

CMSC 858L — Spring 2009 — Class Project

The project will be done in groups of 2. You may choose your partner. As we have 11 people in the class, there will be one group of 3. Let me know as soon as possible if you either want to form a group of 3, or if you cannot find a partner.

There are 3 options:

1) Improve on either MCL, Newman’s modularity, or Graph Summarization in some way. For example, your GS implementation is faster than the reference implementation, or gives a better compression ratio, or handles other kinds of graph patterns, or supports extra data on the nodes / edges, or compresses hypergraphs, or makes better function predictions, or has a NP-hardness proof. Be creative about what you mean by “improve.” (This is a crucial skill for an academic).

As an alternative, you can argue convincingly why one particular approach to improvement does **not** work. For example, if your original plan was to improve Graph Summarization by using an integer programming formulation, and you don’t obtain an improvement, even after some careful thought and experimentation, you might conclude that that idea, though reasonable, won’t work. Explain how you came to that conclusion and support it with some experimental results.

2) Write a useful, interesting Cytoscape plugin that doesn’t already exist. Think carefully about some of the network analysis tasks a biologist might be interested in performing and write a plugin to help users perform that task. You should really try to understand the task from the biologist’s viewpoint, and design your plugin accordingly. Be careful of blindly applying a social network analysis task to biology.

3) Another project related to biological networks that I approve.

You must:

- (1) Send me, via email, a 1–2 paragraph proposal for the project by **5pm, Friday, March 27**. If you choose option #3, your writeup should be 1 page long. The write-up should say which of the above 3 options you have chosen, identify the team members and describe the project briefly. If two or more teams choose a very similar project there may be an negotiation stage where we try to minimize the overlap.
- (2) Present the results of your project in a ~ 30 minute presentation during the last 3 days of class.
- (3) Turn in a write-up of the project (3-5 pages) by the start of the Final Exam.

Evaluation criteria:

- (1) Clarity of presentation and write-up.
- (2) Soundness of the results. Did you try the natural approaches? Are your “experiments” correctly done?
- (3) Usefulness/interestingness/cleverness of approach/problem/results.