



CoCo Seminar Series Fall 2018

Topology and Geometry of Urban Road Networks

Dr. Saray Shai
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Wednesday November 7, 2018

11:00am-12:00pm

**Engineering Building H-9 (Knoll-MacDonald
Commons / Watson Commons)**

Street networks -- acting as the urban substrate for social and economical developments -- control many aspects of our society, from disease spread to urban sprawl and population growth. In their primary representation (where edge represent roads, and nodes represent roads' intersections), street networks are essentially planar and possess many features similar to lattices. Yet, they also display very distinctive features such as heavy-tail distribution of betweenness centrality and cell areas. But as cities and their transportation systems become increasingly complex and multimodal, it is important to understand the implications of such advances to the topology and geometry of street networks. In this talk, I will examine the topological and geometrical properties of multilayer transportation systems involving more than one modality. In particular, I will discuss how the introduction of fast subway systems affect the embedding space of the multilayer transportation network.

Dr. Saray Shai is an Assistant Professor of Computer Science at Wesleyan University. She did her undergraduate study in Mathematics and Computer Science at the Israel Institute of Technology (Technion) and then worked in an Israeli startup called Diligent (which is now part of IBM). Then she went back to University and completed her PhD at the University of St. Andrews, UK. Before coming to Wesleyan, she was a postdoc in the Department of Mathematics at UNC-Chapel Hill. She is interested in anything that has to do with "networks", with a goal to develop mathematical and computational tools and apply them to data analysis problems arising in a variety of contexts.

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<http://coco.binghamton.edu/>