3.4.4. Number of books and chapters in edited volumes / books published per teacher during the last five years

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1	978-981-16-0081-4	Analysis of COVID-19 Impacted Zones Using Machine Learning Algorithms	Dr. K. Reddy Madhavi	Computer Science and Engineering	2020-21	5
2	978-981-16-0081-4	Covid-19 Isolation Monitoring System	Dr. K. Reddy Madhavi	Computer Science and Engineering	2020-21	6
3	978-981-16-0081-4	An Automated approach for detection of Intracranial Haemorrhage using Dense Nets	Dr.J.Avanija Dr.G.Sunitha Dr.K.Reddy Madhavi	Computer Science and Engineering	2020-21	7
4	978-981-16-1941-0	EEG based Brain-electric activity detection during meditation using Spectral Estimation techniques	Dr. K. Reddy Madhavi	Computer Science and Engineering	2020-21	11
5	978-3-030-73050-5	COVID-19 Detection using Deep Learning	Dr. K. Reddy Madhavi	Computer Science and Engineering	2020-21	14
6	978-1-7281-7029-9	Quality Improvement of Retinal Optical Coherence Tomography	Dr. K. Reddy Madhavi Dr.J.Avanija	Computer Science and Engineering	2020-21	16
7	978-1-7281-2680-7	Segmentation of Nuclei in Histopathology images using Fully Convolutional Deep Neural Architecture	V Anantha Natarajana, M Sunil Kumar, Suresh Kallam	Computer Science and Engineering	2020-21	18
8	978-1-7281-5464-0	A Comparative Study of Melanoma Skin Cancer Detection in Traditional and Current Image Processing Techniques	M. Sunil Kumar	Computer Science and Engineering	2020-21	20
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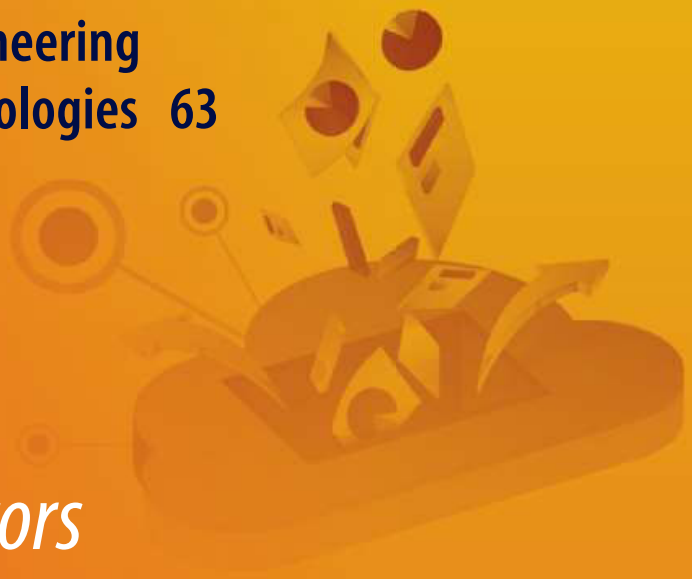

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Data Engineering and Communication Technology

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Analysis of COVID-19-Impacted Zone UsingMachine Learning Algorithms

Sindhooja Abbagalla, B. Rupa Devi, P. Anjaiah, and K. Reddy Madhavi

Abstract Covid-19, first detected at Wuhan in late 2019, has now spread all over the world among many developed and developing countries. As a result of this, World Health Organization (WHO) declared COVID-19 a pandemic on March 11, 2020. Until now, many people have been infected with this coronavirus, some of them are recovering and others causing death. The concern of this paper will be the comparative study of KNN and Naïve Bayes algorithms via the Weka tool's Explorer and Experimenter interfaces, which will tell algorithm is more articulated to be used to evaluate the accuracy of death and recovery of infected COVID-19 patients, so we could estimate that the region will belong to which zone. The COVID-19 dataset to be used in this paper includes details about people who have visited Wuhan during this pandemic or who are from Wuhan and are affected by COVID-19 are fever, cold, cough, breathing difficulties, and many more. The main goal here will be to help users extract valuable data from the dataset and define a predictive algorithm for it. From the results shown, it can be concluded that KNN would demonstrate better precision than Naïve Bayes.

Keywords COVID-19 · Weka · KNN · Naïve Bayes · Classification

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COVID-19 Isolation Monitoring System

K. Reddy Madhavi, Y. Vijaya Sambhavi, M. Sudhakara, and K. Srujan Raju

Abstract The current pandemic caused by the novel coronavirus, probably referred to as COVID-19, has posed a major threat worldwide and has already been declared as a global health emergency. As the WHO has claimed, close contact with an infected COVID-19 individual increases the chances of infection as the droplets produced by an infected person's coughing, sneezing, or talking stay in the air and by inhaling that air provides a path for the virus to reach our body, as it shows that COVID-19 is an airborne disease. In the absence of COVID-19 vaccines and drugs, the only way to treat COVID-19 infected patients if for them to be isolated from other people and to control their temperature and pulse rate and the consumption of drugs and food that enhances their immunity that could defend against the virus. The Internet of Things is a revolution that is fundamentally transforming our everyday lives and is promising to modernize healthcare by creating a more personalized, predictive, and collaborative model of treatment. To incorporate these two essential issues, this work provides an IOT ready system for living assistance that is capable of tracking the vital details of patients as well as providing mechanisms to send alert messages in emergencies. The flexible low-power, low-cost, and wireless features make this solution ideal for use anywhere and by anyone. The module assisted in real-time interventions and monitored the health care system for COVID-19 patients. Data collected from different sensors in real-time are stored on a central server, which connects patients to the doctor to the correct information at the time of an emergency.

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An Automated Approach for Detection of Intracranial Haemorrhage Using DenseNets

J. Avanija, Gurram Sunitha, K. Reddy Madhavi, and R. Hitesh Sai Vittal

Abstract Intracranial haemorrhage is a bleeding that occurs in brain which needs immediate medical attention and intensive medical care. The objective of this work is early detection of intracranial haemorrhage through automated model using DenseNets. DenseNets are used for processing MRI images and for detection of intracranial haemorrhage and its different variants. MRI scanned images samples are collected from a nearby neurology super speciality hospital. Segmentation of images is done through DenseNets which are also called deep connected convolution networks. Based on the image segments, the variant of intracranial haemorrhage is predicted. DenseNets layers are very narrow and as they add small set of feature maps and performs better when compared to the detection of the intracranial haemorrhage using convolution neural network (Juan et al in Proceedings of 4th congress on robotics and neuro science (2019), [1]). The accuracy of the proposed method is 91% achieved through the gradient from loss function which has access to each and every layer.

