ME Seminar

Physics-Based Simulation in Research and Education: Current Practices and Key Initiatives

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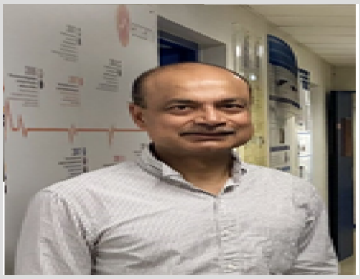
ABSTRACT

Digital transformation is impacting every industry - automotive, aerospace, electronics, logistics, healthcare, and manufacturing, to name a few. Concurrently, digital technologies are increasingly being used in colleges and universities for research and in-person/remote learning where laboratory experiments, design projects, and physical prototyping are being complemented by simulation and software-based experiential learning. The main breakthroughs have been in achieving an unprecedented level of usability, fidelity of methods, and performance via the high-performance computing capacity of modern processors such as GPUs.

The first part of this presentation will provide an overview of physics-based simulation software in research and education as well as touching on current and emerging technologies in numerical methods, high-performance computing, and machine learning. The second part of the talk will be focused on new initiatives where physics-based simulation methods are playing a key role such as healthcare, 5G/6G, autonomy, hypersonics, ICME (Integrated Computational Materials Engineering) and MBSE (Model-Based Systems Engineering.)

ABOUT THE SPEAKER

Dr. Dipankar Choudhury, Ansys Fellow and Deputy CTO, leads advanced technology and exploratory RD in several areas at Ansys Inc. including High-Performance Computing. In addition, he leads Ansys's Academic Program which includes coordinating collaborative research and education partnership programs with Academia centered around engineering simulation. Prior to taking this role, Dipankar was responsible for Ansys Inc.'s product strategy and planning, and corporate product management functions. Dipankar obtained his Ph.D. in the area of Computational Fluid Dynamics and Heat Transfer from the University of Minnesota. After his graduation, he held engineering and product management positions at Creare Inc. and Fluent Inc. where he was part of the founding group and ultimately, the Chief Technology Officer. He is a member of the ASME and the AIAA and has technical publications in journals, conference proceedings, and trade magazines. Dr. Choudhury is an adjunct faculty at the University of Notre Dame and an invited lecturer at institutions such as Stanford University.



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