assessment and verification of the proposed prototype model.
- ✓ Fabrication and Characterization of the structure and prototype model.
- ✓ Application for testing for ethical clearance.
- ✓ Making some units and distribution to the elderly people having conductive and Sensorineural hearing loss.

**Phase VI (25-30 months) :**

- ✓ Taking feedback.
- ✓ Final Implementation of product.
- ✓ Preparing publication and final report.
- ✓ Application to patents.
- ✓

**Science &Technology component/Innovativeness/Novelty of the project.**

Proposed project is to design and develop a novel prototype model of a Hearing aid suitable for elderly people to minimize conductive and Sensorineural hearing loss. The

Dr. N. PADMANABHAI, M.Tech., Ph.D.  
 PROFESSOR  
 Dept. of Electronics & Communications  
 SREE VIDYANIKETHAN ENGG. COLLEGE  
 A.RANGAMPET-517 102 (Chittoor Dt.)



device amplifies only selective frequencies of audio signals based on the audiogram results of persons so that it provides a solution to the problem faced by the elderly people when using a conventional hearing aid that causes irritation and pain due to prolonged usage. In addition to this, it also performs noise reduction, speech enhancement and automatic gain adjustment based on audiometry results.

**8. Indicative techno-economic viability/cost benefits analysis of the project/product developed.**

The approach suggested here provides a solution to the problem faced by the elderly people when using a conventional hearing aid that causes irritation and pain due to prolonged usage. The device can be made available at low cost once it is fabricated and tested if produced in large numbers massively. It is also adaptable and programmable for various users as per their requirements.

**9. Comment on the likely impact of the project (on adjoining areas/society/target groups).**

The proposed project fosters positive impact for the Institute and the Society. The design and development of the prototype model enables elderly people to use the device with comfort and ease. The model can be produced with low cost and made available to people of all categories without financial impairment.

*N.P.*

*(Co-Principal of Institute)*

**Dr. N. PADMAJA, M.Tech., Ph.D.**  
**PROFESSOR**  
**Dept. of Electronics & Communications**  
**SREE VIDYANIKETHAN ENGG. COLLEGE**  
**AIRANGAMPET P.O. (Chittoor Dt.)**





Dr. Anita Aggarwal  
Scientist-E  
TDT Division  
Room No.1, Hall-J  
Telephone No.011- 26590343  
Email:anita.a@nic.in

भारत सरकार  
विज्ञान और प्रौद्योगिकी मंत्रालय  
विज्ञान और प्रौद्योगिकी विभाग  
टेक्नोलॉजी भवन, नया महरौली मार्ग  
नई दिल्ली- 110 016

GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE AND TECHNOLOGY  
DEPARTMENT OF SCIENCE AND TECHNOLOGY  
TECHNOLOGY BHAVAN, NEW MEHRAULI ROAD  
NEW DELHI-110 016

Dated .....

D.O. No.

F. No. IDP/MED/39/2016

Dated: 18<sup>th</sup> May, 2018

Subject: "Design and Development of Micro Cantilever based Biosensor for Early Detection of High Risk Human Papilloma Virus."

Dear Dr. V. R. Anitha,

We are glad to Inform you that above mentioned proposal has been sanctioned at a total cost of Rs. 36,49,600/- i.e. Rs.22,99,600/- would be under the 'General Component' and Rs. 13,50,000/- would be under the head 'Capital Assets Component' for a period of Third years with first release of Rs. Rs.20,10,000/- [Out of which (Rs. 6,60,000/-for General component and Rs. 13,50,000/- for Capital Assets Component)].

The date on receipt of funds should be Intimated to DST and will be considered as the date of commencement of project:-

Enclosed:

- d) Terms and Conditions
- e) Posting of expenditure on EAT module
- f) Manpower Norms

With warm regards,

Yours Sincerely  
  
Dr. Anita Aggarwal)  
Scientist 'E'

Copy to:

1. Dr. V. R. Anitha, Professor, Electronics and Communication Engineering, SreeSainath Nagar, A Rangampet-517102,
2. M/s NanoSniff Technology Pvt.Ltd, F-14, 1<sup>st</sup> Floor, Old Computer Science Building IITB Research Park, IIT Bombay, Powal, Mumbai, Maharashtra-400 076.



TMPAAA012310

ANDHRA BANK  
SRI VIDYA NIKETHAN  
ETIRUPATHI  
ANDHRA PRADESH -517102  
Br Phone : 0877-2247949  
IFSC CODE: ANDB0001540  
MICR CODE: 517011007

Date: 12-03-2019  
Time: 10:39:14  
Page: 1  
bm1540@andhrabank.co.in

STATEMENT OF ACCOUNT  
01-04-2018 to 12-03-2019  
Name : THE PRINCIPAL SVEC DST BIO MEDICAL  
SRI VIDYANIKETAN EDUCATIONAL INSTITUTIONS  
A RANGAMPET TIRUPATI  
TIRUPATHI

A/c.No: 154010100096800 INR  
Scheme: SAVINGS BANK ORD GEN PUB  
Cust ID: 53726926

ANDHRA PRADESH-517502

Deposits are insured up to Rs 1,00,000 by DICGC per customer, subject to change from time to time

DATE	PARTICULARS	CHQ.NO.	WITHDRAWALS	DEPOSITS	BALANCE
01-APR-2018	0/F				516.00Cr
17-Apr-2018	DUPLICATE STATEME NT CHARGES		30.00		486.00Cr
25-May-2018	NEFT/INWARD RTGS			6,60,000.00	6,60,486.00Cr
25-May-2018	NEFT/INWARD RTGS			13,50,000.00	20,10,486.00Cr
02-Jun-2018	DUPLICATE STATEME NT CHARGES		60.00		20,10,426.00Cr
06-Jun-2018	Int. Pd: 010318 t o 310518			1,354.00	20,11,780.00Cr
10-Jul-2018	SVEC	90076	1,50,000.00		18,61,780.00Cr
17-Jul-2018	DUPLICATE STATEME NT CHARGES		30.00		18,61,750.00Cr
16-Aug-2018	VELMURUGAN V 0899 SERVICE CLG	90077	6,880.00		18,54,870.00Cr
06-Sep-2018	Int. Pd: 010618 t o 310818			16,975.00	18,71,845.00Cr
11-Sep-2018	A HARI SESHU	90078	7,984.00		18,63,861.00Cr
03-Oct-2018	DUPLICATE STATEME NT CHARGES		30.00		18,63,831.00Cr
05-Oct-2018	A HARI SESHU	90079	27,300.00		18,36,531.00Cr
05-Nov-2018	MANOSNIFF TECHNOL OGIES P 0755 SERVICE CLG	90080	13,49,212.00		4,87,319.00Cr
05-Nov-2018	MANOSNIFF TECHNOL OGIES P 0755 SERVICE CLG	90082	67,260.00		4,20,059.00Cr
Page Total:			16,08,786.00	20,28,329.00	4,20,059.00Cr

Continued...

\*\*\* WHERE INDIA BANKS \*\*\*

ANDHRA BANK  
SRI VIDYA NIKETHAN  
ETIRUPATHI  
ANDHRA PRADESH -517102  
Br Phone : 0877-2247949  
IFSC CODE: ANDB0001540  
MICR CODE: 517011007

Date: 12-03-2019  
Time: 10:39:14  
Page: 2  
bm1540@andhrabank.co.in

STATEMENT OF ACCOUNT  
01-04-2018 to 12-03-2019  
Name : THE PRINCIPAL SVEC DST BIO MEDICAL  
SRI VIDYANIKETAN EDUCATIONAL INSTITUTIONS  
A RANGAMPET TIRUPATI  
TIRUPATHI

A/c.No: 154010100096800 INR  
Scheme: SAVINGS BANK ORD GEN PUB  
Cust ID: 53726926

ANDHRA PRADESH-517502

Deposits are insured up to Rs 1,00,000 by DICGC per customer, subject to change from time to time

DATE	PARTICULARS	CHQ.NO.	WITHDRAWALS	DEPOSITS	BALANCE
06-Nov-2018	BROUGHT FORWARD A HARI SESHU	90083	27,300.00		4,20,059.00Cr 3,92,759.00Cr
19-Nov-2018	DUPLICATE STATEME NT CHARGES		30.00		3,92,729.00Cr

Page 1



58  
58  
10  
Tirupati  
12.02.2021

Dr.V.R.Anitha  
Professor of ECE  
SVEC, Tirupati

To  
Dr.Anita Agarwal  
Scientist 'E'  
TDT Division  
Room No.1, Hall - J  
New Delhi - 110 016

Madam,

Sub: Request to release 3<sup>rd</sup> year fund and extension of the project - reg.  
Ref: DST reference No.IDP IDP/MED/39/2016, Dated: 18<sup>th</sup> May 2018

With reference to the above research funded project entitled "Design and Development of Micro Cantilever Based Biosensor for Early Detection of High Risk Human Papilloma Virus" sanctioned on 18<sup>th</sup> May 2018. I received two years fund to implement the project and waiting for 3<sup>rd</sup> year fund. In connection to complete my project, I have been struck up in the mid of the experiment due to lack of consumables and materials. Kindly release the 3<sup>rd</sup> year fund to continue the project and finish the same. Also because of the COVID - 19, the experimental work is being stopped for almost 8 months. Hence I am requesting to extend project duration to another 6 Months.

I request you to kindly accept and issue third year fund for further implementation of the research project as early as possible and accept for project extension for another 6 months.

Kindly do the needful and oblige madam.

Thanking you,



(Dr.V.R.Anitha)

Principal Investigator

PROFESSOR  
Dept. of Electronics & Communications  
SREE VIDYANIKETHAN ENGG. COLLEGE  
A. RANGAMPET - 517 102 (Chittoor Dt.)



(59) (59)

**PROGRESS REPORT**

<b>1. Project Title:</b> Design and Development of Micro Cantilever Based Biosensor for Early Detection of High Risk Human Papilloma Virus.	DST No: DST/BDTD/EAG/2016, Dated 12 <sup>th</sup> April 2017 IDP/MED/39/2016, Dated: 18 <sup>th</sup> May 2018
<b>2. PI (Name &amp; Address):</b> <b>Dr. V. R. Anitha</b> Professor Department of Electronics and Communication Engineering Sree Vidyanikethan Engineering College Sree Sainath Nagar, A.Rangampet, Chandragiri Mandal, TIRUPATI, Chittoor Dist., A.P. – 517 102, Email: <a href="mailto:anithavr@gmail.com">anithavr@gmail.com</a> , Mobile: +91 9949400700	Date of Birth 14 <sup>th</sup> April 1979
<b>3. Co-PI (Name &amp; Address):</b>  1. Mr. P. G. Gopinath, Research Scholar, Department of Electronics and Communication Engineering, JNTUA, Ananthapuramu, Andhrapradesh.  2. Dr. K. S. Rajkumar, Surgical Oncologist, Department of Oncology, K.G.Hospital, Coimbatore.	Date of Birth 02-03-1984  05-12-1980



60 60

4. Broad area of Research : Micro Electro Mechanical Systems (MEMS)

4.1 Sub Area: Micro Cantilever Sensors for Biomedical Applications

5. Approved Objectives of the Proposal :

- Selection of MEMS materials for Micro Cantilever.
- Design and development of different models for Micro Cantilever based bio sensor for High Risk HPV detection.
- Design and development of novel biosensor sensor model for High Risk HPV detection consist of arrays of biosensor unit.
- Design of reliable and fast signal conditioning circuits for proposed micro bio sensor.
- Characterization and Fabrication of Micro Cantilever.
- To develop a prototype device this will be clinically evaluated at K.G.Hospital, Coimbatore.
- To make modifications, if any; and to make a final prototype device.

Date of Start: 18<sup>th</sup> May 2018

Total cost of Project: 36,49,600

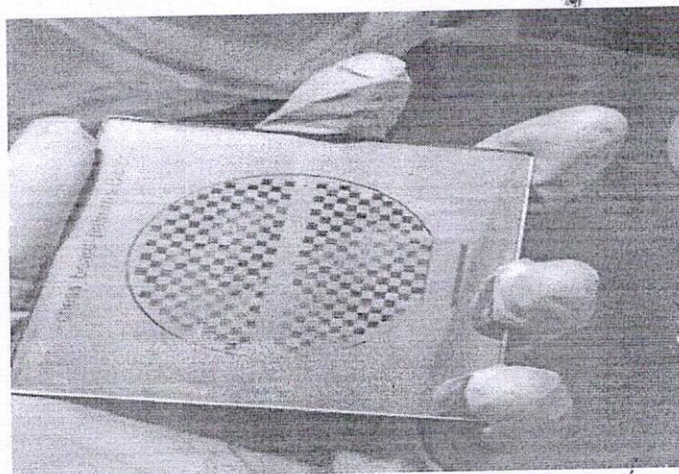
Date of completion: April 2021

Expenditure as on:Rs.20,10,000/-



analytical instruments. Microcantilever is one of the successful mass production products for inertial applications because of maximum sensitivity. The sensitivity has been observed that the cantilever improved the sensitivity by introducing various techniques. Due to these advantages, it can be used for the various biomedical applications to detect the deceases at early stages. Here the focus is on the study of microcantilever sensors derived from atomic force microscopy cantilevers for various biomedical applications especially for Cervical Cancer detection.

- Hence, the mathematical modeling, a theoretical study has been conducted in order to structure, operation, and characteristics of microcantilever.
- Designed and developed the different models of Micro cantilever based bio sensor for High Risk HPV detection.
- Study has been done on various MEMS materials for Micro Cantilevers, simulated the designed cantilever with these materials and chosen the best material for the cantilever.
- Simulations of designed Micro Cantilever was done and observed their physical and electrical characteristics its effects, and done the comparison among the various designed structures of novel microcantilevers.
- Designed and Developed a Microcantilever for Antigen and Antibody interaction.
- To fabricate chess Board pattern on the surface of the 2inch wafer with 100 crystal orientation.



Mask for chess board pattern



6. Methodology :

**STAGE I**

Microcantilever based biosensor exhibit a unique combination of excellent mechanical and electronics properties, which has stimulated increasing interest in the application. Hence literature review and basic simulation works will be performed

**STAGE II**

For the detection of High Risk HPV, the appropriate biomarker will be chosen and model to analyze its properties for various environment conditions.

**STAGE III**

Design Microcantilever based biosensor different materials for optimum and suitable design for our application.

**STAGE IV**

Modeling and simulating CNTFET based biosensor for validation and evaluate their properties (electrical and mechanical) for biosensor design.

**STAGE V**

Bio sensors evaluation for detection of High Risk HPV and comparison with CNTFET based biosensor.

**STAGE VI**

Design of sensor array model based on proposed High Risk HPV micro-bio sensor & its performance will be evaluated the performance of sensor array model based on novel approaches will be improved by design of CNTFET based Biosensor Model for Early detection of High Risk Human papilloma virus.

7. Salient Research Achievements:

7.1 Summary of Progress

The primary objective is to review the microcantilever based sensor used for biosensing applications. The study has been done on biosensor, microcantilever based sensor, its principle and modes, and the importance of MEMS based device in the detection and its significance. Microcantilever place an important role in the healthcare applications and it is the finest platform proved to be the best option over available time consuming, expensive



About Cantilever Sensor:

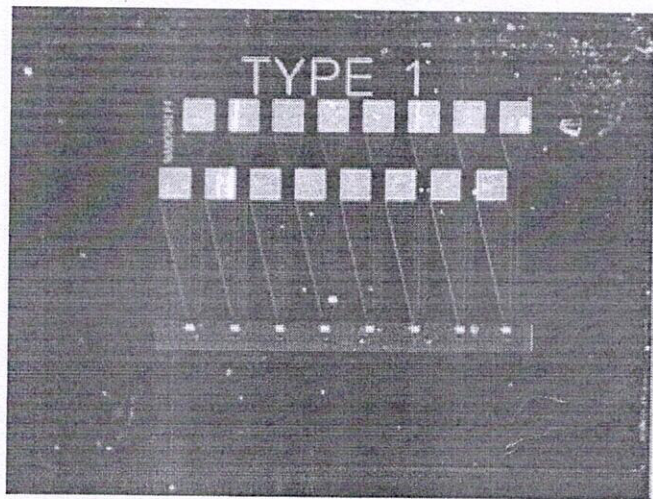
Nanomechanical cantilever is very small and extremely sensitive force and mass detectors. By coating (functionalizing) their surface with a material that selectively adsorbs or binds a given target substance, cantilevers can be converted into highly sensitive and selective chemical sensors or biosensors.

Working of Microcantilevers:

When a target substance comes into contact with a functionalized cantilever surface, the resulting chemical reaction is converted into a mechanical response - the cantilever bends and changes its resonance frequency.

No fluorescent or radioactive labelling is necessary for real-time detection or quantification of the target substance.

We propose piezoresistive cantilevers, which convert the bending information into an electrical signal; which is used for further processing.



7.2 Patents:

Filed a Patent with CBR No. 11631  
Ref No. E-12/306/2016/CHE  
App.No.201641018534

7.3 Publications:

- Dr.V.R.Anitha, "Simulation and Analysis of Highly Sensitive Microcantilever Designs by Introducing Stress Concentration Region (SCR)", presented in Third International Conference on Advanced Materials (ICAM 2019), Kottayam, 9-11 August 2019.



64 64

<ul style="list-style-type: none"><li>• Dr.V.R.Anitha, "Development of SCR Based Highly Sensitive Microcantilever for HPV detection", Emerging Trends in Polymeric Materials', Synthesis, Application and Characterization, Apple Academic Press, Accepted for publication, 2019.</li><li>• Dr. V. R. Anitha, P. G. Gopinath, "Review of Microcantilever Based Biosensor for Biomedical Applications," IEEE International Conference on New Trends in Engineering &amp; Technology (ICNTET), GRT Institute of Engineering and Technology, Tiruttani, Tamilnadu, 7th &amp; 8th September 2018.</li></ul>
<p>7.4 Manpower Trained :</p> <ul style="list-style-type: none"><li>• Junior Research Fellow</li><li>• Faculty</li><li>• PG Students</li></ul>
<p>7.5 Seminar/Conference/FDP Attended</p> <ul style="list-style-type: none"><li>• Attended and presented a paper in Third International Conference on Advanced Materials (ICAM 2019), Kottayam, 9-11 August 2019.</li><li>• Organized SERB sponsored International Conference on Applications of MEMS, Nano, and Smart Materials, Sree Vidyanikethan Engineering College, Tirupati, 12-14 December 2019.</li><li>• Attended and presented a paper in IEEE International Conference on New Trends in Engineering &amp; Technology (ICNTET), GRT Institute of Engineering and Technology, Tiruttani, Tamilnadu, 7th &amp; 8th September 2018.</li></ul>
<p>8. Research work which remains to be done under the project (for on-going projects)</p> <ul style="list-style-type: none"><li>• Developed Microcantilever to be tested with active virus in VSL - 2 or VSL - 3 laboratories.</li><li>• The developed prototype device will be clinically evaluated at K.G.Hospital, Coimbatore.</li><li>• To make modifications, if any; and to make a final prototype device.</li></ul>



The progress of the project is as follows;

Project Title			
Design and Development of Micro Cantilever Based Biosensor for Early Detection of High Risk Human Papilloma Virus.			
S.No.	Approved Objectives	Target achieved	Remaining work of project
1.	Design and development of different models for Micro Cantilever based biosensor for High Risk HPV detection.	Completed	Completed
2.	Design and development of novel biosensor sensor model for High Risk HPV detection consist of arrays of biosensor unit.	Completed	Completed
3.	Characterization and Fabrication of Micro Cantilever.	Completed	Completed
4.	To develop a prototype device	On going	On going
5.	Clinical Evaluation	After serial number 4	After serial number 4



GFR 12-A  
 [(See Rule 238 (1))]

FORM OF UTILIZATION CERTIFICATE (Provisional)

UTILIZATION CERTIFICATE FOR THE YEAR 2019-20 In respect of Recurring  
 GRANTS-IN-AID/SALARIES/General Component/Recurring

1. Name of the Scheme  
 a. Title of the project : Biomedical Device and Technology Development (BDTD)  
 : Design and Development of Micro Cantilever Based Biosensor for Early  
 Detection of High Risk Human Papilloma Virus
2. Whether recurring or non-recurring grants : Recurring (General Component)
3. Grants position of the beginning of the financial year [unspent balance of last financial year if any]
  - i) Cash in Hand/Bank : Rs.1,78,098/-
  - ii) Unadjusted advances : Rs.-
  - iii) Total : Rs.1,78,098/-

4. Details of grants received, expenditure incurred and closing balances: (Actuals)

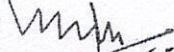
Unspent Balances of Grants received years (figure as at Sl. No. 3 (iii))	Interest Earned thereon	Interest deposited back to the Government	Grant received during the year			Total available funds (1+2-3+4)	Expenditure incurred	Closing Balances (5-6)
			Sanction no. (i)	Date (ii)	Amount (iii)			
1	2	3	4			5	6	7
Rs.1,78,098/-	Rs.2,588/-	-	-	-	-	Rs.1,80,686/-	Rs.1,60,286/-	Rs.20,400/-

Component wise utilization of grants:

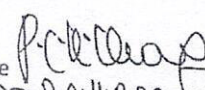
Grant-in-aid-General	Grant-in-aid-Salary	Grant-in-aid-creation of capital assets	Total
Manpower	Rs.1,09,200/-	-	Rs.1,09,200/-
Consumables	Rs.26,366/-	-	Rs.26,366/-
Contingencies	-	-	-
Travel	Rs.24,720/-	-	Rs.24,720/-
Overheads	-	-	-

Details of grants position at the end of the year

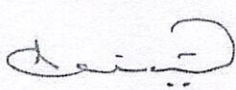
- (v) Cash in Hand/Bank: Rs. 20,400/-
- (vi) Unadjusted Advances : -
- (vii) Total : Rs. 20,400/-

Signature   
 Name \_\_\_\_\_  
 Chief Finance Officer  
 (Head of the Finance)

**DIRECTOR**  
**(FINANCE & ADMINISTRATION)**  
**SREE VIDYANIKETHAN EDUCATIONAL TRUST**  
 Sree Sainath Nagar, A. RANGAMPET-517 102  
 Chittoor (Dist), A.P.

Signature   
 Name **Dr. P. C. ILRISHWAMA CHARY**  
 Head of the Organization

**PRINCIPAL**  
**SREE VIDYANIKETHAN ENGINEERING COLLEGE**  
**(AUTONOMOUS)**  
 Sree Sainath Nagar, A. RANGAMPET  
 Chittoor (Dist.) - 517 102, A.P., INDIA.

Signature   
 Name **Dr. V. R. ANITHA**  
 Name of PI

**PROFESSOR**  
 Dept. of Electronics & Communications  
**SREE VIDYANIKETHAN ENGG. COLLEGE**  
**A. RANGAMPET - 517 102 (Chittoor Dt.)**



F.No. SVEC/DST-BDTD/2019-20

Dt.29.01.2020

Dr.V.R.Anitha  
Professor of ECE  
SVEC, Tirupati.

To

Dr.Anita Aggarwal  
Scientist 'E'  
TDT Division  
Room No.1, Hall – J  
New Delhi – 110 016.

Madam,

Sub: Sree Vidyanikethan Engineering College (Autonomous) – submission of bifurcation for capital and general component of interest for the financial year 2018-19 – reg.  
Ref: DST reference No.IDP/MED/39/2016 dated 23.01.2020.

\*\*\*\*

With reference to the aboveresearch funded project entitled "Design and Development of Micro Cantilever Based Biosensor for Early Detection of High Risk Human Papilloma Virus" sanctioned on 18<sup>th</sup> May 2018 by DST vide reference No.IDP/MED/39/2016 mail received on 23 January 2020 about clarification on Interest of general component.

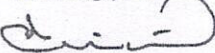
In this regard, the institute accrued interest of Rs.33,933/- for the financial year 2018-19 of capital component and general component. As per the direction of our finance officer the following interest was bifurcated into Capital & general component as detailed below;

- |   |              |
|---|--------------|
| 1. Interest for Capital Component                 | :Rs.24,718/- |
| 2. Interest for general component                 | :Rs.9,215/-  |
| 3. Total Interest for Capital & General component | :Rs.33,933/- |

The unspent balance of Rs. 1,78,098/- has been carry forward for the next financial year 2019-20 and the accrued interest was returned back to Consolidated Fund of India (CFI) or bharkosh on 17<sup>th</sup> June 2019 vide transaction reference number 1406190002941. Also, I am submitting the Provisional UC in the GFR-12A format for recurring component by affixing the seal of the Director (Finance & Administration) and the Principal on the provisional UC form.

