Influence and Degree Distribution of Graphs in Real-World

M.Sc. Thesis

Background

Graphs and Networks are powerful paradigms to understand multidimensional data. Also some of the key machine learning algorithms are based on graph based representations. These methods enable us to understand not only communications systems, but also to analyse a diverse phenomena such as social networks, biological interactions, and economical dynamics.

Tasks

In this thesis you will first learn about how to conduct complex graph based analysis of the influence of different actors on each other, and how to enable automated data mining of big data sets. After mastering the basics you will implement selected graph analysis and learning algorithms in a manner that the software can be used for large data sets. There a multiple ways to do actual implementation, but most likely student would chose to use R, MatLab, and/or C/C++. As the final research task, and practical verification of the graph analysis tool, you will program a simple meta-data parser for a sociological database we have an access, and then conduct the analysis of the data. There is also good change for generating publishable information from this thesis project.

Other Information

The thesis provides an opportunity to learn how modern graph influence based analysis is done for very large data sets. The solid interests and skills on programming are necessary for a practical part of the thesis work. We provide very close supervision and the work is a part of our on-going project that studies (human) agent interactions using graph based analysis tools.

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