

Colloquium

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Fordham University, New York

Friday, October 11, 2013 at 3 pm in BioScience 2.168

Big Data Analytics and Combinatorial Fusion

Big Data, as characterized by four "V": volume, velocity, variety and value, requires a new paradigm shift in the acquisition of data, recognition of patterns, combination of information, extraction of useful knowledge, and generation of actionable insights for decision and policy planning. Combinatorial fusion analysis (CFA), a recently developed algorithmic information fusion paradigm, entails the combination of multiple scoring systems using a rank-score characteristic (RSC) function and the concept of a "cognitive diversity (CD)." In this talk, we will review recent results in CFA and show how to use the RSC function and cognitive diversity to combine variables (cues, attributes, features, parameters, indicators, etc.) or fuse systems (decision, forecasting, data mining, machine learning, etc.). Examples are drawn from science, technology, business and society including information retrieval, virtual screening, ChIP-seq genomics, target tracking, image recognition, cognitive informatics, affective computing, corporate revenue prediction, and joint decision making. This will be a comprehensive talk for students and faculty in mathematics, computer science, biology, and other disciplines in science, engineering and social sciences.

About the Speaker: Frank Hsu is the Clavius Distinguished Professor of Science, a professor of Computer and Information Science, and director of the Laboratory of Informatics and Data Mining (LIDM) at Fordham University in New York City. He was chair of the Dept. of Computer and Information Science, associate dean of the Graduate School of Arts and Sciences at Fordham University, and chair of the Section of Computer and Information Science at the New York Academy of Science. He received an M.S. degree from the University of Texas and a Ph.D. from the University of Michigan. He has been visiting scholar/professor at M.I.T., Taiwan University, Tsing-Hua University (Hsin-Chu, Taiwan), Keio University (IBM Chair Professor), JAIST (Komatsu Chair Professor), and the University of Paris-Sud (and CNRS). Dr. Hsu's research interest includes combinatorics, interconnection networks, informatics and computing. He and his colleagues have proposed and developed an algorithmic information fusion method called combinatorial fusion analysis (CFA). CFA has been used in a variety of domain applications including business intelligence, financial informatics, cognitive informatics, information retrieval, bioinformatics, health informatics, on-line learning, target tracking, image recognition, and joint decision making.