Hence, I request you to kindly accept and issue second year fund for further implementation of the research project.

Thanking you,

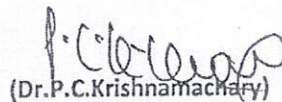


(Dr.V.R.Anitha)

Principal Investigator

PROFESSOR

Dept. of Electronics & Communications  
SREE VIDYANIKETHAN ENGG. COLLEGE  
A. RANGAMPET - 517 102 (Chittoor Dt.)

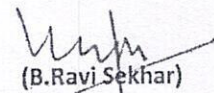


(Dr.P.C.Krishnamachary)

Head of the Organization

PRINCIPAL

SREE VIDYANIKETHAN ENGINEERING COLLEGE  
(AUTONOMOUS)  
Sree Sainath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.



(B.Ravi Sekhar)

Chief Finance Officer

(Head of the Finance)

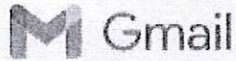
DIRECTOR

(FINANCE & ADMINISTRATION)  
SREE VIDYANIKETHAN EDUCATIONAL TRUST  
Sree Sainath Nagar, A. RANGAMPET-517 102  
Chittoor (Dist), A.P.



2/6/2021

Gmail - DST Reference No.IDP/MED/39/2016/General-----regarding



Anitha Vaddinuri <anithavr@gmail.com>

## DST Reference No.IDP/MED/39/2016/General-----regarding

Mohinder Singh <s.mohinder@nic.in>  
To: "Dr. Anita V.R." <anithavr@gmail.com>

2 July 2020 at 14:10

Dear Dr. Anitha,

The grant has already been credited in grant account No.1481346396 for the release of Rs.4,10,000/-. The UTR Number is 000117027602 of that grant and its success on 26.06.2020.

आदर के साथ,

मोहिन्दर सिंह / Mohinder Singh  
वैज्ञानिक 'सी' / Scientist 'C'  
टी.डी.टी.प्रभाग / Technology Development and Transfer Division  
विज्ञान और प्रौद्योगिकी विभाग  
Department of Science & Technology  
भारत सरकार / Govt. Of India  
नई दिल्ली - 110016 / New Delhi - 110016  
दूरभाष नंबर/Telephone No. - 011 26590287





69

69

OUR DEPOSIT SCHEMES AT A GLANCE

Photo(s)

Savings	SB Account	Age	COVERAGE	Amount of Coverage
Insurance Linked SB Accounts	SB Diamond Account	05-75 Years	Accidental Death Cover	5,00,000
		18-55 Years	Life Cover	1,00,000
	SB Platinum Account	05-75 Years	Accidental Death Cover	10,00,000
		18-55 Years	Life Cover	2,00,000
	ASB Account	05-75 Years	Accidental Cover Only	50,000
	ASB Plus Account	05-75 Years	Accidental Cover Only	1,00,000
	ABG Account	05-75 Years	Accidental Cover Only	1,50,000
	ABJ Account	18-55 Years	Accidental and Natural Death Cover	1,00,000
	ABJ Plus Account	18-55 Years	Accidental and Natural Death Cover	2,00,000
	ABJ Double Plus Account	18-55 Years	Accidental and Natural Death Cover	5,00,000
	ABJ Triple Plus Account	18-55 Years	Accidental and Natural Death Cover	10,00,000
	AB Kiddy Bank (Kids Khazana)	0-18 Years	For Child - Accidental Cover	1,50,000
		18-70 Years	For Parent / Guardian Cover	1,50,000
AB Arogyadan	3 Months-70 Yrs	Renewable life long		
Deposit Schemes	RD Account, RD Plus Account Fixed Deposit, Kalpataru Depositi, AB Tax Saver Deposit, AB Freedom Deposit, AB Double Deposit, AB Money-Time Deposit			

For Further Information and schema details please contact the nearest branch

\* Conditions apply

- ★ Andhra Bank is merely a mobilizer / facilitator for the Insurance and is no way liable for any claim. For the name of the Insurer & applicable terms and conditions of Insurance, customer may approach the Branch or refer Bank's website [www.andhrabank.in](http://www.andhrabank.in)
- ★ For the applicable rates of interest contact the Branch or refer Bank's website [www.andhrabank.in](http://www.andhrabank.in)

Note: 1. Account holders are requested to maintain sufficient balance in the account for deduction of Insurance premium and also verify whether the premium is deducted or not on due dates. Bank will not be responsible for non-deduction of premium due to paucity of clear funds in the account.  
 2. While presented for updation of the Pass Book a New Line appear every time at the end of transactions. Acronyms/Abbreviations used are provided in the last page.

शाखा /Branch .  
 1540 SRI VIDYA NIKETHAN  
 ETIRUPATHI



ECE

Comp. No. 11302

BrPh : 0877-2247949  
 IFSC CODE: ANDB0001540  
 MICR CODE: 517011007

CHITTOR DIST, ANDHRA PRADESH  
 TIRUPATHI

पास बुक PASS BOOK

ANDHRA PRADESH -517102  
 खाताधारक का नाम

खाता नंबर  
 A/c. No 54010100096800

Name of A/c Holder M/S THE PRINCIPAL SVEC DST BIO MEDICAL

पता Address  
 SRI VIDYANIKETAN EDUCATIONAL INSTITUTIONS

फोन नंबर RANGAMPET TIRUPATI  
 Phone No. TIRUPATHI  
 प्रकार /MODE ANDHRA PRADESH-517502

Scheme Code: SBOGP  
 CUST.ID : 53726926

दिनांक /Date AUTHORIZED SIGNATORY / CONS. ATTORNEY  
 नामांकन पंजीकृत : हाँ / नहीं / Nomination Registered : Yes / No

प्रबंधक  
 Manager's Signature

प्रधान कार्यालय, सािफाबाद, हैदराबाद - 500 004  
 Head Office, Saifabad, Hyderabad - 500 004.



UNION BANK OF INDIA  
SRI VIDYA NIKETHAN  
ETIRUPATHI  
CHITTOR DIST, ANDHRA PRADESH  
PHONE: 0877-2247949

10  
70

TO:  
M/S THE PRINCIPAL SVEC DST BIO MEDICAL  
SRI VIDYANIKETHAN EDUCATIONAL INSTITUTIONS  
A RANGAMPET TIRUPATI  
TIRUPATI-517502  
ANDHRA PRADESH, INDIA

DATE: 11-02-2021

CUST ID : 53726926

EMAIL ID: svecp@vidyanikethan.edu

STATEMENT OF ACCOUNT FOR THE PERIOD FROM 01-01-2020 to 10-02-2021 SBOGP-A/C NO: 154010100096800 SAVINGS BANK ORD GEN PUB (SA)

DATE	PARTICULARS	CHQ. NO.	WITHDRAWALS	DEPOSITS	BALANCE
				21,524.50	21,524.50Cr
24-01-2020	DUPLICATE STATEMENT CHARGES		59.00		21,465.50Cr
25-02-2020	V R ANITHA	96577	20,856.00		609.50Cr
05-03-2020	Int. Pd: 011219 to 290220			165.00	774.50Cr
12-04-2020	Int. Pd: 010320 to 310320			2.00	776.50Cr
26-06-2020	NEFT/INWARD RTGS			4,65,000.00	4,65,776.50Cr
07-07-2020	Int. Pd: 010420 to 300620			196.00	4,65,972.50Cr
04-10-2020	Int. Pd: 010720 to 300920			3,514.00	4,69,486.50Cr
04-01-2021	Int. Pd: 011020 to 311220			3,540.00	4,73,026.50Cr
Cumulative Totals:			20,915.00	4,93,941.50	4,73,026.50Cr

The Min. Balance Requirement in (Rural Br.) For SB Account is Rs 100 (without Cheque book) and Rs 250/- (with Cheque book)  
Unless constituent notifies the bank immediately of any discrepancy found  
by him in his statement of Account, it will be taken that he has found the account correct.

FASTEST MODE OF FUNDS REMITTANCE-RTGS (UNION BULLET).  
IFSC/MICR code for SRI VIDYA NIKETHAN is UBIN0815403/517026061

Contact all India toll Free no. 1800 22 22 44 for your account related queries / services

Manager

IFSC/MICR code for SRI VIDYA NIKETHAN is  
15401,powappsrv1,JS674982

PAGE: 1



2016-17

71

71

SREE VIDYANIKETHAN EDUCATIONAL TRUST  
UNIT: SREE VIDYANIKETHAN ENGINEERING COLLEGE  
SREE SAINATH NAGAR, A, RANGAMPET

SCHEDULE - II (Incomes)

PARTICULARS		Amount Rs.	Amount Rs.
A	<b>Fee from Students</b>		
	Tuition fee	508396482	
	Admission/Recognition Fee	3426000	
	Special Fee	6425525	
	Applications/Registrations Fee	1616000	
	Bus Fee	3816550	
	Book Bank	6563910	
	Exam Cell Fee	15655856	
	Ceep & Non Ceep Fee	7200	
	Games Fee	200	
	JNTU Fee	6981750	
	JNTU DLR Fee	1137800	
	JNTU Affiliation Fee	917925	
	JNTU Sports Fee	1208700	
	Sports & Games Fee	132620	
	Techno Cultural Fest Regn.Fee-MM (Net)	2061669	
	Miscellaneous Receipts	149986	
	Training Fee	2479459	
	Consultancy Testing Charges	50700	
	Transport Fee	275250	
	Information & Communication Fee	3290000	
	Students Safety Insurance	578800	565172382
B.	<b>Income from Grants/Sponsorships:</b>		
	All India Council for Technical Education - EEE	250749	
	AICTE-PMKVY TI Skill Development Programme	185895	
	AP State Skill Development	11000	
	Department of Biotechnology Fund (DBT)	201000	
	Department of Science & Technology - Seminar Grant (DST)	200000	
	ISRO Respond Project	586000	
	Govt. of India & A.P. - TEQIP	10200000	
	SVEC Matching Contribution	6256432	17891076
C.	<b>Interest Income</b>		
	Interst on SBs & FDRs	9012050	
	Interest on A.C.D.	81914	9093964

37



*M. Mohan Babu*

**Dr. M. MOHANBABU**  
CHAIRMAN

SREE VIDYANIKETHAN EDUCATIONAL TRUST  
SREE SAINATH NAGAR, A. RANGAMPET  
CHITTOOR DISTRICT - 517 102., A.P.



72 56 72

No. SR/CSRI/370/2016  
Government of India  
Ministry of Science & Technology  
Department of Science & Technology  
(KIRAN DIVISION)

Technology Bhawan  
New Mehrauli Road  
New Delhi-110016  
Dated: 24.09.2020

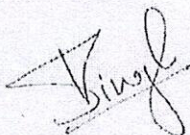
ORDER

Sub: Financial approval of the project under Cognitive Science Research Initiative (CSRI) entitled "*Intelligent system to classify human brain signals for finding brain diseases*" under the guidance of Dr. G. Sasikumar, Associate Professor, Department of Computer Science and Systems Engineering, Sree Vidyanikethan Engineering College, Tirupati-517102.

In continuation of this Department's sanction letter of even number dated 09.01.2018, sanction of the President is hereby accorded to the payment of Rs. 12,35,806/- (Rupees Twelve Lakh Thirty Five Thousand Eight Hundred Six only) as Final installment to the Principal, Sree Vidyanikethan Engineering College, Chittoor-517102 for implementation of the said project during the current financial year.

2. The host institute should release revised fellowship/HRA (w.e.f. 01.01.2019) of manpower recruited (if eligible) from the sanctioned budget under manpower head.
3. This sanction is subject to the condition that the grantee organisation will furnish to the Department of Science & Technology, financial year wise Utilization Certificate (UC) in the proforma prescribed as per GFR 2017 and audited statement of expenditure (SE) along with up to date progress report at the end of each financial year duly reflecting the interest earned / accrued on the grants received under the project. This is also subject to the condition of submission of the final statement of expenditure, utilization certificate and project completion report within one year from the scheduled date of completion of the project.
4. The grantee organisation will have to enter & upload the Utilization Certificate in the PFMS portal besides sending it in physical form to this Division. The subsequent/final installment will be released only after confirmation of the acceptance of the UC by the Division and entry of previous Utilization Certificate in the PFMS.
5. The Grantee Institute (GI) will maintain separate audited as per GFR 2017 Rule 230 (B) account for the project and the entire amount of grant will be kept in an interest bearing bank account. For Grants released during FY 2020-2021 and onwards interest and other earnings, against released Grant shall be remitted to Consolidated Fund of India (through Non-Tax Receipt Portal (NTRP), i.e. [www.bharatkosh.gov.in](http://www.bharatkosh.gov.in)), immediately after finalization of accounts, as it shall not be adjusted towards future release of Grant. A certificate to this effect shall have to be submitted along with statement of expenditure/utilization certificate for considering subsequent release of grant/closure of project accounts. GI should also follow Rule 230 (17) of GFR 2017 concerning to reservation of SC/ST/OBC, if applicable.
6. DST reserves sole rights on the assets created out of grants. Assets acquired wholly or substantially out of government grants (except those declared as obsolete and unserviceable or condemned in accordance with the procedure laid down in GFR 2017), shall not be disposed of without obtaining the prior approval of DST.
7. Principal investigator under Women Scientist Scheme is not permitted to withdraw any emoluments/ salary/fellowship from any other project either supported by DST or by any other funding agency.
8. The account of the grantee organisation shall be open to inspection by the sanctioning authority and audit (both by C& AG of India and Internal Audit by the Principal Accounts Office of the DST) whenever the organisation is called upon to do so, as laid down under Rule 236(1) of General Financial Rules 2017.
9. Due acknowledgement of technical support / financial assistance resulting from this project grant should mandatorily be highlighted by the grantee organisation in bold letters in all publications / media releases as well as in the opening paragraphs of their Annual Reports during and after the completion of the project.
10. Principal Investigator (PI) is directed to acknowledge "research grant" in all publications emerging out of this particular project. For example, "author acknowledge Department of Science & Technology, Government of India for financial support vide reference no. .... under Women Scientist Scheme to carry out this work". Also she is advised to be either 'first' or 'corresponding' author in all publications.

Contd. p/-





11 The expenditure involved is debitable to Demand No 87, Department of Science & Technology for the year 2020-21

3425 Other Scientific Research (Major Head)  
60 Others (Sub-Major Head)  
60.200 Assistance to other Scientific Bodies (Minor Head)  
68 Science and Technology Institutional and Human Capacity Building (Sub Head)  
04 Other Programmes  
68.04.31 Grants-in-aid General for the year 2020-2021 (Voted)  
This release is being made Research & Development Scheme  
(Previous Research & Development Support 3425 60.200.25.01.31)

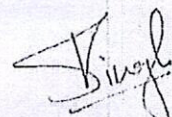
12. The amount of Rs. 12,35,806/- (Rupees Twelve Lakh Thirty Five Thousand Eight Hundred Six only) will be drawn by the Drawing and Disbursing Officer, DST and will be disbursed to the Principal, Sree Vidyanikethan Engineering College, Chittoor-517102. The bank details for electronic transfer of funds through RTGS are given below:

Instituto Name: Sree Vidyanikethan Engineering Trust  
Bank name : Andhra Bank  
Account No. : 154010100108293  
Branch : Sri Vidya Nikethan  
IFSC Code : ANDB0001540  
Unique Code : AP/2016/0113056

13. Goods (consumables/equipment) available in GeM portal are to be procured mandatorily online through Gem only and PI will also follow DoE's guidelines for incurring expenditure under the different sub-head.

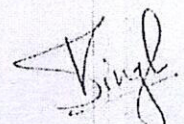
14. As per Rule 234 of GFR 2017, this sanction has been entered at S. No. 22 in the register of grants maintained in the Research & Development

15. This issues with the concurrence of IFD Vide their Concurrence Dy.No.C/1542/IFD/2020-21 dated 04.08.2020.

  
(Vandana Singh)  
Scientist-E

Copy forwarded for information and necessary action to:-

1. The Director of Audit (CW & M-II), AGCR Building, IP Estate, New Delhi-110 002
2. Copy with two spare copies of the sanction to the Drawing & Disbursing Officer, DST, Cash Section
3. The Principal, Sree Vidyanikethan Engineering College, Chittoor-517102
4. Dr. G Sasikumar, Associate Professor, Department of Computer Science and Systems Engineering, Sree Vidyanikethan Engineering College, Tirupali-517102.
5. Pay & Accounts Officer, DST, New Delhi.
6. IFD, DST, New Delhi.
7. Sanction Folder.

  
(Vandana Singh)  
Scientist-E





## **Funded Research Project - Details**

Project Title	: Intelligent system to classify human brain signals for finding brain diseases.
Funding Agency/Department	: DST-CSRI (Cognitive Science Research Initiative)
Name of the PI	: Dr G. Sasikumar Associate Professor, Department of Computer Science and Systems Engineering, Sree Vidyanikethan Engineering College, Tirupati -517102 . Andhra Pradesh
Name of the Co-PI (if any)	: Dr. M.Naresh babu Associate Professor, Department of Computer Science and Systems Engineering, Sree Vidyanikethan Engineering College, Tirupati -517102 . Andhra Pradesh
Name of the JRF	: Ms. G. Sandhya Kumari M.Tech, ECE
Project Duration *	: 3 Years (2017-20)
Project Cost (in Rs.) *	: Rs. 23,73,800/-
Amount Sanctioned (2017-18)	: Rs.9.066 lakhs/- (1 <sup>st</sup> Year)
Amount Sanctioned (2019-20)	: Rs. 12.35806 lakhs/- (II Year)



## **Project Abstract :**

Clinically, electroencephalogram (EEG) refers to the recording of the brain's spontaneous electrical activity over a period of time from multiple electrodes placed on the scalp. EEG data display the signals of electrical variances of brain using metal electrodes. This study is carried on epilepsy disease. People with epilepsy can experience recurrent seizures and a temporary disturbance in the messaging systems between brain cells. Epileptic seizure can be detected with the variation of spikes in the EEG data, with frequency domain analysis, and by using other nonlinear methods. EEG signal contains different artifacts like electrooculography (EOG), electrocardiogram (ECG), and electromyogram (EMG). ECG signal artifacts are produced by the function of heart. EOG signal artifacts are produced because of the movement of eyes, and these variations are noticed in the EEG data. EMG signal artifacts are produced because of the muscles coordination.

## **Project Outcomes :**

The EEG signal parameters are analyzed by using EDF BROWSER and EEG STUDIO. By using EDF BROWSER, mean, frequency values, and RMS values are taken from the filtered output signal. With the help of EEG STUDIO, it is analyzed the average frequency and standard deviation of filtered output signal. Wavelet packet decomposition, wavelet dependent thresholding denoising, and dual-tree discrete wavelet transform are the signal processing techniques that has been applied to analyze the EEG signal for epilepsy disease, where dual-tree discrete wavelet transform has removed most of the noise that present in the signal.

## **Publication Details:**

### ***Journal Papers:***

- Sasikumar Gurumoorthy, Naresh Babu Muppalaneni, Chandra Sekar G, Sandhya kumari G, (2019), 'Epilepsy analysis using open source EDF tools for information science and data analytics', in the Special issue,



76      76  
60

"Data Analytics in Wireless Systems and IoT", of International Journal of Communication Systems [IJCS]. Publisher: John Wiley & Sons Ltd ("Wiley"). ISSN: 1099-1131. pp.1-11. Article Id: IJCS-18-0715.R6.

### **Conference Papers:**

- Sasikumar Gurumoorthy, Naresh Babu Muppalaneni, Chandra Sekar G, Sandhya kumari G, (2018), 'Artificial Intelligence Systems and Expert Systems: An Overview of Recent Trends and Roles in Information Science and Data Analytics', in the proceedings of the Springer Briefs in Forensic and Medical Bioinformatics, 5<sup>th</sup> International Conference on Cognitive Science and Artificial Intelligence (ICCSAI-2018) (Scopus Indexed).
- Sasikumar Gurumurthy, Naresh Babu Muppalaneni, Chandra Sekar G, Sandhya kumari G, (2019), 'Methods for finding the Brain disease like Epilepsy and Alzheimer', in the Springer Lecture Notes on Data Engineering and Communication technologies book series (LNDECT, Volume 31), Proceedings of the International Conference on Computer Networks, Big Data and IOT (ICCB-2018). ICCBI\_158. pp.113-121. (ScopusIndexed) .
- Sasikumar Gurumoorthy, Naresh Babu Muppalaneni, Chandra Sekar G, Sandhya kumari, (2019), 'Implementation of Signal Processing Algorithms on Epileptic EEG Signals', in the proceedings of Springer, 2<sup>nd</sup> International Conference on Universal Computing, Communications and Data Engineering (CCODE-2019). pp. 1-7.

### **Book chapters:**

- Sasikumar Gurumoorthy, Naresh Babu Muppalaneni and G.SandhyaKumari (September 10th 2020). EEG Signal Denoising Using Haar Transform and Maximal Overlap Discrete Wavelet Transform (MODWT) for the Finding of Epilepsy, Epilepsy - Update on Classification, Etiologies, Instrumental Diagnosis and Treatment, Sandro Misciagna, IntechOpen, DOI:10.5772/intechopen.93180.Availablefrom:  
<https://www.intechopen.com/chapters/73163>



## **Workshops Attended:**

- Participated in MeitY, Govt. of INDIA sponsored One Week Faculty Development Program (FDP) on "MACHINE LEARNING" organized by E & ICT Academy, National Institute of Technology, Warangal at Sri Venkateswara Engineering College of Engineering, Tirupati, Andhrapradesh from 12<sup>th</sup> -17<sup>th</sup> November, 2018.
- Participated in One Week Faculty Development Program on "Multidisciplinary Research: Barriers and Opportunities with Computing" Organized by Department of Computer Science and Systems Engineering, Sree Vidyanikethan Engineering College (Autonomous), Tirupati, in Association with IEEE Hyderabad Section, during 21<sup>st</sup> -25<sup>th</sup> January 2019.
- Participated in One Week Faculty Development Program on "Digital Signal processing with ARM CORTEX-M4-Cypress FM4 board" conducted by School of Electronics Engineering at Vellore Institute of Technology (VIT) - Chennai during 2<sup>nd</sup> to 6<sup>th</sup> July 2019.

(Principal Investigator)

Dr G. Sasikumar  
Associate Professor



No. SVEC/DST/CSRI/2020

Dt. 31/03/2020

**Dr. P.C. Krishnamachary, M.E., Ph.D.**  
Principal

To

**Dr Vandana Singh**  
Officer-in-charge,  
Department of Science & Technology,  
Technology Bhavan, New Mehrauli Road,  
New Delhi-110016  
Tel: 011-26590273.

Madam,

**Sub:** Submission of Utilization Certificate 2019-20 - CSRI - Reg.

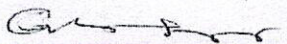
\* \* \*

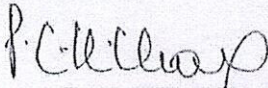
I am enclosing two copies of the Utilization Certificate (2019-20) for the Project titled **"Intelligent System to Classify Human Brain Signals for Finding Brain Diseases"**, (Grant/Ref.No:**SR/CSRI/370/2016**).

I request you to kindly consider the Utilization Certificate (2019-20) for research grant from Department of Science & Technology DST, New Delhi.

Thanking you,

Yours faithfully,

  
**(Dr. G SASIKUMAR)**  
Principal Investigator

  
**(Dr. P C KRISHNAMACHARY)**  
Principal  
PRINCIPAL  
SREE VIDYANIKETHAN ENGINEERING COLLEGE  
(AUTONOMOUS)  
Sree Sainath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.



