

38th Distinguished Lecture on Advanced Design and Manufacturing

Title: Optimization and Uncertainty Quantification - “a peek into the future”

Speaker: Mr. Vinay Ramanath, Principal Key Expert Scientist, Siemens Technology

Date & time: 1st February 2024 (Thursday), 4:00-5:00 PM

Venue: MMCR, Dept. of Design and Manufacturing (erstwhile Centre for Product Design and Manufacturing), IISc

Abstract: The talk will delve into the key challenges in today's optimization solvers and how these challenges manifest as opportunities for further research. We see that there is a technological onslaught of emerging technologies such as Generative AI, Quantum Computing, Industrial Metaverse, and Sustainability. While Artificial general intelligence can make the classical optimization approaches redundant, advances in quantum computing are revolutionizing optimization approaches in solving niche problems in supply chain and logistics. On the other sphere, we see the role of Industrial metaverse in bringing human-centric experiential aspects to enable customizable products for satisfying Industry 4.0 objectives. To top it all, there is an increased demand (from regulatory agencies, for example) to produce and deploy sustainable products and further to account/ manage environmental footprint from cradle to grave. For the companies, there is a dilemma (both engineering and social in nature) of managing the trades between sustainability and profitability. It is extremely interesting to evaluate how these technologies are shaping the world of optimization to solve ever-demanding problems of the customers and how Siemens Technology is reimagining the ecosystem to generate innovations and further to enable Siemens business segments to stay ahead of the competition.

Brief Bio: Vinay Ramanath is currently in the role of Principal Key Expert Scientist at Siemens Technology and holds the key responsibility to drive technologies related to simulation and digital twin into the products and tools segment of Siemens. Vinay is leading one of the technical modules “Optimization and Uncertainty Quantification” within the Company Core Technology “Simulation and Digital Twin”. The technical module looks into engaging with Siemens business units in developing approaches for generative engineering, optimization and probabilistic designs. Vinay's passion lies in exploring the vast domains of optimization and the innovations that arise at the intersection of optimization with generative AI, industrial metaverse, digital twins, quantum algorithms, and systems engineering, Vinay has over 9 granted patents to his credit.