Keywords DenseNets · Intracranial haemorrhage · CT scan · Hematoma type

1 Introduction

Haemorrhage in the head (intracranial haemorrhage) is a relatively common condition that has many causes like trauma, stroke, aneurysm, vascular malformations, high blood pressure, illicit drugs and blood clotting disorders which are some of the causes for intracranial haemorrhage. The consequences neurologically are also varied extensively depending upon the size, type of haemorrhage and location ranging from

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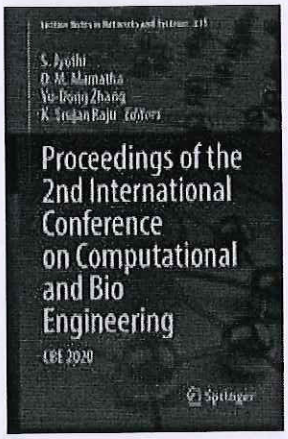

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EEG-Based Brain-Electric Activity Detection During Meditation Using Spectral Estimation Techniques

Authors | Authors and affiliations

Padmavathi Kora, A. Rajani, M. C. Chinnaiah, K. R. Madhavi, K. Swaraja, K. Meenakshi

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First Online: 28 September 2021

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Abstract

EEG based Brain-electric activity detection during meditation using Spectral Estimation techniques

Padmavathi Kora[1], K Swaraja[1], K Meenakshi[1] *, A Rajani[2], and M C Chinnaiah[3], K R Madhavi[4]

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Abstract. The meditation consists of various stages of concentrating on the feeling of peaceful realization of becoming a person and communion of the human soul with the supreme soul brain electric source position in the frequency domain used on multichannel EEG recordings to create activation differences between meditation and open eyed, task-free resting. EEG signals are collected after 3rd, 6th, 9th and 12th week of training with three types meditation Trans dental, Raja yoga and Mindfulness meditation. Then EEG signal are classified using transfer learning methods (VGG-16, VGG-19, ResNet-18 and GoogleNet). EEG showed reduced activity in delta and increased activity in low alpha frequencies. The percentage of the alpha activity in the total power was better indicator of the state of meditation. With the opening of the eyes the total power and the percentage of alpha activity came down. The percentage of alpha activity was higher which signifies perfect meditation. Alpha and beta are highest in the midline central area (Cz) during the relaxed meditation state, and theta is higher in C3 and C4. After experimental evaluation, we observed that the outcomes of these models gives 99.4% accuracy with the VGG-16 transfer learning model.

Keywords: Meditation, EEG, Spectral analysis, Transfer Learning.

1 Introduction

EEG is a simple way to research functional features of Brain and brain-body link condition. The aim of this research is during meditation, the brain-activity is to be examined; the brain activity that is represented as a state in a relaxed and calm state. The goal is to investigate and 0bserve EEG during meditation, functions present in the EEG signal through the use of FFT and DWT. The strategy taken to extract meditation-related EEG features are carried out by study of time-series, using the normalized voltage of the signal as the basic trait,

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Ajith Abraham · Thomas Hanne · Oscar Castillo · Niketa Gandhi · Tatiane Nogueira Rios · Tzung-Pei Hong *Editors*

Hybrid Intelligent Systems

20th International Conference on Hybrid Intelligent Systems (HIS 2020), December 14–16, 2020

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Abstract

The lack of medication or vaccination for new COVID-19 disease, the need for early detection of the infected people to be isolated immediately is of great importance in minimizing the chance of infection to a healthier community. The key screening tool for COVID-19 is RT-PCR, or blood specimens. Nonetheless, the average positive RT-PCR from throat-swab samples is estimated to be 30 to 60%, and then yields to undiagnosed cases, and may threaten a large community of healthy people with infectious symptoms. Radiography of the chest (e.g., Xray or CT imaging) as a standard method for diagnosing respiratory diseases is simple to perform with the fast examination procedure. Disease presence in these images was annotated by a board-certified radiologists. A subset of 2,000 X-rays was used to train four transfer learning approaches to COVID-19 disease detection, including ResNet-18, ResNet-50, SqueezeNet and DenseNet 121. We validated these models on the remaining 1,000 images and with ResNet-18 we achieved a sensitivity rate of 100% with a specificity rate of around 98.6%.

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COVID-19 Detection Using Deep Learning

K. R. Madhavi[1(✉)], G. Madhavi[2], C. V. Krishnaveni[3], and Padmavathi Kora[4]

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Abstract. The lack of medication or vaccination for new COVID-19 disease, the need for early detection of the infected people to be isolated immediately is of great importance in minimizing the chance of infection to a healthier community. The key screening tool for COVID-19 is RT-PCR, or blood specimens. Nonetheless, the average positive RT-PCR from throat-swab samples is estimated to be 30 to 60%, and then yields to undiagnosed cases, and may threaten a large community of healthy people with infectious symptoms. Radiography of the chest (e.g., Xray or CT imaging) as a standard method for diagnosing respiratory diseases is simple to perform with the fast examination procedure. Disease presence in these images was annotated by a board-certified radiologists. A subset of 2,000 X-rays was used to train four transfer learning approaches to COVID-19 disease detection, including ResNet-18, ResNet-50, SqueezeNet and DenseNet 121. We validated these models on the remaining 1,000 images and with ResNet-18 we achieved a sensitivity rate of 100% with a specificity rate of around 98.6%.

AQ1

AQ2

1 Introduction

The COVID-19 disease outbreak is triggering as a global epidemic across the globe (more than 200 countries), adversely impacting the safety and life of many people around the world. One of the main measures in the battle against it is the capability to identify infected people as soon as possible and separate them for proper treatment [1]. One of the easiest ways of diagnosing is to detect this disease from radiology and radiography images. Several earlier studies identified COVID-19 suffered people using the lung radiographs. As inspired by the earlier work, we applied Transfer-learning architectures to identify COVID-19 infected people with their lung radiograms [2]. Nonetheless, the typical true-positive range for RT-PCR test [3] using swab is about 30 to 60% only, which yields a large number of wrongly (false) diagnosed people, who may affect an immense safe community contagiously. The radiography imaging (X-ray and CT) is a regular tool for pneumonia, and the prognosis is simple to execute and faster diagnosis. Deep-learning methods have been successful in the last few years and changed the situation in some areas of study. In the medical field, in particular,

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Quality Improvement of Retinal Optical Coherence Tomography

Publisher: IEEE

A Rajani ; Padmavathi Kora ; K Reddy Madhavi ; J Avanija All Authors

Abstract: This paper suggests a new approach for improving the accuracy of retinal OCT frames. This is referred to as the QIROCT (Quality Enhancement of Retinal Optical Coherence T... **View more**