- ① Sree Sainath Nagar, Tirupati, Andhra Pradesh - 517 102.
- ① +91-877-3066900/01
- ① +91-877-2236712/14
- \* 0877-3066999
- ① www.vidyanikethan.edu



GFR 12 - A  
[[See Rule 238 (1)]]FORM OF UTILIZATION CERTIFICATE  
FOR AUTONOMOUS BODIES OF THE GRANTEE ORGANIZATIONUTILIZATION CERTIFICATE FOR THE YEAR 2018 - 2019 in respect  
of recurring/non-recurring  
GRANTS-IN-AID/SALARIES/CREATION OF CAPITAL ASSETS

1. Name of the Scheme... DST - COGNITIVE SCIENCE RESEARCH INITIATIVE
2. Whether recurring or non-recurring grants... B.O.I.U. (SR/CSRT (370/2016))
3. Grants position at the beginning of the Financial year
- (i) Cash in Hand/Bank
- (ii) Unadjusted advances
- (iii) Total Rs 6,86,402/-
4. Details of grants received, expenditure incurred and closing balances: (Actuals)

Unspent Balances of Grants received years [figure as at Sl. No. 3 (iii)]	Interest Earned thereon	Interest deposited back to the Government	Grant received during the year			Total Available funds (1+2-3+4)	Expenditure incurred	Closing Balances (5-6)
			Sanction No. (i)	Date (ii)	Amount (iii)			
1	2	3	4			5	6	7
Rs 6,86,402/-	Rs 18,154/-	Rs 18,154/-	SR/CSRT 370/2016			Rs 6,86,402/-	Rs 5,31,488/-	Rs 1,54,914/-

Component wise utilization of grants:

Grant-in-aid-General	Grant-in-aid-Salary	Grant-in-aid-creation of capital assets	Total
Rs 97,898/-	Rs 4,33,590/-		Rs 5,31,488/-

Details of grants position at the end of the year

- (i) Cash in Hand/Bank Rs 1,54,914/-
- (ii) Unadjusted Advances NIL
- (iii) Total Rs 1,54,914/-



80

80



**GENERAL FINANCIAL RULES 2017**  
Ministry of Finance  
Department of Expenditure

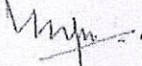
FORM GFR 12A

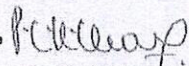
SANCTION NUMBER : SR/CSRI/370/2016  
YEAR : 2018-2019

Certified that I have satisfied myself that the conditions on which grants were sanctioned have been duly fulfilled/are being fulfilled and that I have exercised following checks to see that the money has been actually utilized for the purpose for which it was sanctioned:

- (i) The main accounts and other subsidiary accounts and registers (including assets registers) are maintained as prescribed in the relevant Act/Rules/Standing instructions (mention the Act/Rules) and have been duly audited by designated auditors. The figures depicted above tally with the audited figures mentioned in financial statements/accounts.
- (ii) There exist internal controls for safeguarding public funds/assets, watching outcomes and achievements of physical targets against the financial inputs, ensuring quality in asset creation etc. & the periodic evaluation of internal controls is exercised to ensure their effectiveness.
- (iii) To the best of our knowledge and belief, no transactions have been entered that are in violation of relevant Act/Rules/standing instructions and scheme guidelines.
- (iv) The responsibilities among the key functionaries for execution of the scheme have been assigned in clear terms and are not general in nature.
- (v) The benefits were extended to the intended beneficiaries and only such areas/districts were covered where the scheme was intended to operate.
- (vi) The expenditure on various components of the scheme was in the proportions authorized as per the scheme guidelines and terms and conditions of the grants-in-aid.
- (vii) It has been ensured that the physical and financial performance under..... (name of the scheme has been according to the requirements, as prescribed in the guidelines issued by Govt. of India and the performance/targets achieved statement for the year to which the utilization of the fund resulted in outcomes given at Annexure - I duly enclosed.
- (viii) The utilization of the fund resulted in outcomes given at Annexure - II duly enclosed (to be formulated by the Ministry/Department concerned as per their requirements/specifications.)
- (ix) Details of various schemes executed by the agency through grants-in-aid received from the same Ministry or from other Ministries is enclosed at Annexure - II (to be formulated by the Ministry/Department concerned as per their requirements/specifications).

Date: 28/05/2019  
Place: Tirumala

Signature   
 Name: B. RAJASEKHARA  
 Chief Finance Officer, DIRECTOR  
 (FINANCE & ADMINISTRATION)  
 (Head of the Organisation)  
 VIDYANIKETHAN EDUCATIONAL TRUST  
 Sree Salmath Nagar, A. RANGAMPET-517 102  
 Chittoor (Dist), A.P.  
 (Strike out inapplicable terms)

Signature   
 Name: Dr. P. KRISHNAMACHARY  
 Head of the Organisation  
 PRINCIPAL  
 SREE VIDYANIKETHAN ENGINEERING COLLEGE  
 (AUTONOMOUS)  
 Sree Salmath Nagar, A. RANGAMPET  
 Chittoor (Dist.) - 517 102, A.P., INDIA.



81

65

FORM GFR 12A

GENERAL FINANCIAL RULES 2017  
Ministry of Finance  
Department of Expenditure



**GFR 12 - A**  
[(See Rule 238 (1))]

**FORM OF UTILIZATION CERTIFICATE  
FOR AUTONOMOUS BODIES OF THE GRANTEE ORGANIZATION**

UTILIZATION CERTIFICATE FOR THE YEAR... 2017... 2018... in respect  
of recurring/non-recurring  
GRANTS-IN-AID/SALARIES/CREATION OF CAPITAL ASSETS

- Name of the Scheme... DST - COGNITIVE SCIENCE RESEARCH INITIATIVE
- Whether recurring or non-recurring grants... Both (SR/CSRI/370/2016)
- Grants position at the beginning of the financial year
  - Cash in Hand/Bank
  - Unadjusted advances
  - Total
- Details of grants received, expenditure incurred and closing balances: (Actuals)

Unspent Balances of Grants received years [figure as of Sl. No. 3 (iii)]	Interest Earned thereon	Interest deposited back to the Government	Grant received during the year			Total Available funds (1+2-3+4)	Expenditure incurred	Closing Balances (5-6)
			Sanction No. (i)	Date (ii)	Amount (iii)			
1	2	3	4			5	6	7
			SR/CSRI	11/01/2018	RS 9,06,600/-	RS 9,06,600/-	RS 2,20,198/-	RS 6,86,402/-

Component wise utilization of grants:

Grant-in-aid-General	Grant-in-aid-Salary	Grant-in-aid-creation of capital assets	Total
RS 70,198/-		RS 1,50,000/-	RS 2,20,198/-

Details of grants position at the end of the year

- Cash in Hand/Bank NIL
- Unadjusted Advances NIL
- Total RS 6,86,402/-



82  
66



**GENERAL FINANCIAL RULES 2017**  
Ministry of Finance  
Department of Expenditure

FORM GFR 12A

SANCTION NUMBER : SR/CSRI/370/2016

YEAR : 2017-2018

Certified that I have satisfied myself that the conditions on which grants were sanctioned have been duly fulfilled/are being fulfilled and that I have exercised following checks to see that the money has been actually utilized for the purpose for which it was sanctioned:

- (i) The main accounts and other subsidiary accounts and registers (including assets registers) are maintained as prescribed in the relevant Act/Rules/Standing instructions (mention the Act/Rules) and have been duly audited by designated auditors. The figures depicted above tally with the audited figures mentioned in financial statements/accounts.
- (ii) There exist internal controls for safeguarding public funds/assets, watching outcomes and achievements of physical targets against the financial inputs, ensuring quality in asset creation etc. & the periodic evaluation of internal controls is exercised to ensure their effectiveness.
- (iii) To the best of our knowledge and belief, no transactions have been entered that are in violation of relevant Act/Rules/standing instructions and scheme guidelines.
- (iv) The responsibilities among the key functionaries for execution of the scheme have been assigned in clear terms and are not general in nature.
- (v) The benefits were extended to the intended beneficiaries and only such areas/districts were covered where the scheme was intended to operate.
- (vi) The expenditure on various components of the schema was in the proportions authorized as per the scheme guidelines and terms and conditions of the grants-in-aid.
- (vii) It has been ensured that the physical and financial performance under..... (name of the scheme has been according to the requirements, as prescribed in the guidelines issued by Govt. of India and the performance/targets achieved statement for the year to which the utilization of the fund resulted in outcomes given at Annexure - I duly enclosed.
- (viii) The utilization of the fund resulted in outcomes given at Annexure - II duly enclosed (to be formulated by the Ministry/Department concerned as per their requirements/specifications.)
- (ix) Details of various schemes executed by the agency through grants-in-aid received from the same Ministry or from other Ministries is enclosed at Annexure-II (to be formulated by the Ministry/Department concerned as per their requirements/specifications).

Date: 28/05/2019

Place: Tirupate

Signature

Name: B. RAV SEKHARA  
Chief Finance Officer  
(Head of the Finance) **DIRECTOR**  
(FINANCE & ADMINISTRATION)  
Sree Vidyanikethan Educational Trust  
Selnath Nagar, A. RANGAMPET-517 102  
Chittoor (Dist), A.P.

(Strike out inapplicable terms)

Signature

Name: DR. P.C. KRISHNAMACHARY  
Head of the Organisation  
**PRINCIPAL**  
SREE VIDYANIKETHAN ENGINEERING COLLEGE  
(AUTONOMOUS)  
Sree Selnath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.



**2018-19**





Dr. Anita Aggarwal  
Scientist-E  
TDT Division  
Room No.1, Hall-J  
Telephone No.011- 26590343  
Email:anita.a@nic.in

भारत सरकार  
विज्ञान और प्रौद्योगिकी मंत्रालय  
विज्ञान और प्रौद्योगिकी विभाग  
टेक्नोलॉजी भवन, नया महरौली मार्ग  
नई दिल्ली- 110 016

GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE AND TECHNOLOGY  
DEPARTMENT OF SCIENCE AND TECHNOLOGY  
TECHNOLOGY BHAVAN, NEW MEHRAULI ROAD  
NEW DELHI-110 016

Dated .....

Dated: 18<sup>th</sup> May, 2018

D.O. No.

F. No. IDP/MED/39/2016

Subject: "Design and Development of Micro Cantilever based Biosensor for Early Detection of High Risk Human Papilloma Virus."

Dear Dr. V. R. Anitha,

We are glad to inform you that above mentioned proposal has been sanctioned at a total cost of Rs. 36,49,600/- i.e. Rs.22,99,600/- would be under the 'General Component' and Rs. 13,50,000/- would be under the head 'Capital Assets Component' for a period of Third years with first release of Rs. Rs.20,10,000/- [Out of which (Rs. 6,60,000/- for General component and Rs. 13,50,000/- for Capital Assets Component)].

The date on receipt of funds should be intimated to DST and will be considered as the date of commencement of project:-

Enclosed:

- d) Terms and Conditions
- e) Posting of expenditure on EAT module
- f) Manpower Norms

With warm regards,

Yours Sincerely  
*Anita*  
Dr. Anita Aggarwal  
Scientist 'E'

Copy to:

1. Dr. V. R. Anitha, Professor, Electronics and Communication Engineering, SreeSainath Nagar, A Rangampet-517102,
2. M/s NanoSniff Technology Pvt.Ltd, F-14, 1<sup>st</sup> Floor, Old Computer Science Building IITB Research Park, IIT Bombay, Powai, Mumbai, Maharashtra-400 076.



TMPLAA012310

ANDHRA BANK  
SRI VIDYA NIKETHAN  
ETIRUPATHI  
ANDHRA PRADESH -517102  
Br Phone : 0877-2247949  
IFSC CODE: ANDB0001540  
MICR CODE: 517011007

Date: 12-03-2019  
Time: 10:39:14  
Page: 1  
bm1540@andhrabank.co.in

STATEMENT OF ACCOUNT  
01-04-2018 to 12-03-2019  
Name : THE PRINCIPAL SVEC DST BIO MEDICAL  
SRI VIDYANIKETAN EDUCATIONAL INSTITUTIONS  
A RANGAMPET TIRUPATI  
TIRUPATHI

A/c.No: 154010100096800 INR  
Scheme: SAVINGS BANK ORD GEN PUB  
Cust ID: 53726926

ANDHRA PRADESH-517502

Deposits are insured up to Rs 1,00,000 by DICGC per customer, subject to change from time to time

DATE	PARTICULARS	CHQ.NO.	WITHDRAWALS	DEPOSITS	BALANCE
01-APR-2018	B/F				516.00Cr
17-Apr-2018	DUPLICATE STATEME NT CHARGES		30.00		486.00Cr
25-May-2018	NEFT/INWARD RTGS			6,60,000.00	6,60,486.00Cr
25-May-2018	NEFT/INWARD RTGS			13,50,000.00	20,10,486.00Cr
02-Jun-2018	DUPLICATE STATEME NT CHARGES		60.00		20,10,426.00Cr
06-Jun-2018	Int. Pd: 010318 t o 310518			1,354.00	20,11,780.00Cr
10-Jul-2018	SVEC	90076	1,50,000.00		18,61,780.00Cr
17-Jul-2018	DUPLICATE STATEME NT CHARGES		30.00		18,61,750.00Cr
16-Aug-2018	VELMURUGAN V 0899 SERVICE CLG	90077	6,880.00		18,54,870.00Cr
06-Sep-2018	Int. Pd: 010618 t o 310818			16,975.00	18,71,845.00Cr
11-Sep-2018	A HARI SESHU	90078	7,984.00		18,63,861.00Cr
03-Oct-2018	DUPLICATE STATEME NT CHARGES		30.00		18,63,831.00Cr
05-Oct-2018	A HARI SESHU	90079	27,300.00		18,36,531.00Cr
05-Nov-2018	MANOSNIFF TECHNOL OGIES P 0755 SERVICE CLG	90080	13,49,212.00		4,87,319.00Cr
05-Nov-2018	MANOSNIFF TECHNOL OGIES P 0755 SERVICE CLG	90082	67,260.00		4,20,059.00Cr
Page Total:			16,08,786.00	20,28,329.00	4,20,059.00Cr

Continued...

\*\*\* WHERE INDIA BANKS \*\*\*

ANDHRA BANK  
SRI VIDYA NIKETHAN  
ETIRUPATHI  
ANDHRA PRADESH -517102  
Br Phone : 0877-2247949  
IFSC CODE: ANDB0001540  
MICR CODE: 517011007

Date: 12-03-2019  
Time: 10:39:14  
Page: 2  
bm1540@andhrabank.co.in

STATEMENT OF ACCOUNT  
01-04-2018 to 12-03-2019  
Name : THE PRINCIPAL SVEC DST BIO MEDICAL  
SRI VIDYANIKETAN EDUCATIONAL INSTITUTIONS  
A RANGAMPET TIRUPATI  
TIRUPATHI

A/c.No: 154010100096800 INR  
Scheme: SAVINGS BANK ORD GEN PUB  
Cust ID: 53726926

ANDHRA PRADESH-517502

Deposits are insured up to Rs 1,00,000 by DICGC per customer, subject to change from time to time

DATE	PARTICULARS	CHQ.NO.	WITHDRAWALS	DEPOSITS	BALANCE
					4,20,059.00Cr
06-Nov-2018	BROUGHT FORWARD A HARI SESHU	90083	27,300.00		3,92,759.00Cr
19-Nov-2018	DUPLICATE STATEME NT CHARGES		30.00		3,92,729.00Cr

page 1



Please fill in this format only and send as word file. Do not make a table. This will be a part of agenda

**Item No.** **Reference: IDP/IND/.../.....**

**Project Title:** Design and Development of Micro Cantilever Based Biosensor for Early Detection of High Risk Human Papilloma Virus

**PI:** Dr. V. R. Anitha

**Co-PI:** 1. Mr. P. G. Gopinath, Research Scholar,  
Department of Electronics and Communication Engineering,  
JNTUA, Ananthapuramu, Andhrapradesh.  
2. Dr. K. S. Rajkumar, Surgical Oncologist,  
Department of Oncology, K.G.Hospital, Coimbatore.

**Total Cost:** ₹ 36,49,600/-

**Duration:** 3 yrs

**Manpower:** Junior Research Fellow (JRF)

**Equipment sanctioned under project:** OmniCant (Liquid Analysis of Biomolecules Model-OC-11

**Equipment purchased under project:** OmniCant (Liquid Analysis of Biomolecules Model-OC-11

**Industrial Partner:** NanoSniff Technologies Pvt. Ltd., IIT Bombay, Powai, Mumbai – 400076.

**Industry contribution:** Providing Biosensor Microcantilevers, Prototype of the Instrumentation.

**Objectives:**

- Design of MEMS materials for Micro Cantilever.
- Design and development of different models for Micro Cantilever based bio sensor for High Risk HPV detection.
- Design and development of novel biosensor sensor model for High Risk HPV detection consist of arrays of biosensor unit.
- Design of reliable and fast signal conditioning circuits for proposed micro bio sensor.
- Characterization and Fabrication of Micro Cantilever.
- To develop a prototype device this will be clinically evaluated at K.G.Hospital, Coimbatore.
- To make modifications, if any; and to make a final prototype device.

**Date of Start / Completion :** 18<sup>th</sup> May 2018 (Extended till 2021)

**Released so far** Vide Sanction order dated IDP/MED/39/2016, Dated: 18<sup>th</sup> May 2018



se 88

**Progress Report: (technical results 300 words) and achievements:  
patents/publications/manpower trained/participation in seminar/proceedings/awards/etc**

The primary objective is to review the microcantilever based sensor used for biosensing applications. The study has been done on biosensor, microcantilever based sensor, its principle and modes, and the importance of MEMS based device in the detection and its significance. Microcantilever play an important role in the healthcare applications and it is the finest platform proved to be the best option over available time consuming, expensive analytical instruments. Microcantilever is one of the successful mass production products for inertial applications because of maximum sensitivity. The sensitivity has been observed that the cantilever improved the sensitivity by introducing various techniques. Due to these advantages, it can be used for the various biomedical applications to detect the diseases at early stages. Here the focus is on the study of microcantilever sensors derived from atomic force microscopy cantilevers for various biomedical applications especially for Cervical Cancer detection.

- Hence, the mathematical modeling, a theoretical study has been conducted in order to structure, operation, and characteristics of microcantilever.
- Designed and developed the different models of Micro cantilever based bio sensor for High Risk HPV detection.
- Study has been done on various MEMS materials for Micro Cantilevers, simulated the designed cantilever with these materials and chosen the best material for the cantilever.
- Simulations of designed Micro Cantilever was done and observed their physical and electrical characteristics its effects, and done the comparison among the various designed structures of novel microcantilevers.

#### ACHIEVEMENTS

##### PATENTS

Filed a Patent with **CBR No. 11631**  
**Ref No. E-12/306/2016/CHE**  
**App.No.201641018534**

##### PUBLICATIONS

- Dr. V. R. Anitha, P. G. Gopinath, "Review of Microcantilever Based Biosensor for Biomedical Applications," IEEE International Conference on New Trends in Engineering & Technology (ICNTET), GRT Institute of Engineering and Technology, Tiruttani, Tamilnadu, 7th & 8th September 2018.



**MANPOWER TRAINED**

- Junior Research Fellow
- Faculty
- PG Students

**SEMINAR/CONFERENCES/FDP ATTENDED**

- Attended and presented a paper in IEEE International Conference on New Trends in Engineering & Technology (ICNTET), GRT Institute of Engineering and Technology, Tiruttani, Tamilnadu, 7th & 8th September 2018.



2018-19

90

90

No.SR/WOS-A/ET-72/2017 (G)  
Government of India  
Ministry of Science & Technology  
Department of Science & Technology  
KIRAN DIVISION

Technology Bhawan  
New Mehrauli Road  
New Delhi-110016  
Dated 08.08.2018

**ORDER**

**Sub:** Financial approval of the project under Women Scientist Scheme A (WOS-A) entitled "VLSI design and implementation of optimized turbo channel coding system for advanced wireless communication systems."

PI Ms Sujatha Elukuru, Department of Electronics Communications Engineering, Sree Vidyanikethan Engineering College, Sri Sainatha Nagar A, Rangampet, Tirupati-517102, AP.

Sanction of the President is hereby accorded to the approval of the above mentioned project at a total cost of Rs 15,70,000/- (Rupees Fifteen Lakh Seventy Thousand only) for a duration of 2 years. The detailed breakup of the grant for General (Rs.12,20,000/-)as well as Capital (Rs. 3,50,000/-) Components are given below:

Sl. No.	Heads	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	Total
A.	<b>Non-Recurring (Capital Items)</b>			
	Equipments: Computer, FPGA evaluation kit, RF evaluation boards	3,50,000/-	-----	3,50,000/-
B.	<b>Recurring(General)</b>			
	Fellowship for M.Tech@ Rs 40,000/-	4,80,000/-	4,80,000/-	9,60,000/-
	Consumables	25,000/-	25,000/-	50,000/-
	Contingencies	15,000/-	15,000/-	30,000/-
	Travel	20,000/-	20,000/-	40,000/-
C.	<b>Overhead</b>	87,500/-	52,500/-	1,40,000/-
D.	<b>Total of Recurring Grant (B+C)</b>	<b>6,27,500/-</b>	<b>5,92,500/-</b>	<b>12,20,000/-</b>
E.	<b>GRAND TOTAL (A+D)</b>	<b>9,77,500/-</b>	<b>5,92,500/-</b>	<b>15,70,000/-</b>

2. Sanction of the grant is subject to the conditions as detailed in website [www.online-wosa.gov.in](http://www.online-wosa.gov.in)

3. The sanction of the President is also accorded to the release of Rs 6,77,500/- (Rupees Six Lac Seventy Seven Thousand Five Hundred only) under "General Component" to The Principal, Sree Vidyanikethan Engineering College, Sri Sainatha Nagar A, Rangampet, Tirupati-517102, AP being the first installment of the grant for the year 2018-2019 for implementation of the above mentioned project.

4. This sanction is subject to the condition that the grantee organization will furnish to the Department of Science & technology, financial year wise Utilization Certificate (UC) in the proforma prescribed as per GFR 2017 and audited statement of expenditure (SE) along with up to date progress report at the end of each financial year duly reflecting the interest earned / accrued on the grants received under the project. This is also subject to the condition of submission of the final statement of expenditure, utilization certificate and project completion report within one year from the scheduled date of completion of the project.

5. The grantee organization will have to enter & upload the Utilization Certificate in the PFMS portal besides sending it in physical form to this Division. The subsequent/final instalment will be released only after confirmation of the acceptance of the UC by the Division and entry of previous Utilization Certificate in the PFMS.

6. If the grant has been released under capital head through separate sanction order under the same project for purchase of equipment(s), separate SE/UC has to be furnished for the released Capital head grant.

7. The grant-in-aid being released is subject to the condition that

(a) A transparent procurement procedure in line with the Provisions of General Financial Rules 2017 will be followed by the Institute/ Organization under the appropriate rules of the grantee organization while procuring capital assets sanctioned for the above mentioned project and a certificate to this effect will be submitted by the Grantee organization immediately on receipt of the grant.

(b) While submitting Utilization Certificate/Statement of Expenditure, the organization has to ensure submission of supporting documentary evidences with regard to purchase of equipment/capital assets as per the provisions of GFR 2017. Subsequent release of grant under the project shall be considered only on receipt of the said documents.

Contd /2



8. The Grantee Institute (GI) will maintain separate audited as per GFR 2017 Rule 230 (B) account for the project and the entire amount of grant will be kept in an interest bearing bank account. For Grants released during FY 2017-2018 and onwards interest and other earnings, against released Grant shall be remitted to Consolidated Fund of India, immediately after finalization of accounts, as it shall not be adjusted towards future release of Grant. A certificate to this effect shall have to be submitted along with statement of expenditure/utilization certificate for considering subsequent release of grant/closure of project accounts. GI should also follow Rule 230 (17) of GFR 2017.

9. DST reserves sole rights on the assets created out of grants. Assets acquired wholly or substantially out of government grants (except those declared as obsolete and unserviceable or condemned in accordance with the procedure laid down in GFR 2017), shall not be disposed of without obtaining the prior approval of DST.

10. The Principal Investigator under Women Scientist Scheme is not permitted to withdraw any emoluments/ salary/fellowship from any other project either supported by DST or by any other funding agency.

11. The account of the grantee organization shall be open to inspection by the sanctioning authority and audit (both by C & AG of India and Internal Audit by the Principal Accounts Office of the DST), whenever the organization is called upon to do so, as laid down under Rule 236(1) of General Financial Rules 2017.

