

Modeling networks with node attributes

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Networks are a powerful way to describe and represent social, technological and biological systems, where nodes represent entities (people, web sites, genes) and edges represent interactions (friendships, communication, regulation). The study of such networks then seeks to find common structural patterns and explain their emergence through tractable models of network formation.

The talk investigates machine learning techniques for modeling heterogeneous networks. In particular, we will discuss a set of models based on the Multiplicative Attribute Graphs (MAG) model that provably generate synthetic graphs with similar properties that are found in real graphs as well. Moreover, the models also lend themselves nicely to fitting and parameter estimation. Such models can be used to summarize the network structure, to predict links between the nodes, and to estimate missing features or types of nodes.