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Abstract:

This paper suggests a new approach for improving the accuracy of retinal OCT frames. This is referred to as the QIROCT (Quality Enhancement of Retinal Optical Coherence Tomography) procedure. Retinal optical coherence tomography (OCT) image is a layered structure. A mixture model, combination of multiple distributions, is used to represent retinal OCT image. A Gaussian-Mixture-Model (GMM), mixture of Gaussians, is proposed to represent the retinal OCT image as retina is a layered structure. Expectation maximization (EM) is an algorithm that fits the Gaussian mixture model (GMM). Gaussian components are obtained using the Expectation Maximization (EM) algorithm to match the Gaussian Mixture Model (GMM) to the retinal OCT results. Adaptive Gamma Correction with Weighting Distribution (AGCWD) is used to improve Gaussian components of the retinal OCT image. To understand the superiority of QIROCT method for OCT image processing, 30 healthy retinal OCT images are tested. The QIROCT approach is opposed to the contrast limited adaptive

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of QIROCT method for OCT image processing, 30 healthy retinal OCT images are tested. The QIROCT approach is opposed to the contrast limited adaptive histogram equalization (CLAHE) method, and the difference between the two methods is visually and numerically illustrated. And segmentation is done for retinal OCT image using the QIROCT method and results are shown.

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Contents

I. Introduction

Today, advances in data capturing technologies and the availability of datasets of unbelievable scale in research fields have altered our interpretation of certain standard practices in the real world [1]. Information securing is just a part of the procedure and the primary task remains the detachment of valuable data from the wealth of caught information. Mathematical portrayal is into strategy for this circumstance. For instance, demonstrating the results of numerous imaging frameworks can be utilized as an essential centre of numerous image handling undertakings [9], [10].

Authors

Figures

References

Keywords

Metrics

Segmentation of Nuclei in Histopathology images using Fully Convolutional Deep Neural Architecture

Publisher: IEEE

V. Anantha Natarajan ; M. Sunil Kumar ; Rizwan Patan ; Suresh Kallam ; Mohamed Yasin Noor Mo... All Authors

Abstract

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I. INTRODUCTION

II. RELATED WORKS

III. METHODOLOGY

IV. EXPERIMENT AND RESULTS

V. CONCLUSION

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Footnotes

Abstract: Nuclei segmentation is an initial step in the automated analysis of digitized microscopic images. This paper focuses on utilizing the LinkNET-34 architecture for semantic... **View more**

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Abstract:
Nuclei segmentation is an initial step in the automated analysis of digitized microscopic images. This paper focuses on utilizing the LinkNET-34 architecture for semantic segmentation of nuclei from the H&E stained breast cancer histopathology images. The segmentation process is implemented in two stages where in the first stage the H&E stained images are pre-processed to reduce the variance caused because of staining the microscopic images and scanning the slides. During the second stage the preprocessed images are given as input to the LinkNET network which consists of both down-sampling and up-sampling layers. The network is trained using a set of WSI patches released during the Data Science bowl 2018 competition. The performance of the deep learning model is evaluated based on the segmentation accuracy measured using the Dice Coefficient.

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I. INTRODUCTION

Invasive Ductal Carcinoma (IDC) also known as infiltrating Ductal Carcinoma is the most well-known kind of breast cancer and 80% of breast cancer in women is classified as IDC. The term invasive is used to denote the growth of cancer cells up to surroundings of the breast tissues. Ductal refers to the fact that the cancer started growing in the pipes (aka ducts) which carries milk from the glands. The name Carcinoma applies to any type of cancer that started growing from skin or tissues. On a whole the IDC refers to the cancer that has originated from the walls of the milk ducts and infiltrated to surrounding breast tissues. As time grows the cancer can grow up to the lymph nodes and other parts of the body.

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Keywords

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A Comparative Study of Melanoma Skin Cancer Detection in Traditional and Current Image Processing Techniques

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Abstract

Document Sections

I. Introduction

II. Background Knowledge- Type of Images

III. Comparative Study on Traditional and Current Technologies of Skin Cancer Image Classification

IV. Literature Survey

IV. Conclusion

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Abstract: Skin cancer is a major health issue in the present day especially melanoma skin cancer. In general most of the skin cancers are cured if they are detectedin the early sta... **View more**

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Abstract:
Skin cancer is a major health issue in the present day especially melanoma skin cancer. In general most of the skin cancers are cured if they are detectedin the early stage. With the rapid growth of skin cancer, there is a need for an automated computerized diagnosis mechanism of skin cancer in the early stage is required. Many of the skin cancer images have similar visual characteristics. It is an important challenging task to extract the features from the skin cancer images. The automated computerized diagnosis mechanism helps to improve the accurate analysis of skin diseases which helps the dermatologists to accelerate the diagnostic time and improve the better treatment for the patients. This paper mainly presents the comparative study on traditional image processing and current technologies of different image processing techniques for skin cancer image classification, preprocessing techniques, Feature extraction, and image segmentation datasets.

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I. Introduction

Skin cancer is common now a day. The statistics of American Cancer Society, Inc, Surveillance Research in 2020 estimated new Melanoma skin cancer cases are 100,350 among 60,350 are male cases and 43,070 are female cases [1]. The estimated death rate of Skin cancer is 6,850 among 8,030 are male and 3,450 are female, it will increase almost by 2 percent [1]. Generally, three types of skin cancer are (1). Basal Cell Carcinoma (BCC): It grows from the bottom of the epidermis in the long term exposure area to sunlight. The growth rate of skin cancer is slow, so diagnosis is very easy. Basal Cell Carcinoma can visualize as tiny, shiny, smooth, waxy pearly lump, red with rough, dry, or scaly patches. (2). Squamous Cell Carcinoma (SCC): It is another type of skin cancer. It develops at the outer layer of the skin like Basal Cell Carcinoma. It spread to the other skin areas at its early stage. It is the main difference between BCC and SCC. Squamous Cell Carcinoma can visualize as tiny, smooth, small lumps with real or brown. (3). Malignant Melanoma (MM): It is the third type and dangerous skin cancer disease. It happens in the melanocytes. Melanoma skin cancer visually as asymmetry in shape with irregular borders and unnatural in color [2].