12. Due acknowledgement of technical support / financial assistance resulting from this project grant should mandatorily be highlighted by the grantee organization in bold letters in all publications / media releases as well as in the opening paragraphs of their Annual Reports during and after the completion of the project.

13. Failure to comply with the terms and conditions of the Bond will entail full refund with interest in terms of Rule 231 (2) of GFR 2017.

14. The expenditure involved is debit to Demand No.84, Department of Science & Technology for the year 2018-19:

3425	Other Scientific Research (Major Head)
60	Others (Sub-Major Head)
60.200	Assistance to other Scientific Bodies (Minor Head)
68	Science and Technology Institutional and Human Capacity Building (Sub Head)
01	Disha Programme for Women in Science
68.01.31	Grants-in-aid General for the year 2018-2019 (Voted)
	(Previous: Disha Programme for Women in Science 3425.60.200.55.01.31)

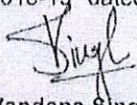
15. The amount of Rs 6,77,500/- (Rupees Six Lac Seventy Seven Thousand Five Hundred only) will be drawn by the Drawing and Disbursing Officer, DST and will be disbursed Principal, Sree Vidyanikethan Engineering College, Sri Sainatha Nagar A, Rangampet, Tirupati-517102, AP. The bank details for electronic transfer of funds through RTGS are given below:-

Institute name	: Sree Vidyanikethan Engineering College,
Bank Name	: Andhra Bank
Account Number	: 154010100108293
Branch	: SVEC Extbsuib
IFSC code	: ANDB0001540

16. The NGO DARPAN Portal Unique Id of Host Institute is AP/2016/0113056.

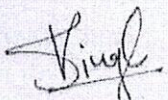
17. As per Rule 234 of GFR 2017, this sanction has been entered at S. No. 217 in the register of grants maintained in the KIRAN Division for scheme (KIRAN: WOS-A).

18. This issues with the concurrence of IFD Vide their Concurrence Dy.No/904/2018-19 dated 18.06.2018.

  
(Vandana Singh)  
Scientist-E

Copy for information and necessary action to:-

1. The Director of Audit (CW & M-I), AGCR Building, IP Estate, New Delhi-110 002.
2. Copy with two spare copies of the sanction to the Drawing & Disbursing Officer, DST, Cash Section.
3. The Principal, Sree Vidyanikethan Engineering College, Sri Sainatha Nagar A, Rangampet, Tirupati-517102, AP.
4. Dr C. Subhas, Professor, Department of Electronics Communications Engineering, Sree Vidyanikethan Engineering College, Sri Sainatha Nagar A, Rangampet, Tirupati-517102, AP.
5. Ms Sujatha Elukuru, Department of Electronics Communications Engineering, Sree Vidyanikethan Engineering College, Sri Sainatha Nagar A, Rangampet, Tirupati-517102, AP.
6. Pay & Accounts Officer, DST, New Delhi.
7. IFD, DST, New Delhi.
8. Sanction Folder.

  
(Vandana Singh)  
Scientist-E



2018-19

SREE VIDYANIKETHAN EDUCATIONAL TRUST  
UNIT: SREE VIDYANIKETHAN ENGINEERING COLLEGE  
SREE SAINATH NAGAR, A.RANGAMPET

SCHEDULE - II (Incomes)

PARTICULARS		Amount Rs.	Amount Rs.
A	<u>Fee from Students</u>	561,413,030	
	Tuition fee	3,648,000	
	Admission/Recognition Fee	6,277,986	
	Special Fee	2,268,660	
	Applications/Registrations Fee	3,959,550	
	Transport Fee	6,176,300	
	Book Bank	10,014,450	
	JNTU Fee	1,117,600	
	JNTU DLR Fee	891,150	
	JNTU Affiliation Fee	1,171,650	
	JNTU Sports Fee	246,750	
	Sports & Games Fee	745,184	
	Miscellaneous Receipts	3,945,000	
	Information & Communication Fee	20,555,123	
	Placement & Training Fee	933,450	
	Communication Skill Fee	844,200	624,208,083
	Students Safety Insurance		
	<u>Exam Cell Fee</u>	325,000	
	Condonation Fee	18,332,080	
	Examination Fee	1,154,000	
	Provisional Certificate Fee	505,102	
	SBTET AP-Exams	54,950	
	JEE Main-2018	311,000	20,682,132
	Transcripts Fee		
	Service Charges		
B.	<u>Income from Grants/Sponsorships:</u>		
	AICTE Grants - Seminar & FDP, SPDP	724,034	
	AICTE-PMKVY TI Skill Development Programme	1,093,530	
	Science and Engineering Research	0	
	Department of Biotechnology Fund (DST) - CSRI	2,010,000	
	AICTE Grants - MODROBS	0	
	Mohan Mantra Registration Fee	22,500	
	DST Fist Programme	0	
	DST-NIMAT	80,000	
	Grant-NPTEL	90,000	
	Grant-Women Scientist	977,500	
	Grant-UGC	36,000	
	Grant-APSSDC	428,012	
		5,461,576	
	Less: Refund of Unspent Grant (ISRO Respond Project)	0	5,461,576
C.	<u>Other Income</u>		
	Technical Skill Development Programme	15,795	
	Techno Cultural Fest Mohan Mantra	1,274,494	
	Interest on SBs & FDRs	5,282,910	
	Interest on A.C.D.	98,281	
	Adjustments relating to earlier years		6,671,480

38



*M. Srinivasulu*  
CHAIRMAN  
SREE VIDYANIKETHAN EDUCATIONAL TRUST  
SREE SAINATH NAGAR, A. RANGAMPET  
CHITTOOR DIST - 517 162, A.P.



GFR 12 - A  
[(See Rule 238 (1)]

73 93

FORM OF UTILIZATION CERTIFICATE  
FOR AUTONOMOUS BODIES OF THE GRANTEE ORGANIZATIONUTILIZATION CERTIFICATE FOR THE YEAR 2018-19 in respect of Non-Recurring  
CREATION OF CAPITAL ASSETS

1. Name of the Scheme : Women Scientist Scheme (WOS-A)  
 2. WOS-A Reference No: SR/WOS-A/ET-72/2017(G)  
 3. Principal Investigator: Ms. Sujatha Elukuru  
 4. Whether recurring or non-recurring grants: Non-recurring  
 5. Grants position at the beginning of the Financial year  
 (i) Cash in Hand/Bank: Nil  
 (ii) Unadjusted advances: Nil  
 (iii) Total: Nil  
 6. Details of grants received, expenditure incurred and closing balances: (Actuals)

Unspent Balances of Grants received years [figure as at Sl. No. 3 (iii)]	Interest Earned thereon	Interest deposited back to the Government	Grant received during the year			Total Available funds (1+2-3+4)	Expenditure incurred	Closing Balances (5-6)
			Sanction No. (i)	Date (ii)	Amount (iii)			
1	2	3.	4			5	6	7
Nil	Nil	Nil	SR/WOS-A/ ET-72/2017(G)	08.08.2018	3,50,000.00	3,50,000.00	3,50,000.00	Nil

## Component wise utilization of grants:

Grant-in-aid-creation of capital assets	Total
3,50,000.00	3,50,000.00

## Details of grants position at the end of the year

- (i) Cash in Hand/Bank: Nil  
 (ii) Unadjusted Advances: Nil  
 (iii) Total: Nil

*Sujatha Elukuru*  
Signature of PI

Date 31/07/19

Signature

B. Ravi Sekhar  
Name... DIRECTOR Finance Officer (Head

(FINANCE & ADMINISTRATION)  
 SREE VIDYANIKETHAN EDUCATIONAL TRUST  
 Sree Sainath Nagar, A. RANGAMPET-517 102  
 Chittoor (Dist), A.P.

*P.C. Kashyam*  
 (Dr. P.C. KASHYAMACHARY)  
 Signature

Name..... Head of the Organisation

(With seal)  
 Date 31/7/2019  
 PRINCIPAL  
 SREE VIDYANIKETHAN ENGINEERING COLLEGE  
 (AUTONOMOUS)  
 Sree Sainath Nagar, A. RANGAMPET  
 Chittoor (Dist.) - 517 102, A.P., INDIA.



GFR 12 - A  
[(See Rule 238 (1)]FORM OF UTILIZATION CERTIFICATE  
FOR AUTONOMOUS BODIES OF THE GRANTEE ORGANIZATIONUTILIZATION CERTIFICATE FOR THE YEAR 2018-19 in respect of Recurring  
GRANTS-IN-AID/SALARIES

1. Name of the Scheme : Women Scientist Scheme (WOS-A)  
 2. WOS-A Reference No: SR/WOS-A/ET-72/2017(G)  
 3. Principal Investigator: Ms. Sujatha Elukuru  
 4. Whether recurring or non-recurring grants: Recurring  
 5. Grants position at the beginning of the Financial year  
 (i) Cash in Hand/Bank: Nil  
 (ii) Unadjusted advances  
 (iii) Total: Nil  
 6. Details of grants received, expenditure incurred and closing balances: (Actuals)

Unspent Balances of Grants received years [figure as at Sl. No. 3 (iii)]	Interest Earned thereon	Interest deposit ed back to the Govern - ment	Grant received during the year			Total Available funds (1+2-3+4)	Expenditure incurred	Closing Balances (5-6)
			Sanction No. (i)	Date (ii)	Amount (iii)			
1	2	3	4	5	6	7		
0.00	16,218.00	0.00	SR/WOS-A/ET-72/2017(G)	08.08.2018	6,27,500.00	6,43,718.00	5,91,043.00	52,675.00

Component wise utilization of grants:

Grant-in-aid- General	Grant-in-aid- Salary	Total
1,35,559.00	4,55,484.00	5,91,043.00

Details of grants position at the end of the year

- (i) Cash in Hand/Bank: 52,291/-  
 (ii) Unadjusted Advances: 384/-  
 (iii) Total: 52,675/-

Signature of PI

Date: 1/7/19

Signature

B. Ravi Sekhar  
Name: Chief Finance Officer

(FINANCE &amp; ADMINISTRATION)

SREE VIDYANIKETHAN EDUCATIONAL TRUST

Sree Sainath Nagar, A. RANGAMPET-517 102

Chittoor (Dist), A.P.

P.C. Krishna  
(Dr. P.C. KRISHNAMOACHARY)  
Signature 31/07/2019

Name..... Head of the Organization

(With seal)

Date PRINCIPAL  
SREE VIDYANIKETHAN ENGINEERING COLLEGE  
(AUTONOMOUS)  
Sree Sainath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.



**FAST CONTENT BASED SEARCH, NAVIGATION AND  
RETRIEVAL SYSTEM FOR E-LEARNING  
(MRP-6683/16(SERO/UGC dt.30.06.2017)**

*Project report*

**Submitted**

To



ज्ञान-विज्ञान विमुक्तये

**UNIVERSITY GRANTS COMMISSION**

South-Eastern Regional Office, Post Box No. 152, A.P.S.F.C.  
Building - IV Floor, 5-9-194, Chirag Ali Lane,  
HYDERABAD – 500 001.

**By**

**Dr. K. RAMANI**

Principal Investigator

Professor, Department of Information Technology

**SREE VIDYANIKETHAN ENGINEERING COLLEGE (AUTONOMOUS),**

Sree Sainath Nagar, A.Rangampet, Chandragiri Mandal,  
Chittoor Dist. A.P - 517 102.

**OCTOBER-2019**



## CONTENTS

96

96

1. Statement of expenditure
2. Utilization certificate
3. Annual Report of the work done on the Project (Annexure-IV)
4. Final Report of the work done on the Project (Annexure-V)
5. Objectives of the Project
6. Achievements from the Project
7. Summary of Findings
8. Contribution to the Society
9. Assert certificate
10. Accession certificate
11. Publications out the Project
12. Technical report (Annexure-VI)



**UNIVERSITY GRANTS COMMISSION**  
**BAHADUR SHAH ZAFAR MARG**  
**NEW DELHI - 110 002**

**STATEMENT OF EXPENDITURE IN RESPECT OF MINOR RESEARCH PROJECT**

1. Name of Principal Investigator : Dr. Kasarapu Ramani
2. Dept. of PI : Information Technology  
 Name of College : Sree Vidyanikethan Engineering College  
 (Autonomous), A. Rangampet.
3. UGC approval Letter No. and Date : F.No:4-4/2015-16(MRP/UGC-SERO), and  
 October, 2016
4. Title of the Research Project : Fast Content based Search, Navigation and  
 Retrieval System for e-Learning.
5. Effective date of starting the project : 01 July 2017
6. a. Period of Expenditure : From 01-07-2017 to 31-10-2019  
 b. Details of Expenditure :

S.N o.	Item	Amount (Rs.) Approved	Amount (Rs.) Sanctioned (for 1 <sup>st</sup> year)	Expenditure Incurred (for 1 <sup>st</sup> year) (Rs.)	Amount (Rs.) Sanctioned (for 2 <sup>nd</sup> year)	Expenditure Incurred (for 2 <sup>nd</sup> year) (Rs.)
i.	Books & Journals	30,000.00	30,000.00	29,898.00	0.0	0.0
ii.	Equipment	3,20,000.00	3,20,000.00	3,20,000.00	0.0	0.0
	<b>Total</b>	<b>3,50,000.00</b>	<b>3,50,000.00</b>	<b>3,49,898.00</b>	<b>0.0</b>	<b>0.0</b>
iii.	Contingency including special needs	15,000.00	7,500.00	7,641.00	6,000.00	5,939.00
iv.	Field work/Travel (details in the proforma)	30,000.00	15,000.00	15,010.00	12,000.00	12,830.00
v.	Hiring Services	0.0	0.0	0.0	0.0	0.0
vi.	Chemicals & Glassware	0.0	0.0	0.0	0.0	0.0
	<b>Total</b>	<b>45,000.00</b>	<b>22,500.00</b>	<b>22,651.00</b>	<b>18,000.00</b>	<b>18,769.00</b>
	<b>Grand Total</b>	<b>3,95,000.00</b>	<b>3,72,500.00</b>	<b>3,72,549.00</b>	<b>18,000.00</b>	<b>18,769.00</b>



- A) Amount (Rs/-) approved: 3,95,000/-
- B) Amount (Rs/-) sanctioned for 1<sup>st</sup> year: 3,72,500/-
- C) Amount (Rs/-) sanctioned for 2<sup>nd</sup> year: 18,000/-

B+C=A

(3,72,500)+(18,000)=3,90,500/-

- D) Expenditure (Rs/-) Incurred for 1<sup>st</sup> year: 3,72,549/-
- E) Expenditure (Rs/-) Incurred for 2<sup>nd</sup> year: 18,769/-

D + E = A

(3,72,549/-)+(18,769/-)=3,91,318/-

- 7. if as a result of check or audit objection some irregularly is noticed at later date, action will be taken to refund, adjust or regularize the objected amounts.
- 8. It is certified that the grant of Rs. 3,90,500/- (Rupees Three Lakhs Ninty Thousand and Five Hundred only) received from the University Grants Commission under the scheme of support for Minor Research Project entitled **Fast Content based Search, Navigation and Retrieval System for e-Learning** vide UGC letter No. **F. No:4-4/2015-16 (MRP/UGC-SERO)** dated **October, 2016** has been fully utilized for the purpose for which it was sanctioned and in accordance with the terms and conditions laid down by the University Grants Commission.

K. Ra

**SIGNATURE OF PRINCIPAL INVESTIGATOR**  
**Dr. K. RAMANI**  
 Professo. & Head  
 Dept. of Information Technology  
 Sree Vidyanikethan Engineering College  
 A. RANGAMPET-517 102

*[Handwritten Signature]*

**PRINCIPAL**  
**PRINCIPAL**  
**SREE VIDYANIKETHAN ENGINEERING COLLEGE**  
**(AUTONOMOUS)**  
 Sree Sainath Nagar, A. RANGAMPET  
 Chittoor (Dist.) - 517 102, A.P., INDIA.

**STATUTORY AUDITOR**

*[Handwritten Signature]*  
**M. RAJAGOPAL REDDY, M.M.C. 024619**  
**B.Sc., M.A., M.COM., F.C.A., D.I.S.A.**  
**CHARTERED ACCOUNTANT**  
 10/80, Royal Nagar, TIRUPATI



99  
99

Annexure - II

UNIVERSITY GRANTS COMMISSION  
BAHADUR SHAH ZAFAR MARG  
NEW DELHI - 110 002

STATEMENT OF EXPENDITURE INCURRED ON FIELD WORK (2<sup>nd</sup> year)

Name of the Principal Investigator : Dr. Kasarapu Ramani

Name of the Place Visited	Duration of the Visit		Mode of Journey	Expenditure Incurred (Rs.)
	From	To		
PES University, Bangalore (05.08.2019)	Tirupati	Bangalore	By Taxi	6,000.00
IIT, Hyderabad (19.10.2019)	Tirupati	Hyderabad	By Train	3,710.00
VIT, Chennai (26.10.2019)	Tirupati	Chennai	By Taxi	3,120.00
<b>Total</b>				<b>12,830.00</b>

*K. Ramani*

SIGNATURE OF THE  
PRINCIPAL INVESTIGATOR  
Dr. K. RAMANI

Professo. & Head  
Dept. of Information Technology  
Sree Vidyanikethan Engineering College  
A. RANGAMPET-517 102

*P. Venkatesh*

PRINCIPAL

PRINCIPAL

SREE VIDYANIKETHAN ENGINEERING COLLEGE  
(AUTONOMOUS)  
Sree Sainath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.

*M. Rajagopal Naidu*

STATUTORY  
AUDITOR

M. RAJAGOPAL NAIDU, M.NO. 024819  
B.Sc., M.A., M.Com., F.C.A., D.I.S.A.,  
CHARTERED ACCOUNTANT  
10/90, Royal Nagar, TIRUPATI



UNIVERSITY GRANTS COMMISSION  
BAHADUR SHAH ZAFAR MARG  
NEW DELHI - 110 002

Utilization certificate

Certified that the grant of Rs. 3,90,500/- (Rupees Three Lakh Ninty Thousand and Five Hundred only) received from the University Grants Commission under the scheme of support for Minor Research Project entitled **Fast Content based Search, Navigation and Retrieval System for e-Learning** vide UGC letter No. **F No:4-4/2015-16(MRP/UGC-SERO)** dated **October, 2016** has been fully utilized for the purpose for which it was sanctioned and in accordance with the terms and conditions laid down by the University Grants Commission.

*K. Ramani*  
SIGNATURE OF THE  
PRINCIPAL INVESTIGATOR  
Dr. K. RAMANI  
Professor & Head  
Dept. of Information Technology  
Sree Vidyanikethan Engineering College  
A. RANGAMPET-517 102

*P. Chellappa*  
PRINCIPAL  
PRINCIPAL  
SREE VIDYANIKETHAN ENGINEERING COLLEGE  
(AUTONOMOUS)  
Sree Sainath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.

*M. Rajagopal Naidu*  
STATUTORY  
AUDITOR  
M. RAJAGOPAL NAIDU, M.NO. 024819  
B.Sc., M.A., M.Com., F.C.A., D.I.S.A.,  
CHARTERED ACCOUNTANT  
10/80, Royal Nagar, TIRUPATI



UNIVERSITY GRANTS COMMISSION  
BAHADUR SHAH ZAFAR MARG  
NEW DELHI - 110 002.

**Annual Report of the work done on the Minor Research Project.**

(Report to be submitted within 6 weeks after completion of each year)

- |    |   |  |
|----|---|--|
| 1. | Project report No.  | Final (After completion of project)<br>Dated: 31.10.2019.                    |
| 2. | UGC Reference No.   | F. No:4-4/2015-16(MRP/UGC-SERO)<br>dated_October, 2016                       |
| 3. | Period of report  | from 08-01-2019_to 31-10-2019  |
| 4. | Title of research project   | Fast Content based Search, Navigation<br>and Retrieval System for e-Learning |
| 5. | (a) Name of the Principal Investigator                                  | Dr. Kasarapu Ramani  |
|    | (b) Dept.   | Information Technology   |
|    | (c) College where work has progressed                                   | Sree Vidyanikethan Engineering<br>College (Autonomous), A. Rangampet         |
| 6. | Effective date of starting of the project                               | 01-07-2017   |
| 7. | Grant approved and expenditure incurred during the period of the report |  |
|    | (a) Total amount approved   | Rs. 3,90,500/-   |
|    | (b) Total expenditure   | Rs. 3,91,318/-   |
|    | (c) Report of the work done   | Please Refer Annexure-VI   |

i. Brief objective of the project:

- To Design and Develop Automatic Lecture video segmentation techniques.
- To Design and Develop Low and high level feature extraction techniques for video lectures.
- To Design and Develop Video ranking system.
- To Design and Develop Automated indexing and search and techniques.

ii. Work done so far and results achieved and publications, if any, resulting from the work (Give details of the papers and names of the journals in which it has been published or accepted for publication:



Details of Paper Presented in conference:

S.No.	Title of the paper	Name of the conference/seminar	International / National	Location where the event is organized	Month and Year of Presentation
1.	Modified Global Pixel Difference Method for Key Frame Detection in Lecture Videos	IEEE International Conference on Electrical, Electronics Computers, Communication, Mechanical and Computing (EECCMC-2018)	International	Priyadarshini Engineering College, Vanyambadi,	January, 2018.
2.	Enhanced Speech Recognition with Audio Processing using Adobe Audition	National Women's Conference on Technological Innovations (NWCOTI-2018)	National	KL Deemed to be University, Vaddeswaram	28th-29th December 2018
3.	A Hybrid Technique for Fast Audio Content based Video Retrieval System for e-Lecture Videos	International Conference on New Trends in Engineering and Technology. ICNTET-2018 (IEEE)	International	GRT Institute of Engineering and Technology, Chennai	7-8 September 2018

Paper publications:

S.No.	Title of the Paper	Name of the Journal	Month and Year of Publication
1.	An experimental Comparative study on Slide change detection in Lecture Videos	International Journal of Information Technology (Springer)	June, 2018
2.	An Optimized e-Lecture Video Retrieval based on Machine Learning Classification	International Journal of Engineering and Advanced Technology, Vol.8, Issue.6 (Scopus Indexed).	August, 2019
3.	An Optimized e-Lecture Video Search and Indexing framework	International Journal of Signal, Image and Video Processing (Scopus Indexed)	Communicated

iii. Has the progress been according to original plan of work and towards achieving the objective. if not, state reasons.

**Yes. The progress is according to the original plan of work.**

iv. Please enclose a summary of the findings of the study. One bound copy of the final report of work done may also be sent to the concerned Regional Office of the UGC.

**A copy of the summary of the findings of the research project are enclosed in Annexure-VI**

v. Any other information: Nil.

*K. Ra*  
SIGNATURE OF THE PRINCIPAL INVESTIGATOR

*P. Chalap*  
PRINCIPAL  
PRINCIPAL  
SREE VIDYANIKETHAN ENGINEERING COLLEGE  
(AUTONOMOUS)  
Sree Sainath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.



## SUMMARY OF FINDINGS

103

- ❖ Algorithms are developed for Automatic Lecture Video segmentations using Modified Global Pixel Difference (key frame detection) techniques based on text content available in lecture videos, to navigate to the required part of the video.
- ❖ A hybrid technique by combining TFIDF and Cosine Similarity based on audio content for lecture video search and retrieval system is developed and performance is studied with different accent and proposed method is compared with existing methods such as Linear, Knuth Morris Pratt (KMP) and search based on First Character Match and the proposed method is taking less time for search compared to other methods. The work is carried on using video lectures captured through Panasonic Professional Camcorder within college campus.
- ❖ Resampled audio signal is better suited for accurate text transcript generation than raw audio signal. It is also observed that the accent of the instructor influences the text transcript generation and the experimental results proved that Indian accent is more appropriate than American accent. It is found that on an average 85% of documents are ranked in a proper order, by which video ranking system is implemented.
- ❖ Pre-processing of audio component present in video lectures plays a major role in accuracy of finding appropriate lecture video portion. Hence, Enhanced speech recognition is implemented by utilizing the Noise Removal, Vocal Enhancer, EQ Filter and Unify Loudness effects provided by Adobe Audition CC. Experimental results show that enhanced recognition is achieved with the audio file subjected to these pre-processing. The work is carried on the lecture videos downloaded from the NPTEL repository.
- ❖ A framework for automatic indexing and searching videos depending on the innate content of the video is developed. Video content analysis is done using the Merged Bounding Box (MBB) text detector based on Convolutional Neural Network (CNN). For audio content analysis, Google Speech Recognition technology is used. The keywords for indexing are created by applying the TextRank algorithm on the extracted text documents. An optimized search is achieved based on the trained Naive Bayes Classification and K-Means Clustering models. The performance of the search is assessed based on the accuracy and time taken for search. Further the improved accuracy of the proposed indexing technique is presented in comparison with the accepted chain indexing technique. The video lecture corpus of 100 videos downloaded from YouTube are used for experimentation. The indexed results are ranked in accordance with the scores calculated based on TFIDF and Cosine Similarity.



