Colorado State University's
Information Science and Technology Center (ISTeC)
presents <u>two</u> lectures by

Dr. Manish Parashar

Director
Rutgers Discovery Informatics Institute (RDI2)
Professor
Department of Electrical & Computer Engineering
Rutgers University

ISTeC Distinguished Lecture
In conjunction with the
Electrical and Computer Engineering Department and
Computer Science Department Seminar Series

"Moving from Extreme Data to Extreme Insights - Addressing Emerging Data Challenges in Simulation-based Science"

Monday November 11, 2013
Reception with refreshments: 10:30 am
Lecture: 11:00 am – 12:00 noon
Location: Morgan Library, Event Hall

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Electrical and Computer Engineering Department and Computer Science Department
Special Seminar *Sponsored by ISTeC*

"Staying Green at the Extreme - Exploring Energy Challenges and Tradeoffs for Science Workflows at Extreme Scales"

Monday, November 11, 2013
Lecture: 4:00 – 5:00 pm
Location: Morgan Library, Event Hall

Abstracts:

Moving from Extreme Data to Extreme Insights - Addressing Emerging Data Challenges in Simulation-based Science

Data-related challenges are quickly dominating computational and data-enabled sciences, and are limiting the potential impact of end-to-end coupled application formulations enabled by current high-performance distributed computing environments. These data-intensive application workflows present significant data management, transport and processing challenges, involving dynamic coordination, interactions and data-coupling between multiple application process that run at scale on different high performance resources, and with services for monitoring, analysis and visualization and archiving. In this presentation I will explore data grand challenges in simulation-based science application workflows and investigate how solutions based on managed data pipelines, in-memory data-staging, in-situ placement and execution, and in-transit data processing can be used to address these data challenges at petascale and beyond.

Staying Green at the Extreme - Exploring Energy Challenges and Tradeoffs for Science Workflows at Extreme Scales

As scientific applications target extreme scales, energy-related challenges are becoming dominating concerns. As a result, it is critical to explore emerging architectures (e.g., with multiple cores and deep memory hierarchies) and applications (e.g., coupled simulation workflows) from an energy perspective and investigate associated overheads and tradeoffs. For example, energy/power-efficiency have to be addressed in combination with quality of solution, performance and reliability, and other objectives, and achieving the desired levels of reduction in power consumptions requires a comprehensive cross-layer and application-aware strategy. In this talk I will explore these issues and will describe recent related research efforts at the Rutgers Discovery Informatics Institute (RDI2).

Speaker Biography:

Manish Parashar is Professor of Electrical and Computer Engineering at Rutgers University. He is the founding Director of the Rutgers Discovery Informatics Institute (RDI2) and of the NSF Cloud and Autonomic Computing Center (CAC), and is Associate Director of the Rutgers Center for Information Assurance (RUCIA). Manish received a BE degree from Bombay University, India and MS and Ph.D. degrees from Syracuse University. His research interests are in the broad areas of Parallel and Distributed Computing and Computational and Data-Enabled Science and Engineering. A key focus of his research is on addressing the complexity or large-scale systems and applications through programming abstractions and systems. Manish serves on the editorial boards and organizing committees of a large number of journals and international conferences and workshops, and has deployed several software systems that are widely used. He has also received numerous awards and is Fellow of AAAS, Fellow of IEEE/IEEE Computer Society and Senior Member of ACM. For more information please visit http://parashar.rutgers.edu/.

To arrange a meeting with the speaker, please contact HJ Siegel (HJ@ColoState.edu).