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A Comparative Study of Melanoma Skin Cancer Detection in Traditional and Current Image Processing Techniques

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***Abstract*—Skin cancer is a major health issue in the present day especially melanoma skin cancer. In general most of the skin cancers are cured if they are detected in the early stage. With the rapid growth of skin cancer, there is a need for an automated computerized diagnosis mechanism of skin cancer in the early stage is required. Many of the skin cancer images have similar visual characteristics. It is an important challenging task to extract the features from the skin cancer images. The automated computerized diagnosis mechanism helps to improve the accurate analysis of skin diseases which helps the dermatologists to accelerate the diagnostic time and improve the better treatment for the patients. This paper mainly presents the comparative study on traditional image processing and current technologies of different image processing techniques for skin cancer image classification, preprocessing techniques, Feature extraction, and image segmentation datasets.**

Keywords*—*Image Processing; Skin Cancer; ABCD rule; Melanoma; Dermoscopy

I. INTRODUCTION

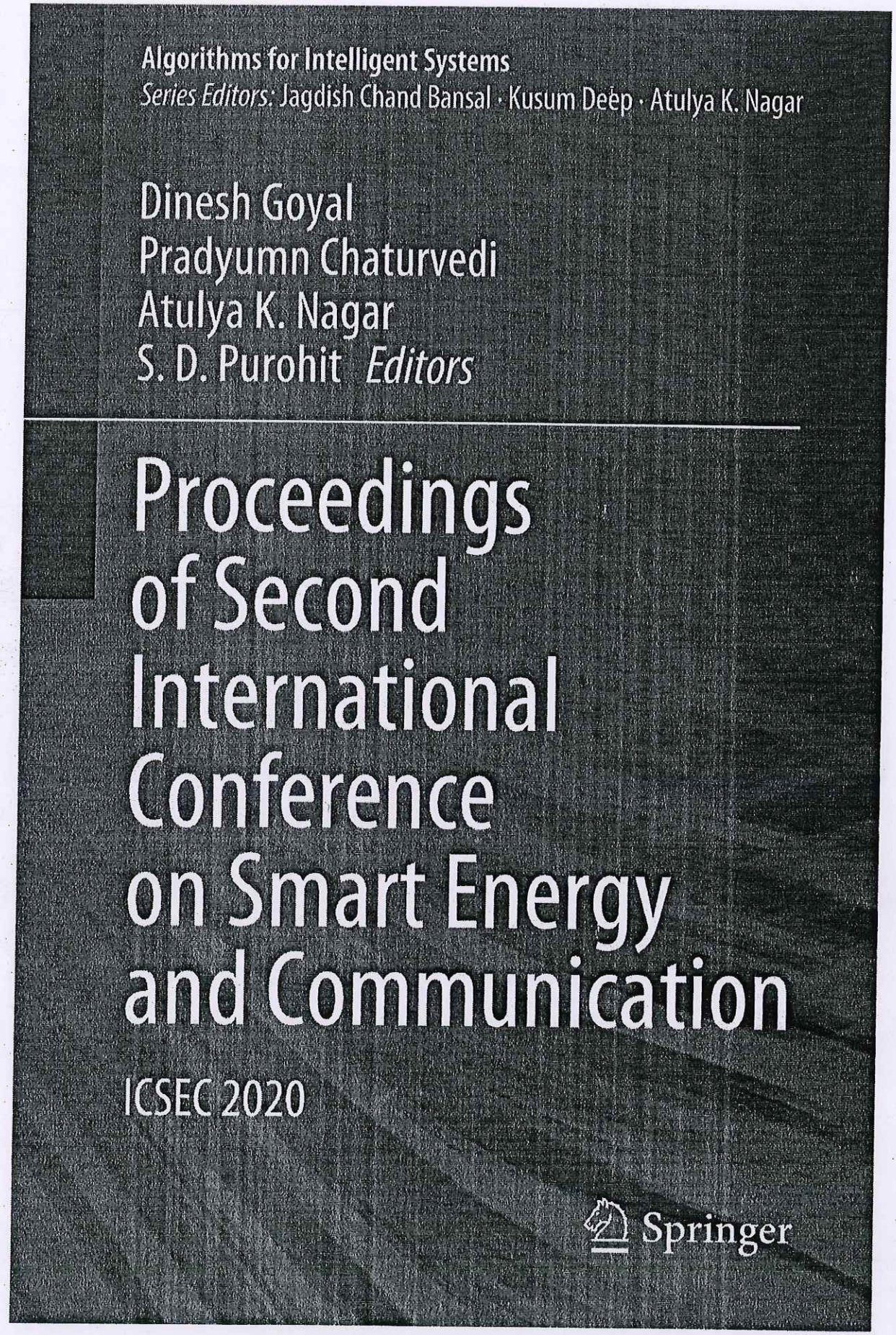
Skin cancer is common now a day. The statistics of American Cancer Society, Inc, Surveillance Research in 2020 estimated new Melanoma skin cancer cases are 100,350 among 60,350 are male cases and 43,070 are female cases [1]. The estimated death rate of Skin cancer is 6,850 among 8,030 are male and 3,450 are female, it will increase almost by 2 percent [1]. Generally, three types of skin cancer are (1). Basal Cell Carcinoma (BCC): It grows from the bottom of the epidermis in the long term exposure area to sunlight. The growth rate of skin cancer is slow, so diagnosis is very easy. Basal Cell Carcinoma can visualize as tiny, shiny, smooth, waxy or pale lump, red with rough, dry, or scaly patches. (2). Squamous Cell Carcinoma (SCC): It is another type of skin cancer. It develops at the outer layer of the skin like Basal Cell Carcinoma. It spread to the other skin areas at its early stage. It is the main difference between BCC and SCC. Squamous Cell Carcinoma can visualize as tiny, smooth, small lumps with real or brown. (3). Malignant Melanoma (MM): It is the third type and dangerous skin cancer disease. It happens in the melanocytes. Melanoma skin cancer visually as asymmetry in shape with irregular borders and unnatural in color [2].

The growth of skin cancer is rapidly increased. Melanoma skin cancer image is diagnosed visually using dermoscopy by the dermatologist. The experienced dermatologist can diagnosis the image by observation of one of the most techniques called ABCD rule [4]. The characteristics of ABCD rule [10] are A – Asymmetry, B – Border irregularity, C – Color distribution, D – Diameter Length. The growth of skin cancer cells may outspread into organs and tissues. Dermoscopy technique is a non-invasive imaging method that is used to detect melanoma skin diseases.

Among all the skin cancers melanoma is very dangerous skin cancer. The death rate of melanoma skin cancer is high compared to other types of skin cancer diseases.

