



Channing Methods Meeting

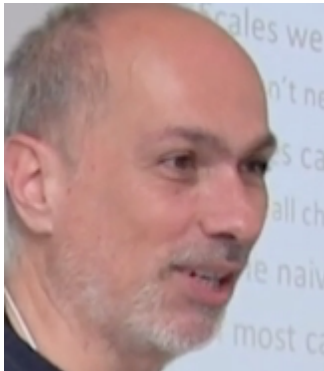
May 16 (Tuesday), 2023, 11AM (ET)

MCP 5th-floor large conference room

<https://us02web.zoom.us/j/579497999?pwd=cHNIWHMzWUJFUUVJTG1EeVJmY05aQT09>

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The Fair Densest Subgraph Problem and its Applications

Abstract: Reducing hidden bias in the data and ensuring fairness in algorithmic data analysis has recently received significant attention. The main problem discussed in this presentation is the one of identifying a densest subgraph, while ensuring that none of the possible values of a protected attribute of the vertices are disparately impacted. While the underlying algorithmic problem is hard in terms of its complexity, we propose efficient, spectral-based heuristics that are effective in practice and, provably, almost optimal on some graph classes of practical interest. The above theoretical findings are corroborated by experimental results on two use cases. In the first, the goal is striking a good balance between item diversity and overall correlation in a recommender system scenario based on an Amazon co-purchasing graph dataset. In the second scenario, we revisit and adapt the above techniques to the problem of identifying potentially interesting locus-disease gene associations for Chronic Obstructive Pulmonary Disease. The latter scenario is the focus of an ongoing project in collaboration with Harvard University.

Bio: I am Associate Professor at Dipartimento di Ingegneria Informatica, Automatica e Gestionale "A. Ruberti", Sapienza University of Rome. I have a background on the design and analysis of efficient heuristics for NP-hard and on-line problems, with an emphasis on the application of probabilistic and algebraic techniques. My current research interests include the design and analysis of algorithms for graph and data mining and the modelling and analysis of dynamic and distributed processes in large complex systems. This research activity has resulted in about 100 publications, many of which appeared in prominent journals and conferences. I have served and regularly serve in the program committees of main conferences in algorithms, data mining and AI.

Hosted by Yang-Yu Liu