## ACHIEVEMENTS FROM THE PROJECT

104

- ❖ This work helped in developing key frame identification technique: Modified Global Pixel Difference, based on text content available in lecture videos in less processing time with more precision compared to other existing methods.
- ❖ The keyword extraction is performed on the segmented WAV file extracted from the lecture video file with and without resampling on both American and Indian accents, and it is observed that resampling improves the efficiency of the methodology by about 3%-5% in precision and recall for Indian accent over American accent.
- ❖ A hybrid technique based on TFIDF and Cosine similarity is developed to search for appropriate lecture videos from Youtube video lecture repository and the developed method is more than 80% accurate and also it is found that on an average 85% of videos are ranked in a proper order.
- ❖ Audio Preprocessing using Adobe Audition for Enhanced Speech Recognition is done to enhance efficiency of Speech Recognition for audio content of lecture videos. Results show that the efficiency of Speech Recognition achieved by the preprocessed audio without noise removal is approximately increased by around 2%. Implementing the noise removal further improved the Speech Recognition efficiency. This percentage varies with the amount of noise present in the recordings.
- ❖ Fast Searching, Ranking and Video Retrieval System for e-Lecture Videos is developed using Machine Learning Classification techniques. The values of recall, precision, F-score and accuracy computed for different search terms on the implemented Naïvebase, Support Vector Machine and Logistic Regression models. The search time taken by the implemented system drastically reduced by around 5-7 times when compared with the normal search operation. Youtube video lectures are considered for experimentation.
- ❖ An Optimized e-Lecture Video Search and Indexing framework is developed, using bounding boxes technique, where Regular search, Search based on Machine Learning Classification (MLC) and Search based on the topic clustering on top of MLC model (Topics on MLC) are also implemented. The results illustrate that the proposed algorithm for the search based on topic clustering on the classification model achieved state of art results both in terms of accuracy and the time taken. By the implementation of ML classification model, the search is restricted to the specific category. By clustering the documents of a specific category into topics, the search is further restricted to the cluster that is closest to the search query. Therefore, with the topic clustering on the MLC model more relevant and refined results are achieved. However the efficiency of the entire model depends wholly on the accuracy achieved by the trained classification and clustering models. With the proposed model, the time taken for search is drastically reduced.



## CONTRIBUTION TO SOCIETY

105  
105

In recent years there has been a growing interest in online-learning by individuals leading to self-learning. But, huge video lecture repositories and lengthy videos may distract individual interest towards the selected topics. Hence, in this project methods are developed for searching most appropriate lecture videos from large repositories and navigating the concerned part of the video using Machine Learning techniques, so that the user can get the required topic of interest and ranking of videos based on their relevancy with topic is done.







**UNIVERSITY GRANTS COMMISSION  
BAHADUR SHAH ZAFAR MARG  
NEW DELHI – 110 002.**

**PROFORMA FOR SUBMISSION OF INFORMATION AT THE TIME OF SENDING THE  
FINAL REPORT OF THE WORK DONE ON THE PROJECT**

- |     |  |   |  |
|-----|--|---|--|
| 1.  | TITLE OF THE PROJECT                                       | : | Fast Content based Search,<br>Navigation and Retrieval System for<br>e- Learning   |
| 2.  | NAME AND ADDRESS OF THE<br>PRINCIPAL INVESTIGATOR          | : | Dr. Kasarapu Ramani<br>Professor,<br>Dept. of Information Technology,<br>Sree Vidyanikethan Engineering<br>College (Autonomous),<br>A. Rangampet |
| 3.  | NAME AND ADDRESS OF THE<br>INSTITUTION                     | : | Sree Vidyanikethan Engineering<br>College (Autonomous),<br>Sree Sainath Nagar, A. Rangampet<br>Chittoor(Dist). Andhra Pradesh<br>517102          |
| 4.  | UGC APPROVAL LETTER NO. AND<br>DATE                        | : | F. No:4-4/2015-16(MRP/UGC-SERO)<br>dated October, 2016   |
| 5.  | DATE OF IMPLEMENTATION                                     | : | 01 July, 2017  |
| 6.  | TENURE OF THE PROJECT                                      | : | 2 Years  |
| 7.  | TOTAL GRANT ALLOCATED                                      | : | Rs. 3,95,000/-   |
| 8.  | TOTAL GRANT RECEIVED                                       | : | Rs. 3,90,500/-   |
| 9.  | FINAL EXPENDITURE  | : | Rs. 3,91,318/-   |
| 10. | TITLE OF THE PROJECT                                       | : | Fast Content based Search,<br>Navigation and Retrieval<br>System for e- Learning   |
| 11. | OBJECTIVES OF THE PROJECT                                  | : | One separate sheet is enclosed   |
| 12. | WHETHER OBJECTIVES WERE<br>ACHIEVED                        | : | Yes (One separate sheet is<br>enclosed)  |
| 13. | ACHIEVEMENTS FROM THE<br>PROJECT                           | : | One separate sheet is enclosed   |
| 14. | SUMMARY OF THE FINDINGS                                    | : | One separate sheet is enclosed   |
| 15. | CONTRIBUTION TO THE SOCIETY                                | : | One separate sheet is enclosed   |
| 16. | WHETHER ANY PH.D. ENROLLED/<br>PRODUCED OUT OF THE PROJECT | : | Yes (1 No. Enrolled Ph. D)   |
| 17. | NO. OF PUBLICATIONS OUT OF<br>THE PROJECT                  | : | 06 No.s (One separate sheet is<br>enclosed)  |

*K. Ra.*  
PRINCIPAL INVESTIGATOR

*f. Chellappa*  
PRINCIPAL  
PRINCIPAL  
SREE VIDYANIKETHAN ENGINEERING COLLEGE  
(AUTONOMOUS)  
Sree Sainath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.



## OBJECTIVES OF THE PROJECT

107

107

- ❖ To Design and Develop Automatic Lecture video segmentation techniques.
- ❖ To Design and Develop Low and high level feature extraction techniques for video lectures.
- ❖ To Design and Develop Video ranking system.
- ❖ To Design and Develop Automated indexing and search and techniques.

❖ **All the 4 objectives met with this project implementation**



## UNIVERSITY GRANTS COMMISSION

BAHADUR SHAH ZAFAR MARG

NEW DELHI - 110 002

## STATEMENT OF EXPENDITURE IN RESPECT OF MINOR RESEARCH PROJECT

1. Name of Principal Investigator : **Dr. P. Dhana Lakshmi**
2. Dept. of Principal Investigator : **Computer Science and Systems Engineering**
3. Name of the College : **Sree Vidyanikethan Engineering College (Autonomous), A. Rangampet.**
4. UGC approval Letter No. and Date : **F. No:4-4/2015-16(MRP/UGC- SERO), Dt.October,2016**
5. Title of the Research Project : **Development of Mathematical Model for he Prediction of Customer Behavior in Online Databases.**
6. Effective date of starting the project : **01-07-2017**
7. a. Period of Expenditure : **From 01-07-2017 to 31-10-2019**
- b. Details of Expenditure:

S.No.	Item	Amount Approved (Rs.)	Amount Sanctioned (for 1 <sup>st</sup> Year) (Rs.)	Expenditure Incurred (for 1 <sup>st</sup> Year) (Rs.)	Amount Sanctioned (for 2 <sup>nd</sup> Year) (Rs.)	Expenditure Incurred (for 2 <sup>nd</sup> Year) (Rs.)
i.	Books & Journals	30,000/-	30,000/-	29,705/-	0.0	0.0
ii.	Equipment	1,20,000/-	1,20,000/-	1,20,959/-	0.0	0.0
	<b>Total</b>	<b>1,50,000/-</b>	<b>1,50,000/-</b>	<b>1,50,664/-</b>	<b>0.0</b>	<b>0.0</b>
iii.	Contingency including special needs	15000/-	7,500/-	7,589/-	6,000/-	6,237/-
iv.	Field Work/Travel (Give details in the proforma).	30000/-	15,000/-	14,740/-	12,000/-	11,937/-
v.	Hiring Services	0.0	0.0	0.0	0.0	0.0
vi.	Chemicals & Glassware	0.0	0.0	0.0	0.0	0.0
	<b>Total</b>	<b>45,000/-</b>	<b>22,500/-</b>	<b>22,329/-</b>	<b>18,000/-</b>	<b>18,174/-</b>
	<b>Grand Total</b>	<b>1,95,000</b>	<b>1,72,500/-</b>	<b>1,72,993/-</b>	<b>18,000/-</b>	<b>18,174/-</b>



- 109  
109
- A) Amount approved: 1,95,000/-  
B) Amount Sanctioned for 1<sup>st</sup> year: 1,72,500/-  
C) Amount to be released for 2<sup>nd</sup> year: 18,000/-  
     $B + C = A$   
     $(1,72,500/- + 18,000/-) = 1,90,500/-$   
D) Expenditure Incurred for 1<sup>st</sup> year: 1,72,993/-  
E) Expenditure Incurred for 2<sup>nd</sup> year: 18,174/-  
     $D + E = B$   
     $(1,72,993) + (18,174) = 1,91,167/-$

**Objectives of the project:**

- Development of the best feature extraction algorithm in the session log and identifying efficient navigation pattern.
- Development of Sequential pattern identification methods to predict future site navigation patterns based on the current and prior observed click stream data and user patterns.
- Development of mathematical rules to correlate the set of Web pages within a site that are accessed within single or multiple specific user sessions.
- Design and development of mathematical model for the prediction of context -based customer behavior.

**Contribution to the Society:**

- Now a day's web is becoming a main channel for reaching customers and prospects. Clickstream data generated by websites has become popular in enterprise data source. Due to stream data are continuous , rapid time varying, unbounded and unpredictable in this project methods and models are developed for predicting customer behaviour on online websites like flipkart.com, Amazon.com and farmers army.com so that user can navigate the products or any information in less time and optimize the websites. It is also useful for web movement investigation, statistical surveying and for dissecting representative profitability. It is also useful for predict user behavior while user interacts with the Web by determining frequent access behavior for users, needed links can be identified to improve the overall performance of future accesses and used in determination of common behaviors or traits of users who perform certain actions, such as purchasing merchandise.

**Achievements from the Project**

1. This work is helped in predicting customer behaviour on real time e-commerce websites in less computation time with more precision compared to other existing methods.
2. Streaming data is preprocessed using Filtering job technique for both numerical and nominal type data on real time data. It is clearly analyzed that the preprocessed streaming data for different e-commerce products has high filtering capability than traditional algorithms in order to remove the noise and duplicate patterns.
3. Future navigation patterns are predicted using historical behaviour and user patterns. Results shows that the proposed model has less error rate and high computational accuracy than existing models.



4. A new mathematical model is developed for predicting the customer behaviour on large click stream data. Here different types of e-commerce products are considered on different sizes (1GB, 2GB, 3G etc). The proposed model is more efficient in filter the streaming data and predicting the customer behaviour in less time by considering the parameters Mapper time, Reducer time and Average filtering time as data.
5. The mathematical rules improves the e-commerce user navigation efficiency while minimizing changes to its existing structure of e-commerce application. These rules specifically suitable for websites with relatively long-term stable content, efficiently predicting the user future requests and for web caching.

**Summary of Findings**

As the size of the data increases in the online e-commerce applications it becomes the problem to find and extract the essential navigation patterns on large streaming data. In this project work, a novel approach is designed and implemented on large streaming data to find the user navigation behavior patterns. Traditional e-commerce navigational pattern mining models are difficult to process a large number of patterns on the streaming data due to high dimensionality and high computational time and memory. In this work, a novel web user navigational patterns are extracted and analyzed to find the highly relevant patterns for the e-commerce users. Experimental results proved that the proposed model has high efficiency for user navigational pattern mining on large data in terms of accuracy and time compared to the existing algorithms.

Nowadays due to increased number of web applications in the internet, analyzing the web usage data to attract more customers and to predict the future interest is an popular research in web usage mining. Real time data analysis is more valuable than historical data for creating an adaptive websites, Recommend the products to the user in optimized way. Generally real time or streaming data is more valuable than the data stored in databases. In this work real time data is processed and batch data analysis is performed using Spark tool. Analyzation of this real time data is useful for prediction of user behavior in single or multiple websites. In this project a novel dynamic model is also introduced to discover the required knowledge from the large databases. A new filter based user navigation pattern mining model is also designed and implemented on the large online steaming databases. The proposed filtered based frequent pattern mining model efficiently predicts the user navigation patterns with high accuracy and less runtime. The proposed models improves the e-commerce user navigation efficiency while minimizing changes to its existing structure. These models are specifically suitable for websites with relatively long-term stable content. Processing web user access behavior, which is crucial for a rapidly growing World Wide Web, may minimize user prospected latency. This work would have a significant impact on recommendations and even on websites for ecommerce, helping to efficiently predict user requests for the future. Effective pages, which are likely to be visited by users and personalized systems, can also be used for web caching policies. Therefore we developed different models for optimizing and personalizing web service and sequential frequent patterns using the parameters: browsing path, frequently visited web pages, time duration of web pages and user interest. These novel models use the parameters and applied on click stream data to optimize the web pages and improve the personalized recommendation.



**2017-18**



**No. SEED/TIDE/015/2017/C**  
**Government of India**  
**Department of Science and Technology**  
**Science for Equity Empowerment and Development Division**

**Technology Bhavan**  
**New Mehrauli Road**  
**New Delhi - 110 016.**

13/03/2018

**ORDER**

**Sub: Financial assistance for the project "Frequency modulated hearing aid for elderly with hearing disability".**

In continuation to this Department's Sanction Order of even number dated 13/03/2018, sanction of the President is hereby accorded for releasing an amount of Rs.23,30,452/- (Rupees Twenty Three Lakh Thirty Thousand Four Hundred Fifty Two Only) to The Principal, Sree Vidyanikethan Engineering College, Tirupati for purchase of equipment for project implementation under the head "Creation of Capital Assets". The organization should utilize the funds for which it has been sanctioned during the implementation of the project. The details of the equipment to be procured are given below.

BUDGET HEADS		1 <sup>st</sup> Year	Total
CAPITAL COMPONENT		(in Rs.)	(in Rs.)
1.	Mathworks's MATLAB & Simulink	6,70,652	6,70,652
2.	NI RIO FPGA & DSP based System Design Hardware with required accessories, cables and connectors	1,77,000	1,77,000
3.	NI LabVIEW Graphical System Design Software	3,95,300	3,95,300
4.	DSP Development Boards	87,500	87,500
5.	Fabrication Costs	10,00,000	10,00,000
<b>TOTAL</b>		<b>23,30,452</b>	<b>23,30,452</b>

2. The sanction of the President is also accorded to the release of Rs.23,30,452/- (Rupees Twenty Three Lakh Thirty Thousand Four Hundred Fifty Two Only) to The Principal, Sree Vidyanikethan Engineering College, Tirupati being the grant under "Capital Component" for implementation of the above mentioned project.

3. This sanction is subject to the condition that the grantee organisation will furnish to the Department of Science & Technology, financial year wise Utilization Certificate (UC) in the proforma prescribed as per GFR 2017 and audited statement of expenditure (SE) along with up to date progress report at the end of each financial year duly reflecting the interest earned / accrued on the grants received under the project. This is also subject to the condition of submission of the final statement of expenditure, utilization certificate and project completion report within one year from the scheduled date of completion of the project.

4. The grantee organisation will have to enter & upload the Utilization Certificate in the PFMS portal besides sending it in physical form to this Division. The subsequent/final installment will be released only after confirmation of the acceptance of the UC by the Division and entry of previous Utilization Certificate in the PFMS.

M n n



15. The amount of Rs.23,30,452/- (Rupees Twenty Three Lakh Thirty Thousand Four Hundred Fifty Two Only) will be drawn by the Drawing and Disbursing Officer, DST and will be disbursed to The Principal, Sree Vidyanikethan Engineering College, Tirupati. The bank details for electronic transfer of funds through RTGS are given below:-

- 1. Name of the Account Holder: The Principal, SVEC DST Fist program
- 2. Name of the Bank: Andhra Bank, SVEC Branch, Tirupati
- 3. Bank Account number: 154010100040865
- 4. IFSC Code: ANDB0001540
- 5. MICR Code: 517011007

16. As per Rule 234 of GFR 2017, this sanction has been entered at S. No.31 in the register of grants maintained in the Division for the scheme (Name of the Scheme).

17. This issues with the concurrence of IFD Vide their Concurrence Diary No. C/5388/IFD/2017-2018 dated 13/03/2018.

(Konga Gopikrishna)  
- Scientist - 'D'  
Tel. No. 26590298

To

The Pay and Accounts Officer  
Department of Science and Technology  
New Delhi.

Copy for information and necessary order to:

- 1. Cash Section (2 copies) for making the payment to the grantee.
- 2. Account Section.
- 3. Director of Audit, (Scientific Dept.) AGCR Building, New Delhi - 110 002.
- 4. Sanction Folder
- 5. Head (SEED)
- 7. Dr. Kondru Ayyappa Swamy, Department of Electronics and Instrumentation Engineering, Sree Vidyanikethan Engineering College, Sri Sainath Nagar, Chandragiri Mandal, Chittoor District - 517 102, Andhra Pradesh
- 8. The Principal, Sree Vidyanikethan Engineering College, Sri Sainath Nagar, Chandragiri Mandal, Chittoor District - 517 102, Andhra Pradesh

(Konga Gopikrishna)  
Scientist - 'D'  
Tel. No. 26590298



114

114

No.SR/CSRI/370/2016(G)  
Government of India  
Ministry of Science & Technology  
Department of Science & Technology

Technology Bhavan  
New Mehrauli Road  
New Delhi-110 016  
Dated-09.01.2018

**ORDER**

Sub: Financial approval of the project under Cognitive Science Research Initiative (CSRI) entitled "Intelligent system to classify human brain signals for finding brain diseases"

PI: Dr. G Sasikumar, Associate Professor, Department of Computer Science and Systems Engineering, Sree Vidyanikethan Engineering College, Tirupati-517102.

Sanction of the President is here by accorded to the above mentioned project at a total cost of ₹23,73,800/- (Rupees Twenty Three Lac Seventy Three Thousand Eight Hundred only) with a break up ₹1,50,000/- under 'Capital Head' and ₹22,23,800/- under 'General Head' for a duration of Three years. The items of expenditure for which the total allocation of ₹23,73,800/- has been approved for Three years are given below:

Sl. No.	Heads	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	Total
A.	<b>Non-Recurring (Capital Items)</b>				
	Equipment-Computer-1, Printer	1,50,000/-	-----	-----	1,50,000/-
B.	<b>Recurring (General)</b>				
	Fellowship: SRF - 1 @ Rs. 28,000/M for 3 years +HRA @ 10% + Project Assistant-1 @ Rs.15,000/- for 3 years	5,49,600/-	5,49,600/-	5,49,600/-	16,48,800/-
	Consumables	50,000/-	50,000/-	50,000/-	1,50,000/-
	Contingencies	40,000/-	30,000/-	30,000/-	1,00,000/-
	Travel (including subjects participatio charges)	50,000/-	50,000/-	50,000/-	1,50,000/-
C.	Overhead	67,000/-	54,000/-	54,000/-	1,75,000/-
D.	Total of Recurring Grant (B+C)	7,56,600/-	7,33,600/-	7,33,600/-	22,23,800/-
E.	GRAND TOTAL (A+D)	9,06,600/-	7,33,600/-	7,33,600/-	23,73,800/-

- Overhead expenses are meant for the host institute towards the cost for providing infrastructure facilities and benefits to the staff engaged in the project, etc. Recruitment of SRF will be done as per OM No. SR/S9/Z-09/2012 dated 21.10.2014.
- Sanction of the grant is subject to the conditions as detailed in website [www.dst.gov.in](http://www.dst.gov.in).
- Sanction of the President is accorded to the payment of ₹7,56,600/- (Rupees Seven Lac Fifty Six Thousand Six Hundred only) under 'Grant-in-aid General' to the Principal, Sree Vidyanikethan Engineering College, Chittoor-517102 being first installment of grant for the year 2017-2018 for implementation of the said research project.
- The grantee organization will maintain separate audited account for the project and the entire amount of grant will be kept in an interest bearing bank account. The interest earned / accrued should be reported to DST (financial year wise) while submitting the Statement of Expenditure/Utilization Certificate. The interest thus earned will be treated as a credit to the grantee organization, which will be adjusted towards future release of grant.
- This sanction is subject to the condition that the grantee organization will furnish to the Department of Science & technology, financial year wise Utilization Certificate (UC) in the proforma prescribed as per GFR 2017 and audited statement of expenditure (SE) along with up to date progress report at the end of each financial year duly reflecting the interest earned / accrued on the grants received under the project. This is also subject to the condition of submission of the final statement of expenditure, utilization certificate and project completion report within one year from the scheduled date of completion of the project.
- The grantee organization will have to enter & upload the Utilization Certificate in the PFMS portal besides sending it in physical form to this Division. The subsequent/final instalment will be released only after confirmation of the acceptance of the UC by the Division and entry of previous Utilization Certificate in the PFMS

Contd.p/-2



115 115

93

9 DST reserves sole rights on the assets created out of grants. Assets acquired wholly or substantially out of government grants (except those declared as obsolete and unserviceable or condemned in accordance with the procedure laid down in GFR 2017), shall not be disposed of without obtaining the prior approval of DST.

10. Failure to comply with the terms and conditions of the Bond will entail full refund with interest in terms of Rule 231 (2) of GFR 2017.

11. The expenditure involved is debatable to:

Demand No.84	Department of Science & Technology
3426	Other Scientific Research (Major Head)
60	Others (Sub-Major Head)
60.200	Assistance to other Scientific Bodies (Minor Head)
68	Science and Technology Institutional and Human Capacity Building (Sub Head)
68.00	Science and Technology Institutional and Human Capacity Building
68.00.35	Grants-in-aid Capital for the year 2017-2018 (Voted)

This release is being made Science and Technology Institutional and Human Capacity Building Scheme. (Previous Research & Development, Support 3426.60.200.25.01.35)

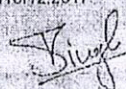
12. The amount of ₹1,50,000/- (Rupees One Lac Fifty Thousand only) as non-recurring grant will be drawn by the Drawing and Disbursing Officer of the Department of Science & Technology and will be disbursed to the Principal, Sree Vidyanikethan Engineering College, Chittoor-517102 by means of electronic transfer as per the details given below:

Institute Name : Sree Vidyanikethan Engineering College  
 Bank name : Andhra Bank  
 Account No. : 154010100093575  
 Branch : Sri Vidya Nikethan  
 IFSC Code : ANDB0001540

13. As per Rule 234 of GFR 2017, this sanction has been entered at S. No. 354 in the register of grants maintained in the Research & Development.

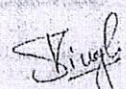
14. This issues with the concurrence of IFD vide their Concurrence Dy No/3896/2017-18 dated 18.12.2017

15. Institute is registered under Niti Ayog -Darpan Portal and unique ID is AP/2016/0113056

  
 (Vandana Singh)  
 Scientist-D

Copy forwarded for information and necessary action to:-

1. The Director of Audit (CW & M-II), AGGR Building, IP Estate, New Delhi-110 002.
2. Copy with two spare copies of the sanction to the DDO, DST Cash Section.
3. The Principal, Sree Vidyanikethan Engineering College, Chittoor-517102.
4. Dr. G. Sankumar, Associate Professor, Department of Computer Science and Systems Engineering, Sree Vidyanikethan Engineering College, Tirupati-517102.
5. Pay & Accounts Officer, DST, New Delhi.
6. Sanction Folder.
7. IFD, DST, New Delhi

  
 (Vandana Singh)  
 Scientist-D



No. SVEC/DST/CSRI/2020

Dt. 31/03/2020

**Dr. P.C. Krishnamachary, M.E., Ph.D.**  
Principal

To

**Dr Vandana Singh**  
Officer-in-charge,  
Department of Science & Technology,  
Technology Bhavan, New Mehrauli Road,  
New Delhi-110016  
Tel: 011-26590273.

