

Special Information Science and Technology Seminar Speaker



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Computing, Exploring, and Tracking Features in Massive Scientific Data

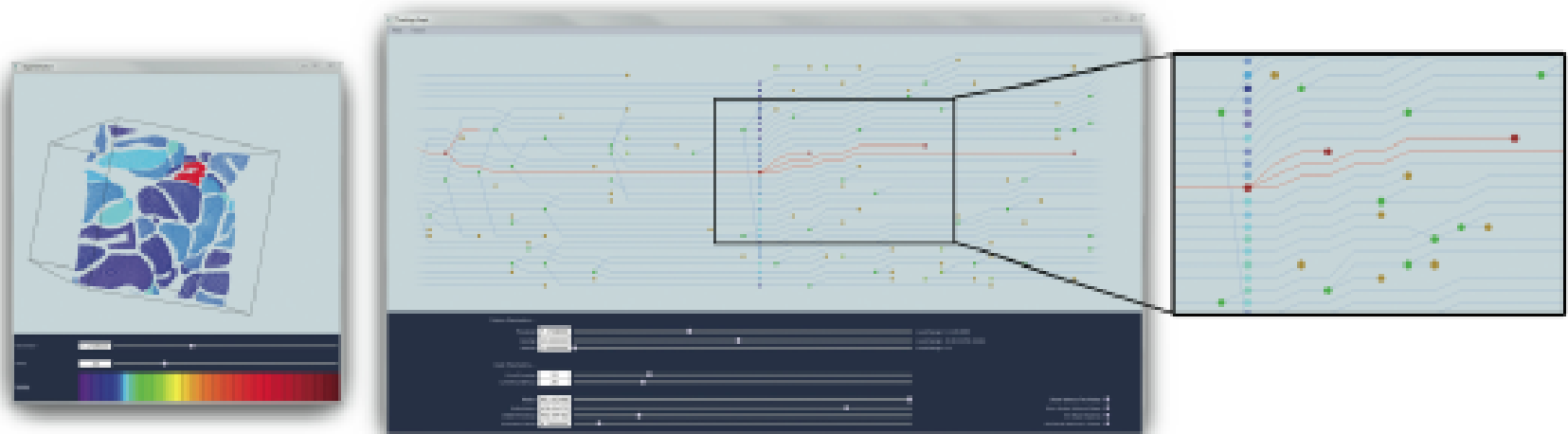
Tuesday, July 9, 2013

2:00 - 3:00 PM

TA-3, Bldg. 1690, Room 102 (CNLS Conference Room)

Abstract: With the continuing increase in available computing resources scientist are able to study physical phenomena with unprecedented detail and complexity. This has led to a shift in analysis techniques away from globally aggregated measures to the study of individual features of interest, such as, eddies, vortices, halos, burning cells, etc. As a result, many advanced analysis techniques require robust, efficient, and scalable techniques to extract features from the emerging Tera- or Peta-byte sized data sets. We will present a general framework to define, extract, and analyze features from scientific data. It consists of two parts: a streaming and/or massively parallel computing pipeline capable of transforming the data into highly compact, abstract representations and an interactive analysis environment that extracts features from this meta-representation on-the-fly while providing a user with the ability to track feature evolution and explore various statistical summaries. Furthermore, we will introduce recent extensions for high dimensional functions that address emerging challenges in uncertainty quantification as well large scale experimental data.

Biography: Peer-Timo Bremer is project leader at the Center for Applied Scientific Computing at the Lawrence Livermore National Laboratory and the Associate Director for Research at the Center for Extreme Data Management Analysis and Visualization (CEDMAV) at the University of Utah. His interests include large scale data analysis, visualization, topological techniques, data management, and high dimensional analysis. Peer-Timo is the main software architect for the TALASS (Topological Analysis for Large Scale Science) and ND2AV (N-Dimensional Data Analysis and Visualization) toolkits and the author of numerous conference and journal papers including several best paper awards.



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