Network Science

Project 1 essential requirements

Introduction

This document lists some "minimum" requirements to the content of presentation for mid-term exam. To recall the exam procedure:

- Presentation in English, both written and oral
- Time limit – 5-7 mins
- `.pdf` file
- You are encouraged to discuss presented results
- Source code submission and its inclusion (with comments) to the report

1 Your Network Summary

- Network source and preprocessing
- Node/Edge attributes
- Size, Order
- *Gorgeous* network layout. Try to show that your network has some structure, play with node sizes and colors, scaling parameters, tools like Gephi may be useful here
- Degree distribution, Diameter, Clustering Coefficient

2 Structural Analysis

- Degree/Closeness/Betweenness centralities. Top nodes interpretation
- Page-Rank. Comparison with centralities
- Assortative Mixing according to node attributes
- Node structural equivalence/similarity
- The closest random graph model similar to your SN

3 Community Detection

- Clique search
- Best results of various community detection algorithms, both in terms of interpretation and some quality criterion. Since Networkx has no community detection algorithms, use additional modules e.g. igraph, communities, graph-tool, etc
- Use and implement incremental algorithms presented during classes
- The results should be visible on the network layout or adjacency matrix picture