Generally, skin cancer disease is diagnosed by the expert dermatologist (Skin specialist doctor). The dermatologists can diagnose skin cancer diseases by visually screening the dermoscopy images. Based on his experience he can diagnose the type of skin cancer but it is not a 100% guarantee to detect skin cancer and sometimes it may lead to potential harm. Here potential harm means, the unnecessary procedure has been performed such as collecting the skin biopsy for lesions, sometimes these biopsy results do not turn out as skin cancer. And sometimes dermatologists not suggest skin biopsy, resulting in death. Early detection of skin cancer leads to a decrease in the death rate and also accelerate the diagnostic time to improve the better treatment for the patients [4].

For detecting the automated melanoma Skin cancer [3] in medical science many technologies are available. But the decision making computerized automatic skin cancer detection is more useful in these days. To better understand the work of different researchers, a survey is proposed on different traditional and current technologies of skin cancer detection in an early stage.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Business Process Reengineering: Issues and Challenges

A. Harika, M. Sunil Kumar, V. Anantha Natarajan, and Suresh Kallam

Abstract Software engineering is the structured and organized approach to software development, operation, and maintenance. Organizations are now looking for new strategic strategies to increase competition in conjunction with quick changes and technological developments. The versatility to adapt to changing consumer demands and establish new technologies is necessary to succeed against an increasingly globalized and competitive environment. Business processes reengineering (BPR) primarily reorganizes operating processes. BPR modifies process management processes, practitioners positions, process composition, and process quality. Business processes (BPR) is one of the most recent industrial engineering developments that reflect a rapid and revolutionary transformation of competitive, value-added processes and of programs, policies, and organizational structures that enable them to improve corporate workflows and profitability. The main aim of business processes reengineering is optimizing operations, increasing productivity, reducing costs, improved quality, and providing a competitive advantage. The paper aims at evaluating and examining common problems and challenges of reengineering systems utilizing different approaches and methodologies.

Keywords Business process reengineering (BPR) · Business processes · Methodologies · Process innovation

1 Introduction

Software engineering became apparent in the 1960s when the need for systematic approaches to the development and maintenance of computer software products was realized. In this decade, computer hardware of the third generation has been

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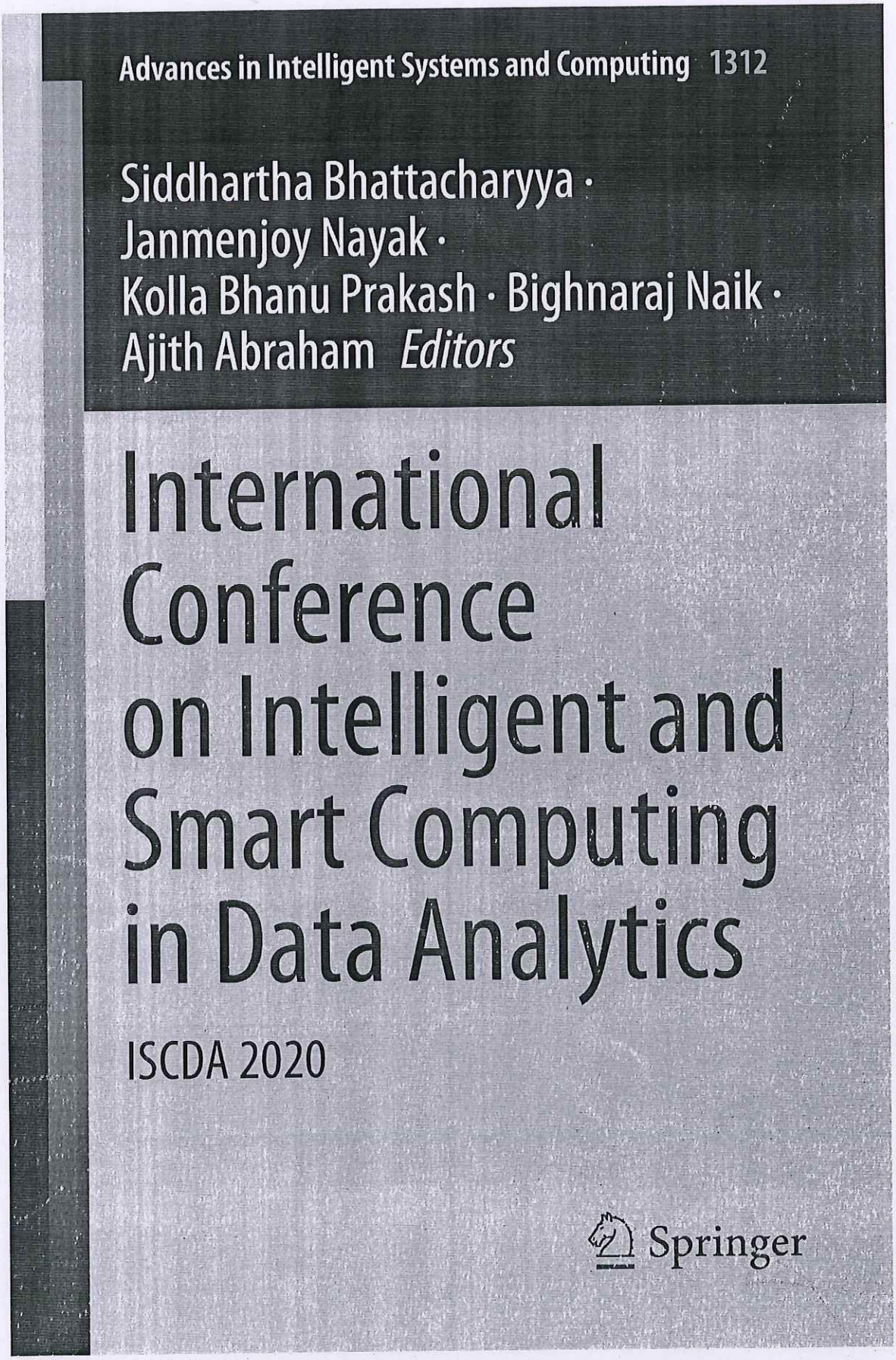
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Novel Defense Framework for Cross-layer Attacks in Cognitive Radio Networks

Ganesh Davanam, T. Pavan Kumar, and M. Sunil Kumar

Abstract Cognitive radio networks are the self-configuring and mainly solve the problem of spectrum utilization. Cognitive radio networks always try to identify Occupied or un-occupied channels for transmission. Cognitive radio networks (CRN's) are an enabling technology for multiple features like dynamic spectrum access, spectrum sharing, and dynamic allocation. The existing research of security issues in CRN's mainly considers attacks in individual layers and provides significant solutions but attacker cannot propagates his attacks in single layer. In this work, we designed a cross-layer attack solution, where attackers attack two different layers at a time. The attacks we considered are report false sensing data (RFSD) attack in physical layer and small backoff window (SBW) attack in MAC layer. Simulation results shows that our proposed solutions perform in reducing these two attacks and significantly reduce the attack probability and increase channel utilization by primary users.

