Special Guest Lectures

Robust Data Mining and Fusion CyberTools for Knowledge Discovery

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Johnston Hall 338
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Abstract:
Computational endeavors in several natural science disciplines are generating high dimensional, heterogeneous and distributed data at an unprecedented rate, much more rapidly than the corresponding development of data analysis techniques capable of novel knowledge analysis and discovery on this data. Data mining and information fusion techniques offers the promise of precise, objective, and accurate in-silico analysis of this emerging data using knowledge discovery routines that reveal embedded patterns, trends, and anomalies to create models for faster and more accurate knowledge discovery. In this talk, we will demonstrate a unique associative learning algorithm in non-temporal data for multi-class classification and another new frequent pattern-mining algorithm for temporal data spaces that addresses the challenges in high-order mining for multi-dimensional datasets. We will also demonstrate the applicability of spectral coherence methods for dimensionality reduction and a unique implementation of multi-scale graph-theoretic image segmentation using wavelet decomposition. This bottom-up segmentation through a weighted agglomeration fusion approach utilizes the specific statistical characteristics of features to efficiently and accurately detects regions of interest in image frames. The talk will conclude with select current and future directions. Note: 338 Johnston is Axis Grid viewing. Live presentation is at 234 Nethken Hall at Louisiana Tech University.

Speaker's Bio:
Dr. Sumeet Dua is an Upchurch Associate Professor, Graduate Coordinator of Computer Science, and Coordinator of IT Research at Louisiana Tech University. He is also an adjunct faculty in the School of Medicine at Louisiana State University Health Sciences Center at New Orleans. His current research interests include building associative models for information fusion in multi-modality datasets, data mining, pattern tracking, anomaly detection, and content-based feature extraction. He is an author/editor of three books in the content area, is an associate editor of three international journals, recurrently serves as a study section member for the NIH, and has served as a panelist for the NSF and U.S. Air Force Office of Surgeon General. He has won several awards including a recent outstanding poster award at NIH/NCI caBIG - NCRI Informatics Joint Conference and the LA Tech Engineering and Science Foundation award. He is a senior member of the IEEE and ACM, and the fellow of ACEEE.

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