CSCI4190 Course Project:

Tentative Deadline: 4 May, 2020

Introduction

In this course project, you are expected to finish a social network analysis task on a real-world dataset. The major phases consist of:

1. Specify your analysis task.

2. The dataset and software which should be utilized in your project.

3. Conduct analysis and finish the final project report.

Phase 1: Specify your tasks

You may choose one specific set of tasks listed below and do analysis on real-world data to complete the whole set of tasks.

Task set 1: Study information cascade

a) Decision making, private signals.

b) Bayes rules and cascading.

c) Example cascade of real-world events.

d) Use simulations to tell why cascade can be wrong and fragile.

Task set 2: Understand power laws and network generation

a) Power law exponents for real world networks.

b) Rich-get-richer model and network generation.

c) The unpredictability of rich-get-richer model.

d) Show the evolving of networks and link creation along time.

Task set 3: Simulate cascading behaviors in networks

a) Payoff (threshold) vs cascading.

b) Adopting key nodes vs cascading.

c) Complete cascade and clusters.

Task set 4: Simulate epidemics

a) SIR model.

b) SIS model.

c) SIRS model.

d) Epidemics and network structure.

Task set 5: Study small world phenomenon

a) Six degree of separation.

b) Watts-Strogatz model.

c) Decentralized search.

Marks will be deducted if only part of the tasks is finished within a task set. Make sure your analysis is thorough with supporting evidences.

Phase 2: Dataset and software

You are required to use the following dataset and software.

Dataset: soc-Slashdot0922 (<http://snap.stanford.edu/data/soc-Slashdot0902.html>)

Software: SNAP (<http://snap.stanford.edu/>)

Phase 3: Project report

You should write a final report to analyze the results and summarize your project. In this report, you are required to address the following points:

1. The tasks you finished

a) Which task set you are working on?

b) How you conduct your analysis to finish those tasks?

2. Results and Analysis

a) Use tables and graphs.

b) Use quantitative values.

c) What conclusions you could make from the results?

3. Conclusion

a) Summarize your findings.

All you need is to summarize the works you have done and your results. Please do not include the introduction of the task sets that have already been covered in the lectures. Your project score is determined by the content of your report and not the page length.

Please make sure that you have put down all important materials (methods, data, experiment results) in your report. Careful design of the article structure may help you present your project better.

Plagiarism check

According to the policies of the university, students? work must go through plagiarism check to ensure academic honesty. Please make sure that you do not include any materials from other sources unless they are properly referenced and/or quoted. Please read carefully the university guidelines ([https://www.cuhk.edu.hk/policy/academichonesty/](https://www.cuhk.edu.hk/policy/academichonesty/" \t "_blank))

You need to learn the proper use of source material. Referencing to the original source means you have consulted that item and are acknowledging the work. If you need to copy or use verbatim the source material, you must also state the extraction explicitly clear in the text (such as using the quotation marks) in addition to the inclusion of the reference.

Please submit your final project report to VeriGuide ([https://academic.veriguide.org/academic/login\_CUHK.jspx](https://academic.veriguide.org/academic/login_CUHK.jspx" \t "_blank)) and choose assignment number 9. You will get a declaration form after the submission.

Submission checklist (\*\*\*\*\*\*\*\*\*\*\*\*\* Please check, there is a beta version for one submission to both blackboard and VeriGuide).

Please submit the files before the deadline. Note that only PDF format is accepted for soft copy submissions. The following points would help you to check if you have completed the submissions.

1. Submit softcopies of your project report and the declaration form generated by VeriGuide to Blackboard before its submission due.

2. Submit the codes (in a zip file) you use to generate the results to Blackboard. You do not need to attach the dataset.

You will get 0 marks if there are no online records on VeriGuide.

Assessments

Your project will be evaluated based on the following perspectives and factors.

1. Project Work and Results

a) Correctness of methods used

b) Amount of work done

c) Analysis and interpretation of results

2. Project Report

a) Presentation

b) Clarity and correctness