Department: ME | Date: 26th July, 2021

An Expert Talk on
"Artificial Intelligence inMechanical Engineering"

With a warm welcome, Dr. K.C.Varaprasad, Professor, Dept. of Mechanical Engineering greeted and honored the members Dr.J.B.Simha, Chief Consultant, Numentrix Consulting Bangalore, and Dr.M.P.Praveen, Director, Numentrix Consulting Bangalore. The program was organized to have insights into utilizing Artificial Intelligence in research in the Department of Mechanical, Civil and Computer Applications.
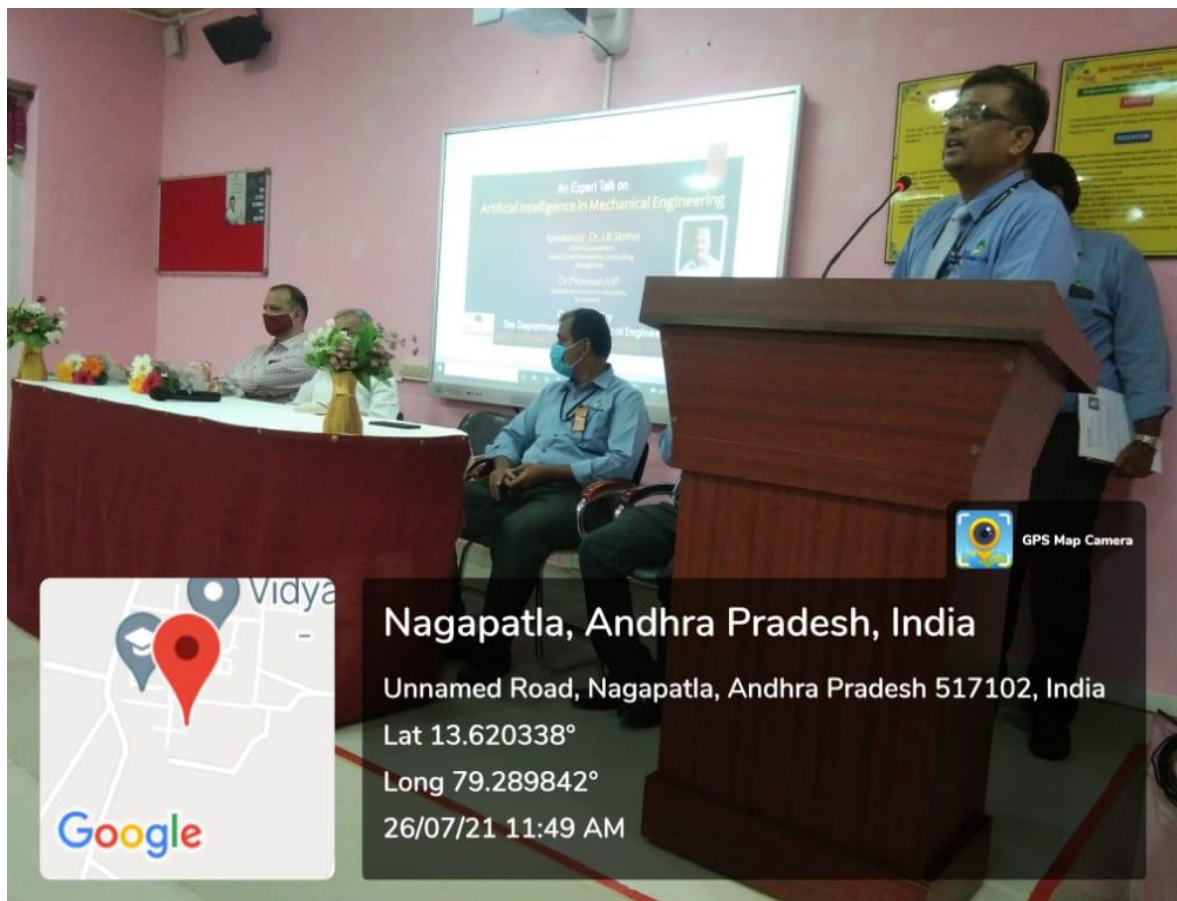
During the forenoon session, Dr.J.B.Simha gave an insight on the overview and applications of Artificial Intelligence(AI) in Engineering. He explained the importance and evolution of industry 4.0 based on the use of the cyber-physical system. Dr.Simha discussed the advantages of adopting industry 4.0. He stated that Machine learning is a subset of AI that allows a machine to automatically learn from past data without programming explicitly and Deep learning is a subset of machine learning-enabled much smarter results than were originally possible with machine learning. He discussed the role of AI in the industry such as

- AI systems predict the future demand for products by learning from patterns in demand and environment data.
- Robots can use image recognition to automatically adapt to the changing locations of the parts.
- AI systems develop new products based on generative principles.
- AI systems predict maintenance needs by identifying failure patterns.
- AI systems predict quality issues by analyzing and learning from quality and process data.
- Assistant systems suggest solutions to incidents based on earlier failure reports.
- AI systems dynamically optimize warehouse utilization, taking into account material outflows, inflows, inventory levels, and turn rates.
- Machine self-optimizes their parameters based on material input and process parameters.
- Automated guided vehicles carry parts, detect obstacles and adjust their routes.

Dr.Simha and Dr.Praveen, discussed the applications of AI in the industry for predictive maintenance, demand forecasting, inventory optimization, Intelligent data security solutions, human robotics collaborative ecosystems, Intelligent factory operations, and digital Twins. The outcome will be improving the process efficiency, improves the inventory turns, reduces the dependency on people, and save costs. The importance of Bigdata and domain knowledge in AI.Dr.Simha emphasized on the scope of Scientific projects where AI can intervene in Computational Fluid Dynamics(CFD), regression, exploratory analysis, hypothesis testing, design

of experiments, and cause-effect analysis. Few case studies were also briefed where AI can be applied like visual analytics, power plant optimization, and process modeling. He discussed virtual lab development using AI.

Dr.Simha finally concluded that Sree Vidyanikethan Engineering faculty members have the potential to do their research in Data Analytics, AI, Big Data and Machine learning where the results yield a good number of Publications, Patents, and Projects.The following are the photographs captured during the deliberations with Dr.J.B.Simah and Dr.M.P.Praveen, Director, Numentrix Consulting Bangalore. Dr.B.M.Satish, Principal addressing the members.

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