Madam,

**Sub:** Submission of Utilization Certificate 2019-20 - CSRI - Reg.


\* \* \*

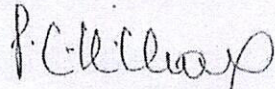
I am enclosing two copies of the Utilization Certificate (2019-20) for the Project titled **"Intelligent System to Classify Human Brain Signals for Finding Brain Diseases"**, (Grant/Ref.No:**SR/CSRI/370/2016**).

I request you to kindly consider the Utilization Certificate (2019-20) for research grant from Department of Science & Technology DST, New Delhi.

Thanking you,

Yours faithfully,

  
**(Dr. G SASIKUMAR)**  
Principal Investigator

  
**(Dr. P C KRISHNAMACHARY)**  
Principal  
PRINCIPAL  
SREE VIDYANIKETHAN ENGINEERING COLLEGE  
(AUTONOMOUS)  
Sree Sainath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.



- ① Sree Sainath Nagar, Tirupati, Andhra Pradesh - 517 102.
- ① +91-877-3066900/01
- ① +91-877-2236712/14
- ① 0877-3066999
- ① www.vidyanikethan.edu



2017-18

117

**SREE VIDYANIKETHAN EDUCATIONAL TRUST  
UNIT: SREE VIDYANIKETHAN ENGINEERING COLLEGE  
SREE SAINATH NAGAR, A,RANGAMPET**

**SCHEDULE - II (Incomes)**

	PARTICULARS	Amount Rs.	Amount Rs.
A	<b>Fee from Students</b>		
	Tuition fee	536053666	
	Admission/Recognition Fee	3214000	
	Special Fee	6163550	
	Applications/Registrations Fee	2039000	
	Bus Fee	3561000	
	Book Bank	6159825	
	JNTU Fee	10511375	
	JNTU DLR Fee	1128200	
	JNTU Affiliation Fee	895600	
	JNTU Sports Fee	1181000	
	Sports & Games Fee	136600	
	Miscellaneous Receipts	325427	
	Transport Fee	477000	
	Information & Communication Fee	3695300	
	Students Safety Insurance	744450	576285993
	<b>Exam Cell Fee</b>		
	Condonation Fee	341000	
	Examination Fee	18162035	
	Provisional Certificate Fee	730500	
	SBTET AP-Exams	503898	
	SBTET Exam Remuneration	152520	
	Transcripts Fee	215450	
	Service Charges	805500	20910903
B.	<b>Income from Grants/Sponsorships:</b>		
	AICTE Grants - Seminar & FDP, SPDP	1921296	
	AICTE-PMKVY TI Skill Development Programme	47385	
	Science and Engineering Research	200000	
	Department of Biotechnology Fund (DST) - CSRI	906600	
	AICTE Grants - MODROBS	1835200	
	UGC Grants	1081579	
	Govt. of India & A.P. - TEQIP	7000000	
		12992060	
	Less: Refund of Unspent Grant (ISRO Respond Project)	159252	12832808
C.	<b>Other Income</b>		
	Consultancy Testing Charges	37200	
	Interst on SBs & FDRs	5881915	
	Interest on A.C.D.	90421	
	Adjustments relating to earlier years	40934171	46943707

For M/s. RAJAGOPAL NAIDU & Co  
Chartered Accountants, FRN. 018890S  
10-10, Royal Nagar, Tirupati

38

My Partner, M. RAJAGOPAL NAIDU  
(M.No. 0248191)

*M. Mohan Babu*

**Dr. M. MOHANBABU**  
CHAIRMAN

SREE VIDYANIKETHAN EDUCATIONAL TRUST  
SREE SAINATH NAGAR, A. RANGAMPET  
CHITTOOR DISTRICT - 517 102, A.P.



118

118

FORM GFR 12A



**GFR 12 - A**  
[[See Rule 238 (1)]]

**FORM OF UTILIZATION CERTIFICATE  
FOR AUTONOMOUS BODIES OF THE GRANTEE ORGANIZATION**

UTILIZATION CERTIFICATE FOR THE YEAR 2018 - 2019 in respect  
of recurring/non-recurring  
GRANTS-IN-AID/SALARIES/CREATION OF CAPITAL ASSETS

- Name of the Scheme... DST - COGNITIVE SCIENCE RESEARCH INITIATIVE
- Whether recurring or non-recurring grants... BD.II (CR/CSRT 370/2016)
- Grants position at the beginning of the Financial year
  - Cash in Hand/Bank
  - Unadjusted advances
  - Total Rs 6,86,402/-
- Details of grants received, expenditure incurred and closing balances: (Actuals)

Unspent Balances of Grants received years [figure as at Sl. No. 3 (iii)]	Interest Earned thereon	Interest deposited back to the Government	Grant received during the year			Total Available funds (1+2-3+4)	Expenditure incurred	Closing Balances (5-6)
			Sanction No. (i)	Date (ii)	Amount (iii)			
1	2	3	4			5	6	7
Rs 6,86,402/-	Rs 18,154/-	Rs 18,154/-	CR/CSRT 370/2016			Rs 6,86,402/-	Rs 5,31,488/-	Rs 1,54,914/-

Component wise utilization of grants:

Grant-in-aid- General	Grant-in-aid- Salary	Grant-in-aid-creation of capital assets	Total
Rs 97,898/-	Rs 4,33,590/-		Rs 5,31,488/-

Details of grants position at the end of the year

- Cash in Hand/Bank Rs 1,54,914/-
- Unadjusted Advances NIL
- Total Rs 1,54,914/-





**GENERAL FINANCIAL RULES 2017**  
Ministry of Finance  
Department of Expenditure

FORM GFR 12A

SANCTION NUMBER : SR/CSRI/370/2016  
YEAR : 2018-2019

Certified that I have satisfied myself that the conditions on which grants were sanctioned have been duly fulfilled/are being fulfilled and that I have exercised following checks to see that the money has been actually utilized for the purpose for which it was sanctioned:

- (i) The main accounts and other subsidiary accounts and registers (including assets registers) are maintained as prescribed in the relevant Act/Rules/Standing instructions (mention the Act/Rules) and have been duly audited by designated auditors. The figures depicted above tally with the audited figures mentioned in financial statements/accounts.
- (ii) There exist internal controls for safeguarding public funds/assets, watching outcomes and achievements of physical targets against the financial inputs, ensuring quality in asset creation etc. & the periodic evaluation of internal controls is exercised to ensure their effectiveness.
- (iii) To the best of our knowledge and belief, no transactions have been entered that are in violation of relevant Act/Rules/standing instructions and scheme guidelines.
- (iv) The responsibilities among the key functionaries for execution of the scheme have been assigned in clear terms and are not general in nature.
- (v) The benefits were extended to the intended beneficiaries and only such areas/districts were covered where the scheme was intended to operate.
- (vi) The expenditure on various components of the scheme was in the proportions authorized as per the scheme guidelines and terms and conditions of the grants-in-aid.
- (vii) It has been ensured that the physical and financial performance under..... (name of the scheme has been according to the requirements, as prescribed in the guidelines issued by Govt. of India and the performance/targets achieved statement for the year to which the utilization of the fund resulted in outcomes given at Annexure - I duly enclosed.
- (viii) The utilization of the fund resulted in outcomes given at Annexure - II duly enclosed (to be formulated by the Ministry/Department concerned as per their requirements/specifications.)
- (ix) Details of various schemes executed by the agency through grants-in-aid received from the same Ministry or from other Ministries is enclosed at Annexure - II (to be formulated by the Ministry/Department concerned as per their requirements/specifications).

Date: 28/05/2019

Place: Tirumala

Signature

*[Handwritten Signature]*

Name: B. RAVISEKHAN

Chief Financial Officer, DIRECTOR  
(FINANCE & ADMINISTRATION)

(Head of the Institution)  
Sree Salmath Nagar, A. RANGAMPET-517 102  
Chittoor (Dist), A.P.

(Strike out inapplicable terms)

Signature

*[Handwritten Signature]*

Name: Dr. P. KRISHNA MACHARY

Head of the Organisation

PRINCIPAL,  
SREE VIDYABHETHAN ENGINEERING COLLEGE  
(AUTONOMOUS)  
Sree Salmath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.



FORM GFR 12A

GENERAL FINANCIAL RULES 2017  
Ministry of Finance  
Department of Expenditure



**GFR 12 - A**  
[(See Rule 238 (1))]

**FORM OF UTILIZATION CERTIFICATE  
FOR AUTONOMOUS BODIES OF THE GRANTEE ORGANIZATION**

UTILIZATION CERTIFICATE FOR THE YEAR... 2017-2018... in respect  
of recurring/non-recurring  
GRANTS-IN-AID/SALARIES/CREATION OF CAPITAL ASSETS

- Name of the Scheme... D.S.T. - COMMITTEE SCIENTIFIC RESEARCH INITIATIVE
- Whether recurring or non-recurring grants... B.G.H. (SR/CSRI/370/2016)
- Grants position at the beginning of the financial year
  - Cash in Hand/Bank
  - Unadjusted advances
  - Total
- Details of grants received, expenditure incurred and closing balances: (Actuals)

Unspent Balances of Grants received years [figure as of Sl. No. 3 (iii)]	Interest Earned thereon	Interest deposited back to the Government	Grant received during the year			Total Available funds (1+2-3+4)	Expenditure incurred	Closing Balances (5-6)
			Sanction No. (i)	Date (ii)	Amount (iii)			
1	2	3	4			5	6	7
			SR/CSRI	11/01/2018	RS 4,06,600/-	RS 9,06,600/-	RS 2,20,198/-	RS 6,86,402/-

Component wise utilization of grants:

Grant-in-aid-General	Grant-in-aid-Salary	Grant-in-aid-creation of capital assets	Total
RS 70,198/-		RS 1,50,000/-	RS 2,20,198/-

Details of grants position at the end of the year

- Cash in Hand/Bank NIL
- Unadjusted Advances NIL
- Total RS 6,86,402/-





**GENERAL FINANCIAL RULES 2017**  
Ministry of Finance  
Department of Expenditure

FORM GFR 12A

SANCTION NUMBER : SR/CSRI/370/2016

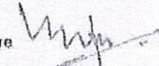
YEAR : 2017-2018

Certified that I have satisfied myself that the conditions on which grants were sanctioned have been duly fulfilled/are being fulfilled and that I have exercised following checks to see that the money has been actually utilized for the purpose for which it was sanctioned:

- (i) The main accounts and other subsidiary accounts and registers (including assets registers) are maintained as prescribed in the relevant Act/Rules/Standing instructions (mention the Act/Rules) and have been duly audited by designated auditors. The figures depicted above tally with the audited figures mentioned in financial statements/accounts.
- (ii) There exist internal controls for safeguarding public funds/assets, watching outcomes and achievements of physical targets against the financial inputs, ensuring quality in asset creation etc. & the periodic evaluation of internal controls is exercised to ensure their effectiveness.
- (iii) To the best of our knowledge and belief, no transactions have been entered that are in violation of relevant Act/Rules/standing instructions and scheme guidelines.
- (iv) The responsibilities among the key functionaries for execution of the scheme have been assigned in clear terms and are not general in nature.
- (v) The benefits were extended to the intended beneficiaries and only such areas/districts were covered where the scheme was intended to operate.
- (vi) The expenditure on various components of the scheme was in the proportions authorized as per the scheme guidelines and terms and conditions of the grants-in-aid.
- (vii) It has been ensured that the physical and financial performance under..... (name of the scheme has been according to the requirements, as proscribed in the guidelines issued by Govt. of India and the performance/targets achieved statement for the year to which the utilization of the fund resulted in outcomes given at Annexure - I duly enclosed.
- (viii) The utilization of the fund resulted in outcomes given at Annexure - II duly enclosed (to be formulated by the Ministry/Department concerned as per their requirements/specifications.)
- (ix) Details of various schemes executed by the agency through grants-in-aid received from the same Ministry or from other Ministries is enclosed at Annexure-II (to be formulated by the Ministry/Department concerned as per their requirements/specifications).

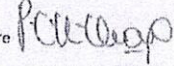
Date: 28/05/2019

Place: Tirupati

Signature 

Name: B. RAV SEKHARA  
Chief Finance Officer  
(Head of the Finance)  
**DIRECTOR**  
**(FINANCE & ADMINISTRATION)**  
Sree Vidya Kethan Educational Trust  
Selnath Nagar, A, RANGAMPET-517 102  
Chittoor (Dist), A.P.

(Strike out inapplicable terms)

Signature 

Name: Dr. P.C. KRISHNAMACHARY  
Head of the Organisation  
**PRINCIPAL**  
**SREE VIDYAKETHAN ENGINEERING COLLEGE**  
**(AUTONOMOUS)**  
Sree Selnath Nagar, A, RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.

121

121





122

A/c Dy No: 965  
Date: 08-01-19

UNIVERSITY GRANTS COMMISSION - SOUTH EASTERN REGIONAL OFFICE  
5-9-194, CHIRAG ALI LANE, IV FLOOR A.P.S.F.C. BUILDING, HYDERABAD - 500 001  
Phones: 040 - 23204735, 23200208 FAX: 040 - 23204734, Website: www.ugc.ac.in, ugcsero@gmail.com

No: F. MRP-6567/16 (MRP/UGC-SERO)

January, 2019

The Accounts Officer  
South Eastern Regional Office  
University Grants Commission  
Hyderabad - 500 001

LINKNO:6567. DEPT:COMPUTER SCIENCE & SYSTEMS ENGINEERING  
COMCODE: APJN035

19 JAN 2019

Sub:Release of Grants-in-aid to The Principal SREE VIDYANIKETAN ENGINEERING COLLEGE A. RANGAMPET TIRUPATI 517102, Under the Scheme "Minor Research Projects" - Reg.

Sir/Madam,

On the basis of the accounts received for the first installment grant, I am to convey the sanction of the Commission for the payment of Rs.18000. to The Principal, SREE VIDYANIKETAN ENGINEERING COLLEGE A. RANGAMPET TIRUPATI 517102, as second installment towards the Minor Research Project entitled Development Of Mathematical Model for the Prediction Of Customer Behavior in Online Databases awarded to PROF P DHANALAKSHMI Department of COMPUTER SCIENCE & SYSTEMS ENGINEERING as per the details given below:-

Item	Allocation (Rs.)	Amount sanctioned so far (Rs.)	Amount sanctioned being	Total amount sanctioned (Rs.)
Hiring Services	00	00	00	00
Contingency	15000.	7500.	6000.	13500.
Chemicals	00	00	00	00
Travel/Field Work	30000.	15000.	12000.	27000.
Total	45000.	22500.	18000.	40500.
Equipment	120000.	120000.	00	120000.
Books	30000.	30000.	00	30000.
Total	150000.	150000.	00	150000.
Grand Total	195000.	172500.	18000. ✓	190500.

Remarks:

- The grant is debitible to the following head of account.

Amount Sanctioned	Head Of Account	Category
Rs.18000.	GEN-3(A)-2202.03.102.02.31 - 19(XXV)	GEN

- The sanctioned amount is debitible to the Major Head of Account: GEN-3(A)-2202.03.102.02.31 - 19(XXV) - Committed liabilities: GIA(31) - Minor Research Project (General) and is valid for payment during the financial year 2018-19 Only and subject to the condition indicated below:

- The amount of the Grant shall be drawn by the Accounts Officer (Drawing and Disbursing Officer) UGC-SERO, Hyd. on the Grants-In Aid Bill and shall be disbursed to and credited to "The Principal, SREE VIDYANIKETAN ENGINEERING COLLEGE, A RANGAMPET TIRUPATI - 517102, by Electronic Mode through PFMS Portal at the following details:

(a) AccountNo:154010100064139 (b)IFSCCode:ANDB0000033 (c) UniqueID:SVCEGOVTFUND

(d)Name & Address of Account Holder: The Principal, SREE VIDYANIKETAN ENGINEERING COLLEGE, A. RANGAMPET, TIRUPATI (e) Name & Address of Bank Branch: AB, TIRUPATI

- The Grant is subject to adjustment on the basis of Utilization Certificate in the prescribed Proforma submitted by the Institution.
- The Institution shall maintain proper accounts of the expenditure out of the Grants which shall be utilized only on the approved items of expenditure.
- The institution may follow the General Financial Rules, 2017 and take urgent necessary action to amend their manuals of financial procedures to bring them in conformity with GFR, 2017 and those don't have their own approved manuals on financial procedures may adopt the provision of GFR 2017 and instructions / Guidelines thereunder from time to time.
- The Utilization Certificate to the effect that the grant has been utilized for the propose for which it has been sanctioned shall be furnished to UGC as early as possible after the close of current financial year.
- The assets acquired wholly or substantially out of UGC's Grant shall NOT be disposed or encumbered or utilized for the proposes other than those for which the grants was given without proper sanction of the UGC and should at any time the Institution ceased to function, such assets shall revert to the University Grants Commission.
- A Register of Assets acquired wholly or substantially out of the Grant shall be maintained by the Institution in the prescribed proforma.



1126 (123)



UNIVERSITY GRANTS COMMISSION-SOUTH EASTERN REGIONAL OFFICE  
A.P.S.F.C. Building (4th Floor) 5-9-194, P.B. No.152, Chirag-Ali-Lane HYDERABAD- 500 001.  
Ph: 040-23204735; Fax: 040-23204734 Email: [ugcsere@gmail.com](mailto:ugcsere@gmail.com)

F.NO:4-4/2015-16(MRP /UGC-SERO)

October, 2016

MOST URGENT

The Principal  
sree vidyanikethan engineering college  
A. RANGAMPET 517102.

**PROPOSAL NUMBER : 329.**

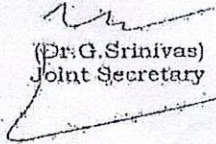
Sir/ Madam,

This has reference to the Minor Research Project titled Development Of Mathematical Model for the Prediction Of Customer Behavior in Online Databases submitted by P DHANALAKSHMI, Department of Computer Science And Systems Engineering of your college. In this regard I am to inform you that the UGC has provisionally considered the proposal for financial assistance to the tenure of Rs. 195000.. In case the Principal Investigator is interested in undertaking the project, the **enclosed Acceptance Certificate** may be filled in all respect and sent to this office immediately through email:[mrpugcsere@gmail.com](mailto:mrpugcsere@gmail.com).

The proposal number mentioned above may be mentioned in the covering letter & in the Acceptance Certificate.

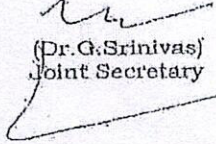
Encls: As mentioned

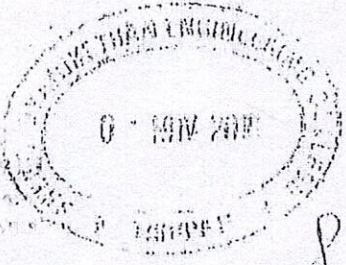
Yours faithfully

  
(Dr. G. Srinivas)  
Joint Secretary

Copy to:

P DHANALAKSHMI  
Department of Computer Science And Systems Engineering  
sree vidyanikethan engineering college  
A. RANGAMPET 517102.

  
(Dr. G. Srinivas)  
Joint Secretary





124

Annexure - III

128p

UNIVERSITY GRANTS COMMISSION  
BAHADUR SHAH ZAFAR MARG  
NEW DELHI - 110 002

Utilization certificate

It is certified that the grant of **Rs. 1,90,500/- (Rupees One Lakh Ninety Thousand Five Hundred only)** received from the University Grants Commission under the scheme of support for Minor Research Project entitled **Development of Mathematical Model for the Prediction of Customer Behavior in Online Databases** vide UGC letter No. **F.No:4-4/2015-16(MRP/UGC-SERO)** dated **October, 2016** has been fully utilized for the purpose for which it was sanctioned and in accordance with the terms and conditions laid down by the University Grants Commission.

*Phane*  
SIGNATURE OF THE

PRINCIPAL INVESTIGATOR  
*P. Phane Lakshmi*

*Principals*  
PRINCIPAL  
PRINCIPAL

SREE VIDYANIKETHAN ENGINEERING COLLEGE  
(AUTONOMOUS)  
Sree Sainath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.

*Naik*

STATUTORY  
AUDITOR

*Naik*  
(UPIN: 17024819A SHACK II)  
M. RAJAGOPAL NAIDU, M.NO. 024819  
B.Sc., M.A., M.Com., F.C.A., D.I.S.A.,  
CHARTERED ACCOUNTANT  
10/80, Royal Nagar, TIRUPATI





125

125

A/c Dy No: 968  
Date: 08.01.19

UNIVERSITY GRANTS COMMISSION - SOUTH EASTERN REGIONAL OFFICE  
5-9-194, CHIRAG ALI LANE, IV FLOOR A.P.S.R.C. BUILDING, HYDERABAD -500 001  
Phones: 040 - 23204735, 23200208 FAX: 040 - 23204734, Website: www.ugc.ac.in,ugcsero@gmail.com

No: P. MRP-6603/16 (MRP/UGC-SERO)

January, 2019

The Accounts Officer  
South Eastern Regional Office  
University Grants Commission  
Hyderabad - 500 001

LINKNO:6603. DEPT:INFORMATION TECHNOLOGY  
COMCODE: APJN035

18 JAN 2019

Sub:Release of Grants-In-aid to The Principal SREE VIDYANIKETHAN ENGINEERING COLLEGE A.RANGAMPET CHITTOOR DIST. 517102. Under the Scheme "Minor Research Projects" - Reg.

Sir/Madam,  
On the basis of the accounts received for the first installment grant, I am to convey the sanction of the Commission for the payment of Rs.18000. to The Principal, SREE VIDYANIKETHAN ENGINEERING COLLEGE A.RANGAMPET CHITTOOR DIST. 517102, as second installment towards the Minor Research Project entitled Fast Content-based Search- Navigation and Retrieval System for e-Learning awarded to Dr. KASARAPU RAMANI Department of INFORMATION TECHNOLOGY as per the details given below:-

Item	Allocation (Rs.)	Amount sanctioned so far (Rs.)	Amount sanctioned being (Rs.)	Total amount sanctioned (Rs.)
Hiring Services	0 0	0 0	0 0	0 0
Contingency	15000.	7500.	6000.	13500.
Chemicals	0 0	0 0	0 0	0 0
Travel/Field Work	30000.	15000.	12000.	27000.
<b>Total</b>	<b>45000.</b>	<b>22500.</b>	<b>18000.</b>	<b>40500.</b>
Equipment	320000.	320000.	0 0	320000.
Books	30000.	30000.	0 0	30000.
<b>Total</b>	<b>350000.</b>	<b>350000.</b>	<b>0 0</b>	<b>350000.</b>
<b>Grand Total</b>	<b>395000.</b>	<b>372500.</b>	<b>18000. ✓</b>	<b>390500.</b>

Remarks:

- The grant is debitible to the following head of account.  

Amount Sanctioned	Head Of Account	Category
Rs.18000.	GEN-3(A)-2202.03.102.02.31 - 19(XXV)	GEN
- The sanctioned amount is debitible to the Major Head of Account: GEN-3(A)-2202.03.102.02.31 - 19(XXV) - Committed Liabilities: GIA(31) - Minor Research Project (General) and is valid for payment during the financial year 2018-19 Only and subject to the condition indicated below:
- The amount of the Grant shall be drawn by the Accounts Officer (Drawing and Disbursing Officer) UGC-SERO, Hyd. on the Grants-In Aid Bill and shall be disbursed to and credited to "The Principal, SREE VIDYANIKETHAN ENGINEERING COLLEGE, A.RANGAMPET, CHITTOOR DIST. - 517102. by Electronic Mode through PFMS Portal at the following details:

(a) AccountNo:154010100064139 (b) IFSCCode:ANDB0000033 (c)UniqueID:SVECGOVTFUND

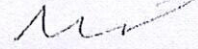
(d)Name & Address of Account Holder: The Principal, SREE VIDYANIKETHAN ENGINEERING COLLEGE, A.RANGAMPET, CHITTOOR DIST.(e) Name & Address of Bank Branch: AB, TIRUPAT.