Keywords Cross-layer attacks · Framework · Security · Cognitive radios · Trust fusion

1 Introduction

Today, wireless communication systems are very important in human life. Wide range of applications and services of wireless communications are going to change the world more in future. The growth and usage of wireless communication systems increased rapidly across the world which led to the main problems of wireless communications, which are the scarcity of radio resources like power, frequency, and time. At present, the frequency spectrum's less availability, the need of reuse

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B. Maheswari ; J Aswini ; M. Anita All Authors

Abstract

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I. Introduction (Heading 1)

II. Related Works

III. Naive Bayes

IV. Hybrid Feature Selection

V. Experimental Results

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Abstract: Consumer behavior research in the banking firms is critical in recognizing consumer expectations as well as identifying potential risk customers of bank enterprises. Sinc... **View more**

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Abstract:
Consumer behavior research in the banking firms is critical in recognizing consumer expectations as well as identifying potential risk customers of bank enterprises. Since access to consumer data is challenging at the beginning of the day and time-consuming. But in recent days due to advancement in internet technology the collection of data related to customer and products are enormous. With the efficient analysis of customer data lead to better opportunities in decision making and also to recognize high-risk customer profile that can reduce the risk of loss by taking action into account. In this research, a machine learning methodology is applied to conduct consumer analysis using Naïve Bayes. But due to the presence of redundant, missing and noisy variables in data sets, Naïve Bayes can perform poorly in the prediction of performance. In order to eliminate the correlated and unnecessary attributes in the dataset and to enhance model efficiency, a hybrid feature selection (HFS-IGFS) approach is applied to

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I. Introduction (Heading 1)

In today's highly competitive banking industry, the effective analysis of customer behavior patterns is an essential one to satisfy customers' needs and possibly to retain the customers for a long time and with the aim of developing the business process and sustaining in the rapidly changing industry. Since, in the traditional days, performing customer analysis is limited due to unavailable of data and access to data are time-consuming and expensive [10]. But with the evolution of technologies and the internet, an enterprise has many possible ways to access the products and consumers' related data compared to traditional days. In today's scenario the customer data are enormous in volume, but how efficiently the data are processed to find insight information in data is left out in research. To analyze the customer data efficiently uses of predictive analytics with the machine learning (ML) is aimed [8]. Predictive analytics uncovers queries like reducing risk, improving operations, enhancing marketing campaigns, detecting fraud and customer satisfaction. By analyzing the current and past customer data will helps to analyze the customer behavior and accordingly to develop strategies to enhance the business. With the ML, the NB a simple classifier is applied to forecast the consumer analysis []. But, violation of parametric assumption made by NB, in some real-time datasets makes to perform badly in prediction []. To overcome the problem with the redundant, irrelevant, missing attributes and high dimensional features a preprocessing step feature selection method is performed before modeling with Naïve Bayes. (Feature or attributes or variables) selection is a preprocessing method that is considered an important phrase in machine learning while using high dimensional attributes in the datasets []. The use of FS identifies important features in the datasets and removes the correlated and irrelevant attributes with the aim of improving prediction, reducing training time & cost and avoiding over fitting and curse of dimensionality []. FS is carried using a filter or wrapper method. The filter FS method uses some statistical measure to rank the attributes according to correlation with the class label and set up with a threshold value to select an optimal subset features. The filter method is fast and it is not dependent on any ML algorithms. While the wrapper methods use some ML algorithms to choose the relevant feature subset. The advantage of the wrapper method is it selects the best attribute subset when compared to the filter approach. But it takes high computation time with high dimensional attribute datasets []. The filter method performs fast in choosing an attribute subset, but the attribute subset results obtained are not satisfactory. While on wrapper side best feature subset results are obtained, but it takes high computational time to process []. Considering the disadvantages in the filter and wrapper method, this research

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Hybrid Feature Selection Approach for Naive Bayes to Improve Consumer Behavior Analysis

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Keywords—Artifical Intelligence, Machine Learning, Naive Bayes, Customer analysis, Predictio.

I. INTRODUCTION (*HEADING 1*)

In today's highly competitive banking industry, the effective analysis of customer behavior patterns is an essential one to satisfy customers' needs and possibly to retain the customers for a long time and with the aim of developing the business process and sustaining in the rapidly changing industry. Since, in the traditional days, performing customer analysis is limited due to unavailable of data and access to data are time-consuming and expensive[10].But with the evolution of technologies and the internet, an enterprise has many possible ways to access the products and consumers' related data compared to traditional days. In today's scenario the customer data are enormous in volume, but how efficiently the data are processed to find insight information in data is left out in research. To analyze the customer data efficiently uses of predictive analytics with the machine learning (ML) is aimed[8]. Predictive analytics uncovers queries like reducing risk, improving operations, enhancing marketing campaigns, detecting fraud and customer satisfaction. By analyzing the current and past customer data will helps to analyze the customer behavior and accordingly to develop strategies to enhance the business. With the ML, the NB a simple classifier is applied to forecast the consumer analysis [**16**].But, violation of parametric assumption made by NB, in some real-time datasets makes to perform badly in prediction[**21**]. To overcome the problem with the redundant, irrelevant, missing attributes and high dimensional features a preprocessing step feature selection method is performed before modeling with Naïve Bayes. (Feature or attributes or variables) selection is a preprocessing method that is considered an important phrase in machine learning while using high dimensional attributes in the datasets [**12**]. The use of FS identifies important features in the datasets and removes the correlated and irrelevant attributes with the aim of improving prediction, reducing training time & cost and avoiding over fitting and curse of dimensionality [**3**]. FS is carried using a filter or wrapper method. The filter FS method uses some statistical measure to rank the attributes according to correlation with the class label and set up with a threshold value to select an optimal subset features. The filter method is fast and it is not dependent on any ML algorithms. While the wrapper methods use some ML algorithms to choose the relevant feature subset. The advantage of the wrapper method is it selects the best attribute subset when compared to the filter approach. But it takes high computation time with high dimensional attribute datasets [**5**].The filter method performs fast in choosing an attribute subset, but the attribute subset results obtained are not satisfactory. While on wrapper side best feature subset results are obtained, but it takes high computational time to process [**6**]. Considering the disadvantages in the filter and wrapper method, this research

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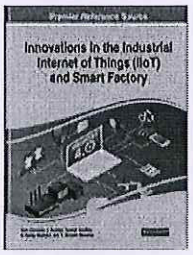

