DEPARTMENT OF MECHANICAL ENGINEERING
Purdue School of Engineering and Technology

FALL 2005 SEMINAR SERIES

Date: Thursday, September 29, 2005

Time: 11:00 am - noon
Room: SL 165

Reception at 10:45 am (cookies and refreshments served)
Everyone is invited

Scientific Computing and Visualization on the TeraGrid Facility

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Abstract. TeraGrid (http://www.teragrid.org) is an NSF-supported national distributed computing environment for open scientific research. It includes 20 teraflops of computing power distributed at nine sites with facilities capable of managing and storing nearly 1 petabyte of data, high-resolution visualization environments, and toolkit for grid computing. All the sites are tightly integrated and connected through a network that operates at 40 gigabits per second. Indiana and Purdue Universities are connected to TeraGrid via I-Light.

ParaView (http://www.paraview.org) is an extensible, open source multi-platform application for visualizing large data sets. ParaView operates on a wide range of data formats including structured, unstructured grids, and adaptive mesh refinement data sets. ParaView includes a suite of visualization algorithms, including contouring, clipping, streamlines, stream ribbons, glyphing, and animations. In addition to these features, ParaView offers an advantage of running visualization processes in distributed and parallel fashion for processing large data sets. It runs parallel on distributed and shared memory systems using the Message Passing Interface (MPI). ParaView uses the data parallel model. In this model, data is broken into the pieces to be processed by different processors which allows to visualize large data sets. This capability makes Paraview suitable visualization application for TeraGrid environment. This presentation will show how large data sets, produced by the parallel Computational Fluid Dynamics (CFD) applications can be visualized with distributed and parallel modes of ParaView on TeraGrid resources.

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About the Speaker. Resat Umit Payli is Research Associate at the Computational Fluid Dynamics Laboratory. His research interests are scientific computing, scientific visualization. distributed and parallel computing. He is currently working on the TeraGrid environment to solve large scale CFD problems and visualization of the solution results.