Ranking on Graphs: A Machine Learning Approach

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Ranking problems on graphs are increasingly common and arise in a variety of applications, including computational biology, social network analysis, web applications, and many others. Algorithms such as PageRank and HITS are well known in this setting. However these algorithms do not incorporate information about the relative relevance of different nodes. In this talk I will describe a machine learning approach for ranking on graphs that takes into account information about the relative relevance of different objects or nodes in the graph. The approach builds on recent results on regularization theory for graphs. The basic approach is highly flexible and can be used in a variety of applications. I will illustrate the approach with some applications in computational biology.