

International Conference on **Big Data Analysis and Data Mining**

May 04-05, 2015 Kentucky, USA

Data mining and optimization techniques for massive networks

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In recent years, data mining and optimization heuristics have been used to analyze many large (and massive) data-sets that can be represented as a network. In these networks, certain attributes are associated with vertices and edges. This analysis often provides useful information about the internal structure of the datasets they represent. We are going to discuss our work on several networks from telecommunications (call graph), financial networks (market graph), social networks, and neuroscience. In addition, we are going to present recent results on critical element selection. In network analysis, the problem of detecting subsets of elements important to the connectivity of a network (i.e., critical elements) has become a fundamental task over the last few years. Identifying the nodes, arcs, paths, clusters, cliques, etc., that are responsible for network cohesion can be crucial for studying many fundamental properties of a network.

Biography

Panos M Pardalos serves as Distinguished Professor of Industrial and Systems Engineering at the University of Florida. Additionally, he is the Paul and Heidi Brown Preeminent Professor in Industrial & Systems Engineering. He is also an affiliated faculty member of the Computer and Information Science Department, the Hellenic Studies Center, and the Biomedical Engineering Department. He is also the Director of the Center for Applied Optimization. He is a world leading expert in global and combinatorial optimization. His recent research interests include network design problems, optimization in telecommunications, e-commerce, data mining, biomedical applications, and massive computing. He is a fellow of AAAS and INFORMS and his recent awards include the Constantin Carathéodory Prize, (July 2013) and the 2013 EURO Gold Medal.

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