HPI Kolloquium
17.11.2016, 16:00 Uhr

Hasso-Plattner-Institut, Vorlesungsgebäude, Auditorium 1
Campus Griebnitzsee, 14482 Potsdam

"Summarizing Large-scale Static and Time-evolving Graphs"

Prof. Danai Koutra
University of Michigan

Abstract

Networks naturally capture a host of real-world interactions, spanning from social interactions to brain activity. But, given a massive graph (e.g., a large email exchange network), what can be learned about its structure? What are its "important" patterns?

In this talk I will present our work on scalable algorithms that help us to make sense of large graph data during early exploratory analysis. I will focus on two approaches: "VoG" and "TimeCrunch". VoG disentangles the complex graph connectivity patterns, and efficiently summarizes large graphs with important and semantically meaningful structures by leveraging information-theoretic methods. TimeCrunch discovers coherent temporal patterns, and summarizes time-evolving networks in a scalable and effective way. Both methods provide key insights into large real-world graphs.

I will conclude the talk by presenting "Perseus", an interactive large-scale graph mining and visualization tool that can be used to obtain a different type of summaries that consist of graph properties (or statistics).

Short CV

Danai Koutra is an Assistant Professor in Computer Science and Engineering at University of Michigan, Ann Arbor. Her research interests include large-scale graph mining, graph similarity and matching, graph summarization, and anomaly detection. Danai's research has been applied mainly to social, collaboration and web networks, as well as brain connectivity graphs. She holds one "rate-1" patent and has six (pending) patents on bipartite graph alignment. Danai won the 2016 ACM SIGKDD Dissertation award, and an honorable mention for the SCS Doctoral Dissertation Award (CMU). She has multiple papers in top data mining conferences, including 2 award-winning papers, and her work has been covered by the popular press, such as the MIT Technology Review. She has worked at IBM Hawthorne, Microsoft Research Redmond, and Technicolor Palo Alto/Los Altos. She earned her Ph.D. and M.S. in Computer Science from CMU in 2015 and her diploma in Electrical and Computer Engineering at the National Technical University of Athens in 2010.

Host: Prof. Dr. Emmanuel Müller