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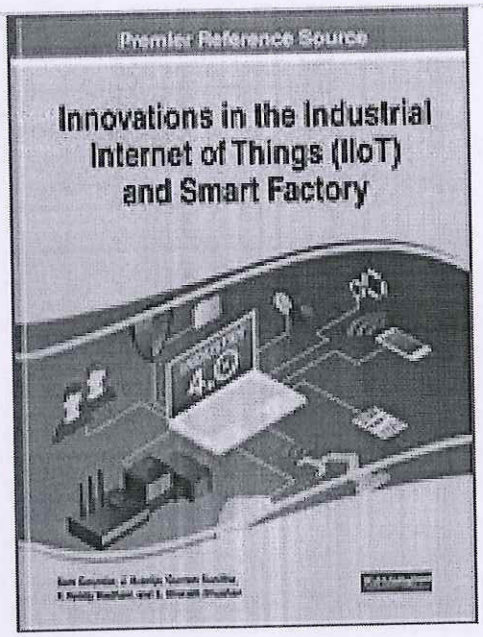

Advanced Predictive Analytics for Control of Industrial Automation Process

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Abstract

The recent evolution of the fourth industrial revolution is Industry 4.0, projecting the enhancement of the technology, development, and trends towards the smart processing of the automation in industries. The advancements in communication and connectivity are the major source for the Industrial IoT (IIoT). It collaborates all the industrial functional units to work under a single control channel, digital quantification analytic methods deployment for the prediction of machinery, sensors, monitoring systems, control systems, products, workers, managers, locations, suppliers, and customers. In addition to IIoT, AI methods are also playing a vital role in predictive modeling and analytic methods for the assessment, control, and development of rapid production, from the industries. Other side security issues are challenging the development, concerning all the factors digitalization processes of the industries need to move forward. This chapter focuses on IIoT core concepts, applications, and key challenges to enhance the industrial automation process.

Chapter Preview

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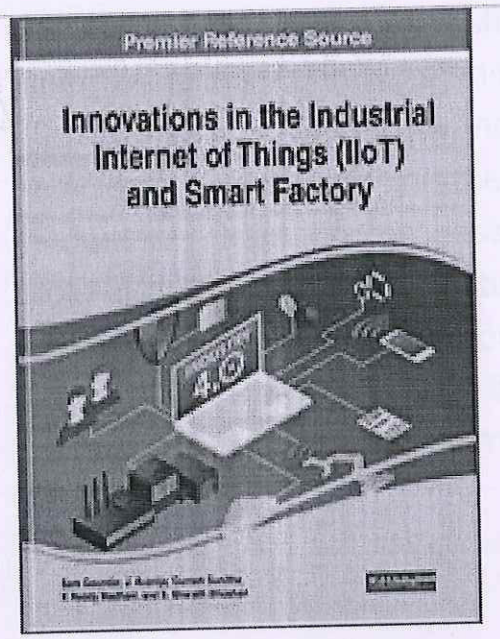
Introduction

Internet of Things is a network that connects mechanical, digital, and computing machines with the least human-computer interaction. In 1982, a Coca Cola vending machine at Carnegie Mellon University was the first machine connected via the internet and it was designed to know if the cool drinks in the vending machine are cool without the need for a physical check. Later in 1990, an Internet controlled toaster was built by John Romkey which switches on and off the toaster automatically without human interaction. Father of IoT Kevin Ashton, the Executive Director of Auto-ID Labs at MIT first introduced the term IoT in the presentation designed for Procter & Gamble in the year 1999 (Shimanuki, 1999). He believed



Internet of Things and Robotic Applications in the Industrial Automation Process

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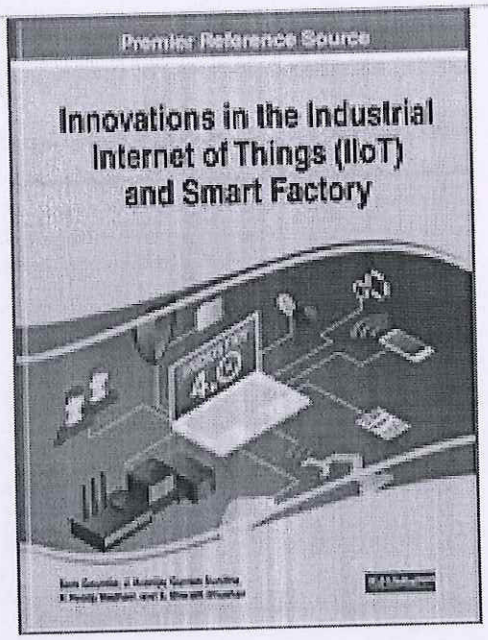

Towards the Protection and Security in Fog Computing for Industrial Internet of Things

G. Rama Subba Reddy (Mother Theresa Institute of Engineering and Technology, India), K. Rangaswamy (Sai Rajeswari Institute of Technology, India), Malla Sudhakara (VIT University, India), Pole Anjaiah (Institute of Aeronautical Engineering, India) and K. Reddy Madhavi (Sree Vidyanikethan Engineering College, India)