- The Grant is subject to adjustment on the basis of Utilization Certificate in the prescribed Proforma submitted by the Institution.
- The Institution shall maintain proper accounts of the expenditure out of the Grants which shall be utilized only on the approved items of expenditure.
- The institution may follow the General Financial Rules, 2017 and take urgent necessary action to amend their manuals of financial procedures to bring them in conformity with GFR, 2017 and those don't have their own approved manuals on financial procedures may adopt the provision of GFR 2017 and Instructions / Guidelines thereunder from time to time.
- The Utilization Certificate to the effect that the grant has been utilized for the propose for which it has been sanctioned shall be furnished to UGC as early as possible after the close of current financial year.
- The assets acquired wholly or substantially out of UGC's Grant shall NOT be disposed or encumbered or utilized for the proposes other than those for which the grants was given without proper sanction of the UGC and should at any time the Institution ceased to function, such assets shall revert to the University Grants Commission.
- A Register of Assets acquired wholly or substantially out of the Grant shall be maintained by the Institution in the prescribed proforma.



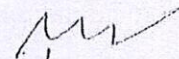
10. The Grantee Institution shall ensure the utilization of Grants-in-Aid for which it is being sanctioned / paid. In case of Non-Utilization / Part Utilization thereof, simple interest @ 10% per annum, as amended from time to time on the unutilized amount from the date of credit of amount to the date of refund as per provision contained in General Financial Rules of Govt. of India will be charged.
11. The Institution shall follow strictly the Government of India/ UGC's Guidelines regarding Implementation of the reservation policy (Both Vertical [for SC,ST & OBC] and horizontal [for Persons with disability etc.]) in teaching and non-teaching posts.
12. The Institution shall fully implement the Official Language Policy of Union Government and comply with the Official Language Act 1963 and Official Languages (Use for Official Purposes of Union) Rules, 1976 etc.
13. The sanction is issued in exercise of the delegation of powers vide UGC Order No. 69/2014 (F.No.10-11/12 (Admn.A&B) dated 23.03.2014.
14. The Institution shall strictly follow the UGC Regulations on curbing the menace of Ragging in Higher Education Institutions, 2009 and amendments thereof.
15. It may be noted that the accounts of the grant-in-aid institution shall be subject to inspection by Officers of the SERO, UGC, Hyderabad.
16. The sanction issues in exercise of the delegation of powers vide Commission Office Order No: 25/92 dated May 01,1992.
17. The funds to the extent are available under the Scheme.
18. No Extension will be given beyond two years of tenure.
19. The Principal Investigator of the Project has to send the final Technical Report to this office and a copy to The Director, Information and Library Networking Center (INFLIBNET), Opposite Gujarat University Guest House, Post Box No. 4116, Navarangapur, Ahmadabad - 380 009.
20. A certificate to the effect that books & journals and equipments purchased under the scheme have been deposited to college/institution in the departmental/central library after the completion of this project must be submitted to UGC.
21. A certificate signed by the Principal Investigator and Principal to the effect that Executive summary of the report, Research documents, monograph, academic papers published under Minor Research Project has been posted on the website of the College.
22. The University/ College / Institution is registered / mapped with PFMS Portal"
23. The Expenditure is to be incurred using EAT module in PFMS. The stepwise details for implementation of EAT Module is available at "<https://pfms.nic.in/> -> Books and Manuals -> EAT User Manual"

Yours faithfully,

  
(Dr.G.Srinivas)  
Joint Secretary  
08/01/19

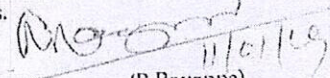
Copy forwarded for information and necessary action to:

- (1) The Principal (through RTGS/DIRECT CREDIT/Demand Draft)  
SREE VIDYANIKETHAN ENGINEERING COLLEGE A.RANGAMPET  
CHITTOOR DIST. 517102.  
He/She is requested to abide by the instructions/guidelines of sanction order.
- (2) The Principal Accountant General, ANDHRA PRADESH State
- (3) Dr. KASARAPU RAMANI  
Department of INFORMATION TECHNOLOGY  
SREE VIDYANIKETHAN ENGINEERING COLLEGE  
A.RANGAMPET, CHITTOOR DIST. 517102.
- (4) The Commissioner/Director  
Collegiate Education  
Government of ANDHRA PRADESH

  
(Dr.G.Srinivas)  
Joint Secretary

Gar GIA Sl.No. 165 /2018-2019

The sanctioned grant of Rs.18000. /- has been transferred to your college Account as mentioned at the Point No. 2 of this Sanction Order by e-payment through PFMS portal vide date.....11/01/19.....You are requested to acknowledge the receipt of the above amount in your account by sending back the enclosed stamped receipt within 7 days.

  
(R.Rayappa)  
Accounts Officer



127

137

Annexure -IV

UNIVERSITY GRANTS COMMISSION  
BAHADUR SHAH ZAFAR MARG  
NEW DELHI - 110 002.

**Annual Report of the work done on the Minor Research Project.**

(Report to be submitted within 6 weeks after completion of each year)

1. Project report No. **First (After One Year) Dated: 20.07.2018.**
2. UGC Reference No.F. No:4-4/2015-16(MRP/UGC-SERO) dated\_October, 2016
3. Period of report: **From 01-07-2017 To 31-07-2018**
4. Title of research project :**Fast Content based Search, Navigation and Retrieval System for e-Learning**
5. (a) Name of the Principal Investigator: **Dr. Kasarapu Ramani**  
(b) Dept.: **Information Technology**  
(c) College where work has progressed :**Sree Vidyanikethan Engineering College (Autonomous), A. Rangampet.**
6. Effective date of starting of the project: **01-07-2017**
7. Grant approved and expenditure incurred during the period of the report:
  - a. Total amount approved : **Rs. 3,95,000/-**
  - b. Total expenditure: **Rs. 3,72,549/-**
- c. Report of the work done: **Please Refer Annexure-V**
  - i. Brief objective of the project:
    - To Design and Develop Automatic Lecture video segmentation techniques.
    - To Design and Develop Low and high level feature extraction techniques for video lectures.
    - To Design and Develop Video ranking system.
    - To Design and Develop Automated indexing, search, navigation and retrieval techniques.
  - ii. Work done so far and results achieved and publications, if any, resulting from the work (Give details of the papers and names of the journals in which it has been published or accepted for publication:



- A) Amount (Rs/-) approved: **3,95,000/-**
- B) Amount (Rs/-) sanctioned for 1<sup>st</sup> year: **3,72,500/-**
- C) Amount (Rs/-) sanctioned for 2<sup>nd</sup> year: **18,000/-**

B+C=A

**(3,72,500)+(18,000)=3,90,500/-**

- D) Expenditure (Rs/-) Incurred for 1<sup>st</sup> year: **3,72,549/-**

- E) Expenditure (Rs/-) Incurred for 2<sup>nd</sup> year: **18,769/-**

D + E = A

**(3,72,549/-)+(18,769/-)=3,91,318/-**

- 7. if as a result of check or audit objection some irregularly is noticed at later date, action will be taken to refund, adjust or regularize the objected amounts.
- 8. It is certified that the grant of **Rs. 3,90,500/- (Rupees Three Lakhs Ninty Thousand and Five Hundred only)** received from the University Grants Commission under the scheme of support for Minor Research Project entitled **Fast Content based Search, Navigation and Retrieval System for e-Learning** vide UGC letter No. **F. No:4-4/2015-16 (MRP/UGC-SERO)** dated **October, 2016** has been fully utilized for the purpose for which it was sanctioned and in accordance with the terms and conditions laid down by the University Grants Commission.

*K. Ra*  
**SIGNATURE OF PRINCIPAL INVESTIGATOR**  
**Dr. K. RAMANI**  
 Professo. & Head  
 Dept. of Information Technology  
 Sree Vidyanikethan Engineering College  
 A. RANGAMPET-517 102

*P. Chelappo*  
**PRINCIPAL**  
**PRINCIPAL**  
**SREE VIDYANIKETHAN ENGINEERING COLLEGE**  
**(AUTONOMOUS)**  
 Sree Sainath Nagar, A. RANGAMPET  
 Chittoor (Dist.) - 517 102, A.P., INDIA.

*M. Rajagopal*  
**STATUTORY AUDITOR**  
**M. RAJAGOPAL MUDU, M NO. 024814**  
**B.Sc., M.A., M.Com., F.C.A., D.I.S.A.,**  
**CHARTERED ACCOUNTANT**  
**10/80, Royal Nagar, TIRUPATI**





129

129

A/c Dy No. 366  
Date: 29/6/17

UNIVERSITY GRANTS COMMISSIONS -SOUTH EASTERN REGIONAL OFFICE  
5-9-194, CHIRAG ALI LANE, IV FLOOR, A.P.S.F.C. BUILDING, HYDERABAD -500 001  
Phones: 040 - 23204735, 23200208 FAX: 040 - 23204734, Website: www.ugc.ac.in, email: ugesero@gmail.com

No.F MRP-6437/16 (SERO/UGC)

Link No:6437.

June,2017

The Accounts Officer  
UGC-SERO, Hyderabad

Comcode: APJN035  
UniqueID:SVCEGOVTFUND

30 JUN 2017

Sub; Release of Grants-in-aid to Minor Research Projects for the year 2017-2018 .

Sir / Madam,

The has reference to the Minor Research Project proposal submitted by RASHEED SYED Department of Chemistry of "Sree Vidyanikethan Engineering College" A.RANGAMPET, TIRUPATI entitled "SYNTHESIS OF BIOLOGICALLY ACTIVE SUBSTITUTED TRIAZOLES AND TETRAZOLES". The subject expert, who evaluated the proposal, has recommended for financial assistance as detailed below.

Sl. No	Item	Amount Allocated (Rs.)	Amount Sanctioned as first installment (Rs.)
1.	Books & Journals	00	00
2.	Equipment	80000.	80000
	Total	80000.	80000.
3.	Field work & Travel	10000.	5000
4.	Chemical & Glass Ware	60000.	30000
5.	Contingency (incl. Special Needs)	30000.	15000.
6.	Hiring Services	00	00
	Total	100000.	50000.
	Grand Total	180000.	130000.

1. I am further to convey the sanction of the University Grants Commission to the payment of Rs.130000. to the principal, Sree Vidyanikethan Engineering College, A.RANGAMPET, TIRUPATI as first installment (100% Non-Recurring and 50% Recurring grants) towards the above project.

Amount Sanctioned	Head of Accounts	Category
Rs. 80000.	35-CAP-MRP(50)-3(A)2202.03.102.02.01	GEN
Rs. 50000.	31-GIA-MRP(50)-3(A)2202.03.102.02.01	GEN

2. The above approval is subject to the general conditions of grants prescribed by the UGC for this scheme.
3. The sanctioned amount is debitible to the Head of Accounts 35-CAP-MRP(50)-3(A)2202.03.102.02.01 (General), 31-GIA-MRP(50)-3(A)2202.03.102.02.01(General) and is valid for payment during the financial year 2017-18 only and the amount of the Grant shall be drawn by the Accounts Officer (Drawing and Disbursing Officer) UGC-SERO, Hyd. on the Grants-In-Aid Bill and shall be disbursed to and credited to "The Principal, Sree Vidyanikethan Engineering College, A.RANGAMPET, TIRUPATI by Electronic Mode through PFMS Portal at the following details: (a) Name & Address of Account Holder: The Principal, Sree Vidyanikethan Engineering College, A.RANGAMPET, TIRUPATI (b) Account No: 15401010006413 (c) Name & Address of Bank Branch: AB, TIRUPATI. (d) IFSC Code: ANDB0000033.
4. In case the Principal Investigator is having ongoing Major/Minor Research Project OR has been transferred/left/retired from the college, the released amount of Rs.130000/- may be returned to UGC-SERO, Hyderabad immediately, failing which action will be initiated against the College for not adhering with the norms of UGC for the scheme.
5. The grantee institution shall ensure the utilization of grants -in-aid for which it is being sanctioned/paid. In case of non-utilization /part utilization, interest @ 10% per annum as amended from time to time on utilized amount from the date of drawl to the date of refund as per provision contained in General Financial Rules of Govt. of India will be charged.
6. The assets acquired wholly or substantially out of UGC's grants shall not be disposed or encumbered or utilized for the purposes other than those for which the grant was given, without proper sanction of the UGC and should, at any time the college ceased to function, such assets shall revert to the UGC.



UNIVERSITY GRANTS COMMISSION  
UGC-SERO MINOR PROJECT

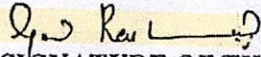
Annexure - IV

130  
130

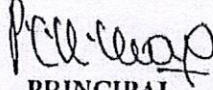
Utilization certificate

Certified that the grant of Rs. 1,30,000 (Rupees One Lakh Thirty Thousand) received from the University Grants Commission under the scheme of support for Major Research Project entitled SYNTHESIS OF BIOLOGICALLY ACTIVE SUBSTITUTED TRIAZOLES AND TETRAZOLES vide UGC letter No. F. MRP-6437/16(SERO/UGC) dt.30-06-2017 has been fully utilized for the purpose for which it was sanctioned and in accordance with the terms and conditions laid down by the University Grants Commission.

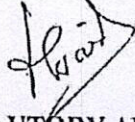
7

  
SIGNATURE OF THE  
PRINCIPAL INVESTIGATOR

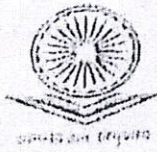
[Dr. Raheed Syed]

  
PRINCIPAL

PRINCIPAL  
SREE VIDYANIKETHAN ENGINEERING COLLEGE  
(AUTONOMOUS)  
Sree Sainath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA.

  
STATUTORY AUDITOR  
M. RAJAGOPAL NAIDU, M.NO. 024819  
B.Sc., M.A., M.Com., F.C.A., D.I.S.A.,  
CHARTERED ACCOUNTANT  
10/80, Royal Nagar, TIRUPATI





UNIVERSITY GRANTS COMMISSION - SOUTH EASTERN REGIONAL OFFICE  
5-9-194, CHIRAG ALI LANE, IV FLOOR, A.P.S.F.C. BUILDING, HYDERABAD -500 001  
Phones: 040 - 23204735, 23200208 FAX: 040 - 23204734.

F.No:MRP 6437/16 (UGC-SERO)

Date: October, 2020

Link No - 6437

The Principal

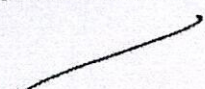
Sree Vidyaniketan Engg College  
A. Ranganapet  
517-102-

Sub: UGC assistance to Minor Research Project approved to Dr. / ~~Mr./Mrs./Ms.~~  
Dr. Raheed Syed, Dept. of Chemistry entitled "Synthesis of Biologically  
Active Substituted Triazoles and Tetrazoles  
-Reg.

Sir/Madam,

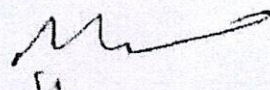
Based on the documents submitted by the College/Principal Investigator of the Project on the subject cited above, the Commission has Settled the accounts of the project without any reimbursement.

Yours faithfully,

  
(Dr. G. Srinivas)  
Additional Secretary

Copy to:

Dr. Raheed Syed  
Dept. of Chemistry  
Sree Vidyaniketan Engg College  
A. Ranganapet  
517-102-

  
(Dr. G. Srinivas)  
Additional Secretary

09/10/2020





132

132

A/c Dy No. 367  
Date: 29/6/17UNIVERSITY GRANTS COMMISSIONS - SOUTH EASTERN REGIONAL OFFICE  
5-9-194, CHIRAG ALI LANE, IV FLOOR, A.P.S.E.C. BUILDING, HYDERABAD -500 001  
Phones: 040 - 23204735, 23200208 FAX: 040 - 23204734, Website: www.ugc.ac.in, email: ugcsero@gmail.com

No.F MRP-6438/16 (SERO/UGC)

Link No:6438.

June,2017

The Accounts Officer  
UGC-SERO, HyderabadComcode: APJN035  
UniqueID:SVECGOVTFUNDSub: Release of Grants-in-aid to Minor Research Projects for the year 2017-2018.  
Sir / Madam,

30 JUN 2017

The has reference to the Minor Research Project proposal submitted by B.Palakshi Reddy Department of Chemistry of "Sree Vidyanikethan Engineering College" A.RANGAMPET, A.RANGAMPET entitled "SYNTHESIS OF NI NANOPARTICLES USING POLYPHENOLS AND ITS APPLICATION IN CONVERSION OF BISPIDINONES TO BISPIDINOLS". The subject expert, who evaluated the proposal, has recommended for financial assistance as detailed below.

Sl. No	Item	Amount Allocated (Rs.)	Amount Sanctioned as first installment (Rs.)
1.	Books & Journals	10000.	10000.
2.	Equipment	100000.	100000.
	Total	110000.	110000.
3.	Field work & Travel	10000.	5000.
4.	Chemical & Glass Ware	60000.	20000.
5.	Contingency (incl. Special Needs)	40000.	20000.
6.	Hiring Services	0 0	0 0
	Total	110000.	55000.
	Grand Total	220000.	165000.

1. I am further to convey the sanction of the University Grants Commission to the payment of Rs.165000. to the principal, Sree Vidyanikethan Engineering College, A.RANGAMPET, A.RANGAMPET as first installment (100% Non-Recurring and 50% Recurring grants) towards the above project.

Amount Sanctioned	Head of Accounts	Category
Rs. 110000.	35-CAP-MRP(50)-3(A)2202.03.102.02.01	GEN
Rs. 55000.	31-GIA-MRP(50)-3(A)2202.03.102.02.01	GEN

2. The above approval is subject to the general conditions of grants prescribed by the UGC for this scheme.
3. The sanctioned amount is debitible to the Head of Accounts 35-CAP-MRP(50)-3(A)2202.03.102.02.01 (General), 31-GIA-MRP(50)-3(A)2202.03.102.02.01 (General) and is valid for payment during the financial year 2017-18 only and the amount of the Grant shall be drawn by the Accounts Officer (Drawing and Disbursing Officer) UGC-SERO, Hyd. on the Grants-In Aid Bill and shall be disbursed to and credited to "The Principal, Sree Vidyanikethan Engineering College, A.RANGAMPET, A.RANGAMPET by Electronic Mode through PFMS Portal at the following details: (a) Name & Address of Account Holder: The Principal, Sree Vidyanikethan Engineering College, A.RANGAMPET, A.RANGAMPET (b) Account No: 154010100064139. (c) Name & Address of Bank Branch: AE, TIRUPATI (d) IFSC Code: ANDB0000033.
4. In case the Principal investigator is having ongoing Major/Minor Research Project OR has been transferred/left/retired from the college, the released amount of Rs.165000./- may be returned to UGC-SERO, Hyderabad immediately, failing which action will be initiated against the College for not adhering with the norms of UGC for the scheme.
5. The grantee institution shall ensure the utilization of grants -in-aid for which it is being sanctioned/paid. in case of non-utilization /part utilization, interest @ 10% per annum as amended from time to time on utilized amount from the date of drawl to the date of refund as per provision contained in General Financial Rules of Govt. of India will be charged.
6. The assets acquired wholly or substantially out of UGC's grants shall not be disposed or encumbered or utilized for the purposes other than those for which the grant was given, without proper sanction of the UGC and should, at any time the college ceased to function, such assets shall revert to the UGC.



133

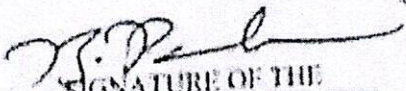
133

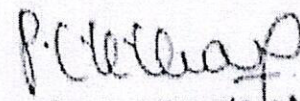
Annexure - IV


UNIVERSITY GRANTS COMMISSION  
UGC-SERO MINOR PROJECT

Utilization certificate

Certified that the grant of Rs. 1,65,000 (Rupees One Lakh Sixty Five Thousand) received from the University Grants Commission under the scheme of support for Minor Research Project entitled SYNTHESIS OF NI NANOPARTICLES USING POLYPHENOLS AND ITS APPLICATION IN CONVERSION OF BISPIDINONES TO BISPIDINOLS vide UGC letter No. F. MRP-6438/16(SERO/UGC) dt.30-06-2017 has been fully utilized for the purpose for which it was sanctioned and in accordance with the terms and conditions laid down by the University Grants Commission.

  
SIGNATURE OF THE  
PRICIPAL INVESTIGATOR  
(Dr. B. Padakshi Reddy)

  
(Dr. P.C. KRISHNAMACHARY)  
PRINCIPAL  
PRINCIPAL  
SREE VIDYAKRISHNAN ENGINEERING COLLEGE  
(AUTONOMOUS)  
Sree Sainath Nagar, A. RANGAMPET  
Chittoor (Dist.) - 517 102, A.P., INDIA

  
STATOURY AUDITOR  
M. RAJAGOPAL NAIDU, M.NO. 024819  
B.Sc., M.A., M.Com., F.C.A., D.I.S.A.,  
CHARTERED ACCOUNTANT  
10/80, Royal Nagar, TIRUPATI



134

SREE VIDYANIKETHAN EDUCATIONAL TRUST  
SREE SAINATH NAGAR, A.RANGAMPET  
CHANDRAGIRI MANDAL, CHITTOOR DISTRICT, A.P.

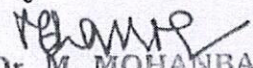
SCHEDULE - I (Income & Expenditure)

	PARTICULARS	Amount Rs.	Amount Rs.
<b>A.</b>	<b><u>FEE FROM STUDENTS:</u></b>		
	Tuition Fee	715345647	
	Admission Fee	4990500	
	Special Fee	9583115	
	Lab Fee	5179150	
	Swimming Fee	35757	
	Book Bank scheme fee	7534225	
	Bus Fee	5806500	
	Applications/Registrations Fee	2642100	
	Information Commuicaion and Student insurance	6107425	
	Registration Fee / Gems fee	99200	
	JNTU UCS and Admission fee / University Fee	11087078	
	JNTU Affiliation Fee	972550	
	JNTU DLR Fee	1128200	
	JNTU Sports Fee	1280300	
	Sports & Games Fee	2649750	
	Adhoc Receipts (Exam fee, Tuck shop, fines, medicals, Condonation etc)	3839546	
	Transportaion charges	477000	
	Placement & Training Fee (Net)	8120180	786878223
	Hostel Fee	143386681	
	Stationery Fee	614550	
	Examination Fees (Exam Cell)	20910903	164912134
	<b>Total</b>		951790357
<b>B.</b>	<b><u>GRANTS/ SPONSERSHIPS:</u></b>		
	AP State Skill Development	200000	
	All India Council for Technical Education	2009134	
	Govt. of India and A.P - TEQIP	7000000	
	DBT (Department of Biotechnology)	906600	
	University Grants Commission	1081579	
	DST (Science & Engg. Research Project / Seminar)	2585200	
		13782513	
	Less: ISRO Respond Project (Refund of Unspent Grant )	159252	13623261
<b>C.</b>	<b><u>OTHER INCOME:</u></b>		
	Consultancy and Testing charges	44700	
	Examination Fees	221189	
	CBSE Exam Fees	125750	
	Rents Received	381150	
	Insurance Claims	176600	
	Interest on Deposits	10846657	
	Interest on ACD	209638	
	Miscellaneous Receipts (Xerox charges, Fines, Certificate fees etc)	775380	
	Adjustments Relating to Earlier Years A/c	41364760	54145823

For M/s. RAJAGOPAL NAIDU & Co  
Chartered Accountants, F.R.N. 018890S  
18-80, Rajal Nagar, Tirupati

Mg. Partner: M. RAJAGOPAL NAIDU  
(M.No. 024819)

5

  
Dr. M. MOHANBABU  
CHAIRMAN

SREE VIDYANIKETHAN EDUCATIONAL TRUST  
SREE SAINATH NAGAR, A. RANGAMPET  
CHITTOOR DISTRICT - 517 102., A.P.



