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Yusu Wang* (yusu@cse.ohio-state.edu). *Geometric and topological methods for graph analysis.*

Graphs form one of the most important types of data in various applications across science and engineering. They could be geometric in nature, such as road networks in GIS, or relational and abstract, such as protein-protein interaction networks. In this talk, I will give some examples where topological and geometric ideas can be used to analyze various forms of graph data. In particular, we will discuss the reconstruction of hidden geometric graphs from density data, the recovery of graph metrics from noisy observations, and the comparison of metric graphs. In each of the case, we aim to also provide theoretical understanding and guarantees. Through these topics, I hope to illustrate how geometric and topological ideas can be very useful in the (qualitative) analysis of graphs. (Received January 14, 2020)