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Nitesh V Chawla* (nchawla@nd.edu). *Coupled: Link Prediction in Coupled Networks.*

We study the problem of link prediction in *coupled networks*, where we have the structure information of one (source) network and the interactions between this network and another (target) network. The goal is to predict the missing links in the target network. The problem is extremely challenging as we do not have any information of the target network.

We propose a unified framework, CoupledLP, to solve the problem. Given two coupled networks, we first leverage atomic propagation rules to automatically construct implicit links in the target network for addressing the challenge of target network incompleteness, and then propose a Coupled Factor Graph to incorporate the meta-paths extracted from the coupled part of the two networks for transferring heterogeneous knowledge. We evaluate the proposed framework on two different genres of datasets: disease-gene (DG) and mobile social networks. The proposed problem of coupled link prediction and the corresponding framework demonstrate both the scientific and business applications in biology and social networks. (Received August 10, 2015)