

Communications & Multimedia Lectures
Inst. Telecommunication and Multimedia Applications - Universitat Politècnica de València

Invited lecture

SENSOR AND SOCIAL NETWORKS: A CASE FOR TOPOLOGICAL DATA ANALYSIS

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2015 IEEE – Signal Processing Distinguished Lecturer

Date: **May 28th, 2015** || Hour: **10:00 h**

Location: **Conference room, Building 8E (Yellow Cube), Access G, 3rd floor**, Universitat Politècnica de València, Camino de Vera s/n, 46022 Valencia. (<http://www.upv.es/plano/plano-2d-es.html>)

Abstract

Network science has permeated all areas of applications of data science, including dimension reduction, to sensor networks to social networks. While graph-based methods have long been as a technique of choice to model the network structure, the pair-wise relationship between nodes/agents/sensors has been recognized as a limitation in many practical cases. The so-called topological data analysis (TDA) has over the last few years, demonstrated that many timely, important and relevant questions in network science can be effectively addressed. These include rapid detection and localization of failures in sensor networks, and core-periphery decomposition of social networks (for community detection). We discuss some efficient, distributed and fast techniques that not only account for the underlying homology of the network, but also offer insight in their functionality.

Short Biography

As a Member of Technical Staff at AT&T Bell Labs, he has worked in the areas of telephony and digital communication systems/subsystems. Following an NSF postdoctoral fellowship at Foreign Centers of Excellence, LSS/University of Orsay, Paris, France, he became a Research Scientist at the Laboratory for Information and Decision Systems, Massachusetts Institute of Technology, Cambridge, performing and supervising research. He is presently on the faculty in the ECE Department, North Carolina State University, Raleigh, leading the Vision, Information and Statistical Signal Theories and Applications group (<http://research.ece.ncsu.edu/vissta/>). Dr. Krim is also an Associate Editor of IEEE Transactions on Signal Processing.

Dr. Krim's research interests are in statistical signal processing and mathematical modeling with a keen emphasis on applications. He has been particularly interested in introducing geometric and topological tools to statistical signal processing problems and applications. His research has primarily centered on estimation theoretic problems and modeling. Dr. Krim has published extensively on these areas with an impact amounting to over 5000 citations to date.

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