Social Network Analysis

Project essential requirements

Deadline: 12 June (without prolongations)

Introduction

This document lists some "minimum" requirements to the content of presentation for major homework on Graph section. To recall the exam procedure:

- Presentation in English in written format
- `.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, Shortest Path distribution, Diameter, Radius, Clustering Coefficients (local distribution and global)

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

- Search for cliques, hierarchical k-cores, k-plexes.
- Best results of various community detection algorithms, at least, hierarchical spectral clustering and modularity optimization should be applied with another TWO algorithms and compared in terms of stability of clustering. You may use communities, graph-tool, etc
- Use and implement incremental algorithms of finding communities presented during classes
- The results should be visible on the network layout and adjacency matrix picture

4 Extracting friendship graph

For max grade 6: Export friends graph

In all other cases try to learn VK API using examples written in Python: here, here, here and many other working examples on habrahabr. Use official documentation. All scripts should be written in R.