Network Science - A.Y. 2018/2019

Homework 2

Due on 20th January 2019

1. Use the same dataset of HW1 (alternatively, you can identify a new one)
2. Evaluate relevant ranking/community/link analytics/epidemics within your dataset
   - Everything taught in the second part of the courser is welcome. You can evaluate HITS and/or PageRank values, convergence speed of power iteration, eigenvalue plots, topic specific PageRank, SimRank, TrustRank; community detection through modularity optimization, the spectral approach, or PageRank-Nibble; Conductance quality of the result; Link prediction performance using neighbor, path, or random walk techniques through precision and/or AUC; simulation of an epidemics with a compartmental model of your choice over your network. While you do not have to do all of this, the more evaluations you perform, the better.
   - Not only should you try performing different evaluations but you should also, to the best of your ability, perform *comparative* evaluations and discuss the results accordingly. For example, you can use different techniques and/or highlight different characters of your dataset that emerge from your set of evaluations, and discuss pros and cons of these results.
   - Analytics can be extracted by using MatLab or any other programming language of your choice (Python, C, Java, etc...).
3. Write a brief text report of 4/5 pages
   - The report should be written in English.
   - The report should discuss the results, report significant measures, and visually/graphically illustrate relevant analytics.
   - Please organise your report in such a way to be clear, complete, correct, concise, and creative.
   - The LaTeX typesetting system is suggested, but you are free to use any document preparation system (e.g., Word).
4. Upload your work through the course web-site
   - You are specifically asked to upload three separate files, namely
     a) the text report (in **pdf** format)
     b) supporting code used to evaluate metrics - please polish the code at your best, and add proper comments to it
     c) companion data in accessible format