

Overview of Social Networks and their Applications

In this course, we will discuss how to leverage social networks for analytical purposes. Obviously, when we say social networks, many people will think of Facebook, Twitter, Google+, LinkedIn, and so on. These are all examples of networks that connect people using either friendship or professional relationships.

We will zoom out and provide a much more general definition of a social network. In fact, we will define a social network as a network of nodes that are connected using edges. Both nodes and edges can be defined in various ways.

Here you can see some examples of social network analytics. The goal of email community mining is to find communities of people who frequently exchange emails. The nodes are people and the edges represent email exchanges. To predict churn in a Telco setting, you can analyze the social network of people who call each other. Here, the nodes are people and the edges represent the phone calls that were made. Fraud rings in a corporate setting can also be detected using social networks. The nodes are companies and the edges represent shared resources such as employees, equipment, physical address, and so on. Web community mining tries to find web sites or web pages that discuss similar topics. The nodes are websites or web pages, and the edges are the hyperlinks between them. Closely related is research community mining, which aims at finding communities of researchers who work on similar topics. The nodes are researchers and the edges can be based on co-authorship or citations. In a terrorism detection setting, the nodes can be people and the edges are communications between them. Finally, anti-money laundering can be analyzed by building a network of bank accounts and cash transfers between them.

To summarize, you can clearly see that a social network is more than just Facebook, Twitter, and LinkedIn. It's a network of nodes and edges that are defined in a particular way.

Social Network Analytics

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