**2016-17**



व अन्तरिक्ष अनुसंधान संगठन

अन्तरिक्ष विभाग

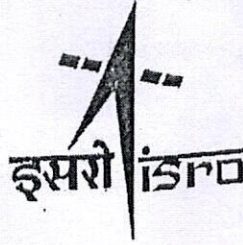
भारत सरकार

अन्तरिक्ष भवन

न्यू बी ई एल रोड, बेंगलूर - 560 231, भारत

दूरभाष : +91 80 2341 5474

फैक्स :



Indian Space Research Organisation  
Department of Space  
Government of India  
Antariksh Bhavan  
New BEL Road, Bangalore - 560 231, India  
Telephone : +91 80 2341 5474  
Fax : 2016-17

136

136

Dr. K Ganesha Raj  
Director, RESPOND

☎ : 080 2341 5269/22172269  
FAX: 080 -23412471

Email: director-respond@isro.gov.in

January 12, 2017

ISRO/RES/2/398/16-17

Dear Dr.Nimmagadda Padmaja,

Subject: RESPOND Project - "MST Radar Signal Processing using Empirical Mode Decomposition and Hilbert Huang Transform"-reg.

This has reference to the submission of the First Year Annual Progress Report of the above-mentioned RESPOND Project and your request for renewal for Second Year of the project. I wish to inform you that, Chairman, ISRO/Secretary, DOS has approved the following:

1. Renewal of the project for Second Year
2. Release of grant of ₹5.86 Lakhs (Rupees Five Lakhs and Eighty Six Thousand only) for meeting the expenditure of the project during the second year which includes enhancement of salary and HRA of JRF ₹2.38 Lakhs
3. Utilization of unspent balance of ₹0.25 lakhs

In this context, DOS has already issued Financial Sanction Order (copy enclosed). Further, on completion of the project:

- (a) You will have to send a comprehensive report (hard copy and soft copy) covering total project activities. The copies of reports should be sent to Director, NARL, Gadanki (Attn: Dr.S.Sridharan, RESPOND Co-ordinator, NARL, Gadanki) and two copies to the undersigned.
- (b) You will have to send the final Fund Utilization Certificate and Audited Accounts Statement for the total expenditure incurred in the project. The FUC and AAS should be sent to the Pay & Accounts Officer, Department of Space, Antariksh Bhavan, New BEL Road, Bengaluru 560 231; Director, NARL, Gadanki (Attn: Dr.S.Sridharan, RESPOND Co-ordinator, NARL, Gadanki) with a copy to the undersigned.

भारतीय अन्तरिक्ष अनुसंधान संगठन / Indian Space Research Organisation

. N 12

Scanned by CamScanner



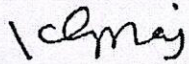
137

137

You are requested to send the enclosed grant-in-aid bill and the Electronic Transfer Mandate Form duly filled and signed in original to The Pay and Accounts Officer, Department of Space, Antariksh Bhavan, New BEL Road, Bengaluru : 560 231 with a copy to the undersigned for releasing the grants ( to The Principal, Sree Vidyanikethan Engineering College, Tirupati) at the earliest.

With Best Regards,

Yours sincerely,

  
(K Ganesha Raj)

**Dr. Nimmagadda Padmaja**  
**Professor**  
**Department of Electronics & Communication Engineering**  
**Sree Vidyanikethan Engineering College**  
**Sree Sainath Nagar, A Rangampet**  
**Tirupati : 517 102**  
**Chittoor District**  
**Andhra Pradesh.**

CC: Scientific Secretary, ISRO  
Director, NARL, Gadanki  
Principal, Sree Vidyanikethan Engineering College, Tirupati  
Dr S Sridharan, RESPOND Co-ordinator, NARL, Gadanki



2016-17

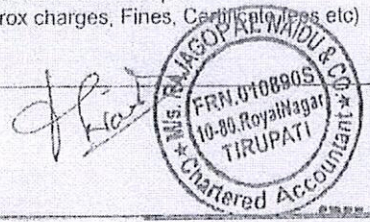
138

138

SREE VIDYANIKETHAN EDUCATIONAL TRUST  
SREE SAINATH NAGAR, A.RANGAMPET  
CHANDRAGIRI MANDAL, CHITTOOR DISTRICT, A.P.

SCHEDULE - I

	PARTICULARS	Amount Rs.	Amount Rs.
A.	<u>FEE FROM STUDENTS;</u>		
	Tuition Fee	647195846	
	Admission Fee	7857000	
	Special Fee	9612855	
	Lab Fee	2746480	
	Swimming Fee	313932	
	Book Bank scheme fee	7861960	
	Bus Fee	8694834	
	Applications/Registrations Fee	2249600	
	Tab Fee	1192201	
	Information Commuicaion and Student insurance	5426900	
	Registration Fee / Gems fee	197950	
	JNTU UCS and Admission fee / University Fee	7397633	
	JNTU Affiliation Fee	933825	
	JNTU DLR Fee	1137800	
	JNTU Sports Fee	1295100	
	Sports & Games Fee	3262920	
	Ceep & Non Ceep Fee	7200	
	Adhoc fee (Exam fee, Tuck shop, fines, medicals, Condonation etc)	7563346	
	Transportalon Fee	275250	
	Placement & Training Fee	7426034	722648686
	Hostel Fee	158015175	
	Stationery Fee	2049321	
	Income from Techno Cultural Fest - MM 2016	2061669	
	Examination Fees (Exam Cell)	16655856	177782021
	<b>Total</b>		<b>900430687</b>
B.	<u>GRANTS/ SPONSERSHIPS;</u>		
	AP State Skill Development	11000	
	All India Council for Technical Education	443919	
	Govt. of India and A.P - TEQIP	10200000	
	DBT (Department of Biotechnology)	201000	
	Indian Council of Medical Research	40000	
	ISRO Respond Project	586000	
	University Grants Commission	19200	
	DST (Science & Engg. Research Project / Seminar)	3715200	
	TTD - Management Thoughts from Bhagavadh Gita	200000	15416319
C.	<u>OTHER INCOME;</u>		
	Consultancy and Testing fee	50700	
	Examination Fund	57934	
	CBSE Exam Fund	270007	
	Rents	374850	
	Insurance Claims	1112156	
	Interest on Deposits	13798917	
	Interest on ACD	202678	
	Miscellaneous Receipts (Xerox charges, Fines, Card/Photo fees etc)	1891051	17758293



5

Dr. M. MOHANBABU  
CHAIRMAN



### Funded Research Project - Details

Project Title \* : MST Radar Signal Processing using Empirical Mode Decomposition and Hilbert Huang Transform.

Funding Agency/Department \* : ISRO-RESPOND  
Department of Space, GoI.

Name of the PI : Dr. N Padmaja

Name of the Co-PI (if any) : Dr. S Varadarajan

Affiliation of PI & Co-PI : Professor of ECE,  
Sree Vidyanikethan Engg College (PI)  
Professor of ECE, Sri Venkateswara  
University College of Engineering  
College, Tirupati (Co-PI)

Project Duration \* : 2 Years (2014-17)

Project Cost (in Rs.) \* : Rs.16,74,000/-

Amount Sanctioned till date : Rs.16,74,000/-

Amount Utilized till date : Rs. 15,22,758/-

Balance Amount : Rs. 1,59,252/- (Refunded to ISRO)

Project Started in \* : 2014

Project Expected end in \* : 2017

Project Expected Outcomes \* :

- Developed a versatile and GUI (Graphic user Interface) package consisting of efficient inbuilt algorithms using Empirical Mode Decomposition (EMD) and Hilbert Huang Transform (HHT) for processing MST (Mesosphere-Stratosphere-Troposphere) radar echoes for accurate Doppler profile detection in Stratosphere and Mesosphere region and calculation of Wind Velocity using moments. The work is executed using MATLAB software.
- An algorithm was developed for estimation of Moments like Power, Doppler, Doppler width and SNR using soft threshold de-noising techniques.

*N. Padmaja* PI  
**Dr. N. PADMAJA, M.Tech., Ph.D.**  
 PROFESSOR  
 Dept. of Electronics & Communications  
 SREE VIDYANIKETHAN ENGINEERING COLLEGE  
 A. RANGAMPET-517 102 (Chittoor Dt.)



# MST RADAR SIGNAL PROCESSING USING EMPIRICAL MODE DECOMPOSITION AND HILBERT HUANG TRANSFORM

140

140

## A. ABSTRACT

The project involves development of versatile Graphic User Interface (GUI) Model consisting of efficient inbuilt algorithms using Empirical Mode Decomposition (EMD) and Hilbert Huang Transform (HHT) for processing MST Radar echoes for accurate Doppler profile detection in lower stratosphere and troposphere region.

HHT is a time-frequency analysis technique that is adaptive and constitutes Empirical Mode Decomposition of non-linear and non-stationary data to obtain Intrinsic Mode Functions (IMFs). The algorithm uses EMD de-noising using soft thresholding techniques for accurate doppler profile detection and Signal to Noise Ratio (SNR) improvement of MST Radar Signals. HHT process has been applied on the time series radar data of MST radar collected from NARL (National Atmospheric Research Laboratory), Gadanki, India. Further, spectral moments were estimated and signal parameters such as mean doppler, signal power, noise power and SNR were calculated. Stacked doppler profile was plotted to observe the improvement in doppler detection. It has been observed that there is a considerable improvement in recognition of the doppler echo leading to improved Signal Power and SNR. The algorithm was tested for its efficacy on various data sets for all the 6 beams and the results of three data sets are presented in this work.

The developed GUI model is user friendly and menu driven. The signal processing parameters include Doppler frequency, Signal Power, Noise Power, SNR and wind velocity. The menu driven parameters such as Radar Data, Beam, and Estimation of moments and calculation of Wind velocity were taken into consideration. Mean doppler profiles were plotted using FFT and HHT and moments were calculated and stored. Finally, the Wind velocity was calculated. The developed algorithm was tested on several data sets for testing its efficacy. It was observed that the algorithm showed improvement in the detection of genuine doppler echo and further improvement in the visibility of doppler profile upto 26 Kms. The GUI model results were verified using Atmospheric Data Processor (ADP).

## 1. Summary of the work

The Radar returns from the atmosphere are non-linear and non-stationary in nature and are very weak since they are buried in noise. Hence, they demand efficient signal processing techniques in order to improve doppler profile detection and parameter extraction.



150 km (E region) and 150-800 km (F region). The echoes from the atmosphere are due to neutral turbulence in the lower height regions and due to the irregularities in electron density in the higher altitudes [3].

## 2.2 MST Radar Equation

MST radar uses the scattering and reflection from variation in radio refractive index of neutral atmosphere which in turn depends on variability of humidity, temperature and electron density induced by turbulence in the lower and middle atmosphere. The mean received echo power due to volume scatter is given by

$$P_r \propto \frac{P_t A_e \eta r}{4\pi R^2} \text{----- (2.1)}$$

- Where  $P_t$  = Transmitter power  
 $A_e$  = Effective antenna area  
 $r$  = Range resolution  
 $R$  = Range of reflecting volume  
 $H$  = Volume reflectivity coefficient

## 2.3 Objectives

The objective of the proposed project involves development of versatile software consisting of efficient inbuilt algorithms using Empirical Mode Decomposition (EMD) and Hilbert Huang Transform (HHT) for processing MST Radar echoes for accurate Doppler profile detection in lower stratosphere and troposphere region. The software developed is user friendly, menu driven and adaptable to change for various radar operational strategies and signal processing parameters required for HHT processing. The signal processing parameters include Doppler frequency, Signal Power, Noise Power, SNR and wind velocity. The menu driven parameters such as Radar Data, Beam, and Estimation of moments and calculation of wind velocity were taken into consideration.

A few further outcomes from the research work are:

- To detect dopplers at higher altitudes (above 15Kms).
- Plot doppler profiles using FFT and HHT
- To Enhance the Signal-to- Noise ratio (SNR) using de-noising techniques
- Estimate Moments and Signal Parameters like Signal power, Noise power, SNR, Doppler width.
- UWW computation and calculation of Wind velocity.



- Qualitative assessment of the proposed HHT processing with conventional approaches such as FFT.
- Validation of the results using Atmospheric Data Processor (ADP).

### 3. Instrumentation – Development of equipment/hardware

The project involves development of versatile Graphic User Interface (GUI) Model consisting of efficient inbuilt algorithms using Empirical Mode Decomposition (EMD) and Hilbert Huang Transform (HHT) for processing MST Radar echoes for accurate Doppler profile detection in lower stratosphere and troposphere region. The GUI model developed is user friendly and menu driven. The signal processing parameters include Doppler frequency, Signal Power, Noise Power, Doppler width, SNR and wind velocity. Mean doppler profiles can be plotted and observed using FFT and HHT. The menu driven parameters such as Radar Data, Beam, and estimation of moments and calculation of Wind velocity were taken into consideration. The process involves calculation of moments and storing individual beams for computation of U, V W components and Wind velocity. The GUI model developed is as shown in the Figure 3.1. It consists of several menu driven elements to process the radar signals.

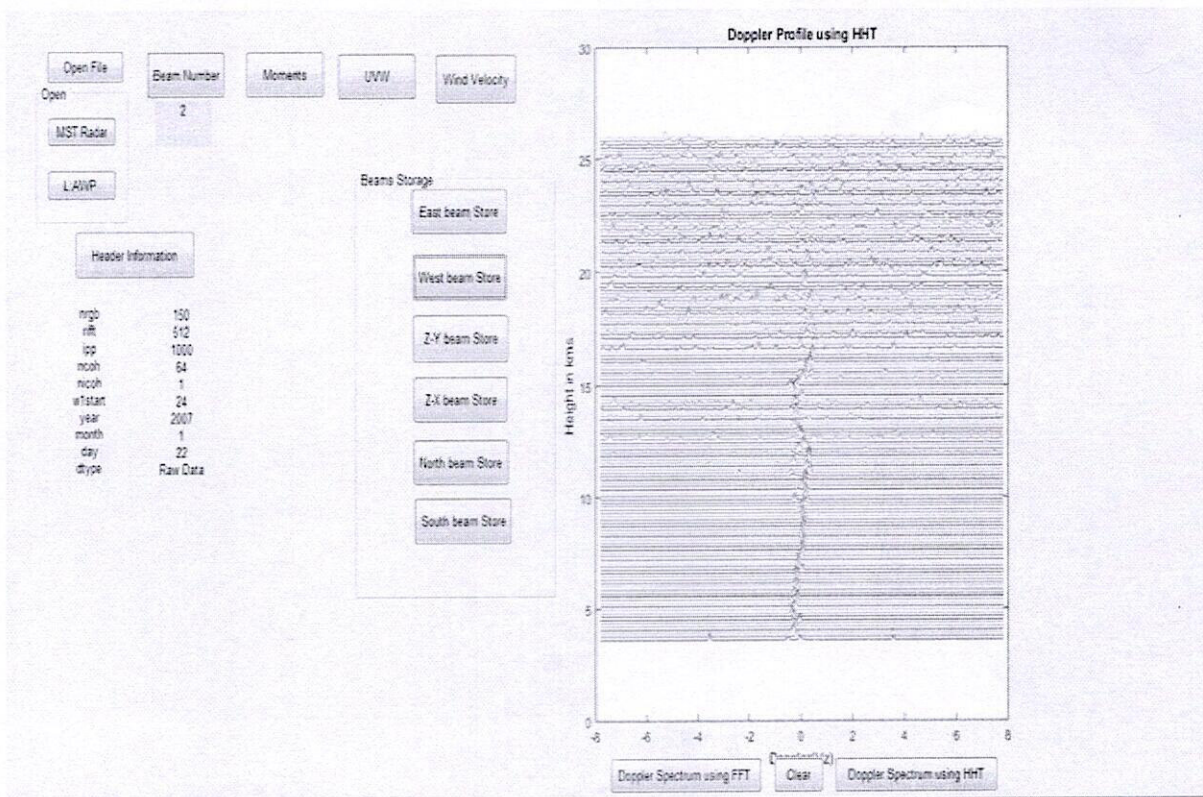


Figure 3.1 Graphic User Interface Model developed.



## 5.6. Development of Graphical User Interface (GUI) model using MATLAB

A versatile Graphic User Interface (GUI) Model was further designed and developed that consists of the algorithms that were developed using Empirical Mode Decomposition (EMD) and Hilbert Huang Transform (HHT) techniques discussed earlier in chapter 4 for processing MST Radar echoes for accurate Doppler profile detection in lower stratosphere and troposphere region.

GUIs are used because it makes things simple for the end-users of the program. Graphical user interface (GUI) provides point and click control of software applications, eliminating the need to learn a language or type commands in order to run the application. MATLAB apps are self contained MATLAB programs with GUI front ends that automate a task or calculation. The GUI, typically contains controls such as menus, toolbars, buttons, and sliders.

### 5.6.1 Creating a MATLAB GUI with GUIDE

GUIDE (GUI development environment) provides tools to design user interface for custom apps. Using the GUIDE layout editor, we can graphically design our UI. GUIDE then automatically generates the MATLAB code for constructing the UI, which we can modify to program the behavior of our app. Select the default blank GUI option and click OK. You will now have the following workspace where you can drag and drop elements into your interface as shown in figure 5.1a. and 5.1b. [18,19].

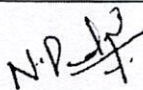
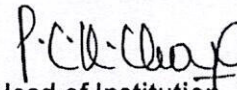
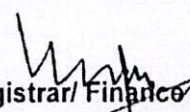
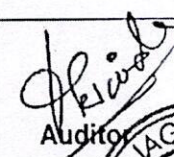

*NMP*  
Dr. N. PADMAJA, M.Tech., Ph.D.  
PROFESSOR  
Dept. of Electronics & Communications  
SREE VIDYANIKETHAN ENGG. COLLEGE  
A.RANGAMPET-517 102 (Chittoor Dt.)



**ISRO HEADQUARTERS  
RESPOND PROGRAMME OFFICE  
FORM OF FUND UTILISATION CERTIFICATE  
(PROJECTS/SCHEMES)**

<b>Name of the Nodal Institution / Department of Organization</b>	Sree Vidyanikethan Engineering College Department of Electronics and Communication Engineering, Tirupati.
<b>Name of the Project / Scheme</b>	MST Radar Signal Processing using Empirical Mode Decomposition and Hilbert Huang Transform

Certified that out of Rs.16,82,010/- of Grant-in-aid sanctioned during the financial years 2014-15 (Rs.10,63,000/-) and 2016-17 (Rs.5,86,000/-), Bank interest (Rs.8010/-) and unspent amount of Rs. 25,000/- during the first year of the project in favour of Principal, Sree Vidyanikethan Engineering College, Tirupati, on the subject project for the first and second year by Government of India, Department of Space, Bangalore as per Sanction Order No and DOS/PAO/GIA/2014-15/81/552 dated 16/12/2014 and DOS/PAO/GIA/2016-17/160/819 dated 28/02/2017, a sum of Rs.15,22,758/- has been utilized during the years 2014-17 on the Project /Scheme and the balance amount of Rs.1,59,252/- (including interest amount received due to bank balance, remains unutilised at the end of the project. The unspent balance of the project is surrendered to Pay and Accounts Officer, Department of Space, Bangalore duly supported by consolidated Audited statement of account, reports, papers, compendium of data analysis etc. ( Andhra Bank, Sri Vidyanikethan branch, DD No "323190", Date 16-10-2017).

 <b>Project Investigator</b> <b>Dr. N. PADMAJA, M.Tech., Ph.D.</b> <b>PROFESSOR</b> Dept. of Electronics & Communications <b>SREE VIDYANIKETHAN ENGG. COLLEGE</b> A.RANGAMPET-517 102 (Chittoor Dt.)	 <b>Head of Institution</b> <b>PRINCIPAL</b> <b>SREE VIDYANIKETHAN ENGINEERING COLLEGE</b> <b>(AUTONOMOUS)</b> Sree Sainath Nagar, A. RANGAMPET Chittoor (Dist.) - 517 102, A.P., INDIA	 <b>Registrar/ Finance Officer</b> <b>DIRECTOR</b> <b>(FINANCE &amp; ADMINISTRATION)</b> <b>SREE VIDYANIKETHAN EDUCATIONAL TRUST</b> Sainath Nagar, A. RANGAMPET-517 102 Chittoor (Dist), A.P.	 <b>Auditor</b> 
---	--	--	--



## AUDITED STATEMENT OF ACCOUNTS

1. **Project Title** : MST Radar Signal Processing using Empirical Mode Decomposition and Hilbert Huang Transform.
  2. **Name of the PI & Designation** : Dr. N. Padmaja  
Professor  
Department of ECE
  3. **Name & Address of Institution**: Sree Vidyanikethan Engineering College  
Sree Sainath Nagar, A. Rangampet  
Tirupati.
  4. **ISRO/DOS Letter/Sanction Order No & Date** : DOS/PAO/GIA/2014-15/81/552 dated 16/12/2014  
(First Year).  
DOS/PAO/GIA/2016-17/160/819 dated 28/02/2017  
(Second Year).
  5. **Period of Statement** : 16/12/2014 to 15/09/2017 (2 Years 9 months)
  6. **Total Grants Approved/ Grants for the Year** : Rs.16,82,010/-  
{Rs. 10,63,000/- for First Year (2014-15) +  
Rs. 5,86,000/- for Second Year (2016-17) +  
Rs.25000/- Unspent amount during first year +  
Rs.8010/- bank interest on bank balance}
- Note:** An amount of Rs.25,000/- incurred due to bank interest that was unutilized in first year was considered while granting the second year fund of Rs.5.86 Lakhs.  
Therefore Total Amount approved/available for the project = Rs. 16,82,010/-
7. **University/ Institute Sanction Date & No.** : 16/12/2014

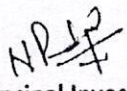


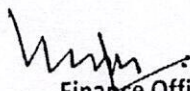
146  
146

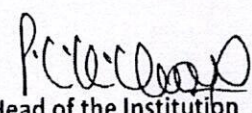
8. Expenditure Statement for the period: 16/12/2014 to 15/09/2017 (2 Years, 9 months)

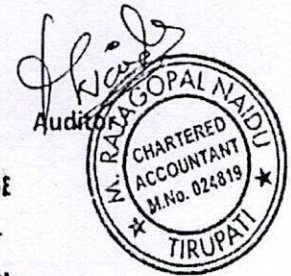
Sl. No	Budget Item	Amount Sanctioned by ISRO/DOS in Rupees.		Expenditure incurred in Rupees (year wise)		Balance in Rupees (At the end of the project)
1.	JRF salary	First Year	2,11,000	2,12,335	-1335 (i.e spent in excess)	1,56,822
		Second Year	4,49,000/- (2,11,000 + 2,38,000 enhanced salary)	2,90,843	1,58,157 (spent less)	
2.	Equipment	First Year	4,75,000	4,73,682	1,318 (spent less)	1318
		Second Year	Nil	Nil	Nil	
3.	Travel	First Year	1,00,000	1,00,889	-889 (spent in excess)	-1502
		Second Year	50,000	50,613	-613 (spent in excess)	
4.	Contingency	First Year	1,00,000	98,867	1,133 (spent less)	-5396
		Second Year	50,000	56,529	-6,529 (spent in excess)	
5.	Institution Overheads @ 20%	First Year	1,77,000	1,77,000	-	Nil
		Second Year	62,000	62,000	-	
6.	Interest incurred on bank balance during second year	Second year	8,010	-	-	8,010
Total			16,82,010	15,22,758		*Rs.1,59,252/-

\*Rs.1,59,252/- is surrendered to Pay and Accounts Officer through Demand Draft No: 323190, dated 16-10-2017, Andhra Bank, Sree Vidyanikethan Branch )

  
 Principal Investigator  
**Dr. N. PADMAJA, M.Tech., Ph.D.**  
 PROFESSOR  
 Dept. of Electronics & Communications  
**SREE VIDYANIKETHAN ENGG. COLLEGE**  
 A.RANGAMPET-517 102 (Chittoor Dt.)

  
 Finance Officer  
**Director**  
 (FINANCE & ADMINISTRATION)  
**SREE VIDYANIKETHAN EDUCATIONAL TRUST**  
 Sree Sainath Nagar, A. RANGAMPET-517 102  
 Chittoor (Dist), A.P.

  
 Head of the Institution  
**Principal**  
**SREE VIDYANIKETHAN ENGINEERING COLLEGE**  
 (AUTONOMOUS)  
 Sree Sainath Nagar, A. RANGAMPET-517 102  
 Chittoor (Dist), A.P.



**M. Raja Gopal Naidu**  
 B.Sc., M.A., M.Com., F.C.A., D.I.S.A  
 CHARTERED ACCOUNTANT  
 10/80, 6th Cross, Royal Nagar,  
 R.C. Road, TIRUPATI - 517 501