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Abstract

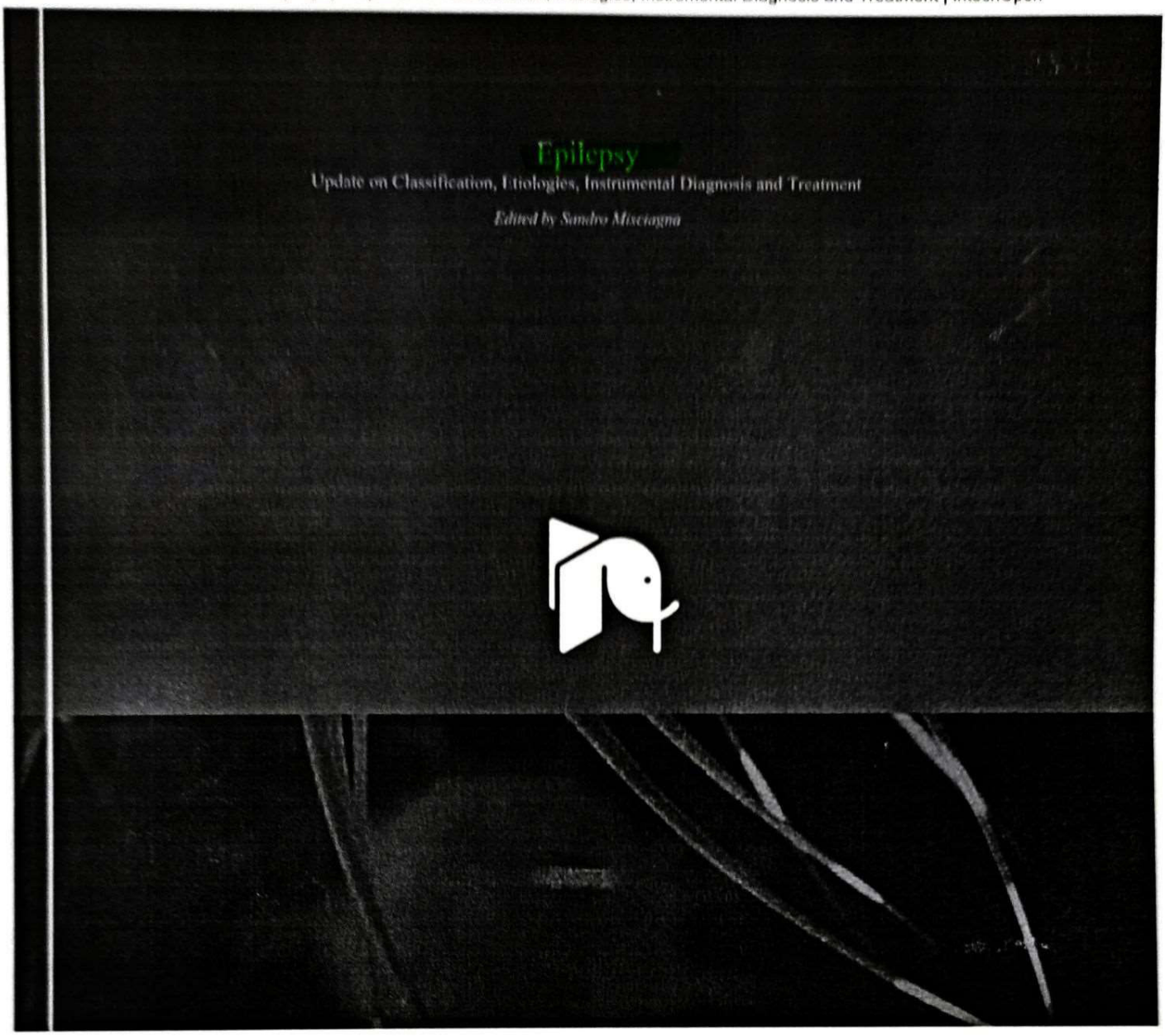
Internet of things (IoT) has given a promising chance to construct amazing industrial frameworks and applications by utilizing wireless and sensor devices. To support IIoT benefits efficiently, fog computing is typically considered as one of the potential solutions. Be that as it may, IIoT services still experience issues such as high-latency and unreliable connections between cloud and terminals of IIoT. In addition to this, numerous security and privacy issues are raised and affect the users of the distributed computing environment. With an end goal to understand the improvement of IoT in industries, this chapter presents the current research of IoT along with the key enabling technologies. Further, the architecture and features of fog computing towards the fog-assisted IoT applications are presented. In addition to this, security and protection threats along with safety measures towards the IIoT applications are discussed.

Chapter Preview

Top

Introduction

IoT is one of the trending technologies and is predicted to provide challenging results in operational transformations and the role of various industrial systems that are available like systems related to transport and manufacturing. For instance, when IoT is utilized to develop knowledge transportation systems, then transportation authority can keep track of the current location of every vehicle, monitors the motion of that vehicle and forecasts its future place and traffic strength. IoT, the term was first recommended for referring the connected objects that are uniquely recognizable interoperable by Radio-Frequency Identification (RFID) technology (Dedy Irawan et al., 2018). After this, researchers relate this IoT with new technologies, for example, sensors, mobile phones, and many other GPS



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Chapter

EEG Signal Denoising Using Haar Transform and Maximal Overlap Discrete Wavelet Transform (MODWT) for the Finding of Epilepsy

Sasikumar Gurumoorthy, Naresh Babu Muppalaneni and G. Sandhya Kumari

Abstract

Wavelet transform filters the signal without changing the pattern of the signal. The transformation techniques have been applied to the continuous time domain signals. The chapter is devoted to the study of the EEG (ElectroEncephaloGram) Signal processing using Haar wavelet transform and Maximal overlap discrete wavelet transform (MODWT) for the analyzing of Epilepsy. Haar transform returns the approximation coefficients and detail coefficients. Detail coefficients are generally referred to as the wavelet coefficients and are a highpass representation of the input. In this chapter, with the help of Haar transform, the detailed coefficients of the input signal have been analyzed for the detection of Epilepsy. Maximal overlap discrete wavelet transform filters the noise coefficients of the input signal in each and every level, and it has displayed the filtered output signal.

Keywords: EEG, Haar, MODWT, wavelet transform, epilepsy

1. Introduction

EEG Signal processing is essential for the diagnosis of brain disorders. The brain EEG signal that has been acquired from the EEG equipment consists of noise disturbances such as eye ball movement, muscle contractions etc., where the particular brain signal cannot be analyzed without any filtration techniques. Due to the presence of noise coefficients in the input signal, the transformation techniques have been applied to the input signal. Haar transform and maximal overlap discrete wavelet transform are the transformation techniques that supported for the filtration of the noisy coefficients from the input EEG signal.

The transformation techniques that have been applied to the brain signal filtered the noise coefficients without disturbing the peak values of the input signal.

EEG Signal Denoising Using Haar Transform and Maximal Overlap Discrete Wavelet Transform (MODWT) for the Finding of Epilepsy

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Deep Learning and its Applications: A Real-World Perspective

Lakshmi Haritha Medida and Kasarapu Ramani

1 Introduction

This chapter mainly focuses on DL genesis and its applications in everyday life. DL is altering the perspective of technologies. Artificial intelligence (AI) and its subsidiaries, namely ML and DL, are currently in great excitement. Although, both ML and DL are subsets of AI (Fig. 1), DL represents the next evolution of ML. DL learns through an artificial neural network (ANN) that works very much like a human brain and helps the machine to analyze data as much as humans do.

1.1 History

DL, as a branch of ML, uses layers of algorithms to process data and replicate the natural human thinking process. Information is transferred across the layers, with the previous layer output provided as input to the subsequent layer. The network's first layer being the input layer, the last layer is referred to as an output layer. All the layers between these input and output layers are called the hidden layers. Usually, each layer is a simple, uniform algorithm incorporating a type of activation function. The first deep network architecture trained by Alexey Grigorevich Ivakhnenko in 1965 is shown in Fig. 2 [1].

The traces of DL can be found in the history since 1943 when a computer model based on the neural networks mimicking the human brain was created by Walter

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