ME Seminar

Machine Learning and Combustion Research

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ABSTRACT

Machine learning can be used to find and direct patterns in combustion research data to enhance quality and quantity of energy being generated by the combustion process. The quality of energy being generated can be enhanced by the use of good quality fuel, air flow, other controls and also by reducing the pollutants being generated. Combustion data is generated by experiments and by simulations. Wide range and amount of data is generated under multiple spatiotemporal scales. In this talk we try to give a broad perspective to the process of combustion and how machine learning can be used to enhance the process of combustion. Ideas of combustion data generation and augmentation. Elaborate and illustrate some branches and sub-branches of machine learning. We share ideas of current and future research in different domains of machine learning specifically reinforcement learning. How reinforcement learning can be used to control and enhance combustion process? And some results on it.

ABOUT THE SPEAKER

Pankaj Kumar received the B.Tech degree from the Indian Institute of Technology, Delhi, India, and the M.Eng. and Ph.D. degrees from the National University of Singapore, Singapore. Currently he is professor at UPES Dehradun, prior to joining UPES he served as professor and Director at Nirma University, Ahmedabad, Gujarat, he has been affiliated with University of South Australia and University of Adelaide and also worked as Scientist and Associate Scientist at Defense Science and Technology Organization, Australia and Institute of Infocomm Research, Singapore, respectively. His research interests include computer vision, artificial intelligence, Machine learning large data mining and analysis, behavior analysis, multicamera tracking, and surveillance. He is program committee member of several IEEE conferences and has served as guest editor for MDPI journal Technology. He has more than 100 publications in reputed conferences and journals and has worked on several internationally funded projects.

February 21, 2025, 4:00 PM, AR Auditorium, Mechanical Engineering, IISc