COMP 150 CSB – Computational Systems Biology

Class Project
Requirements & Deadlines

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Project Overview

- **Goal**
  - Use knowledge learned in class to explore a specific problem and to extend understanding of systems biology

- **Focus on**
  - what is to be learned and discovered from the project
  - Material submitted should reflect the learning and discovery

- The evaluation is based on the satisfactory and timely completion of the project and all its milestones.
Three project aspects

1. Problem definition and literature background
2. Design of methods to solve the problem
3. Implementation and evaluation of solution
1. Problem Definition and literature background

- It should explore and describe the problem and provide some investigation of background work in this area.
- It should examine the research literature in the selected area, according to what are the important problems, to what degree are these problems understood and solved, how different solutions interrelate, and what are important trends to consider for the future.
  - Narrow down the problem
  - Utilize material from the class
  - Use literature search to learn what others have done in this area
  - Original thoughts, solutions, insights are strongly encouraged and will be rewarded
  - Ambitious large projects are OK – as long as you can define a specific subproblem for which you can provide details
2. Design/Methods

- The design should try to map out a software solution that is implementable with the available time and computing resources.
- Due to the time limit, think of "prototyping" rather than writing complete software solutions.
- Because of the focus on discovery and learning, select software solutions to enable discovery and learning.
- Maximize the return on the time invested in developing the solution.
3. Implementation and evaluation

- The methods, or some aspect of the methods, is implemented to demonstrate feasibility.
- The experimentation involves developing a reasonable hypothesis and designing and performing an experimental evaluation to test this hypothesis.
- Use real biological data from models or databases.
Structuring the Project

The project is to be structured into the following three stages (or requirements):

A. Initial Proposal

- A written proposal describing the area and problems to be explored, the motivations for choosing this area, possible directions of investigation, proposed type of project, and the expected results. And the progress to be expected by the milestone. This should be roughly 2-4 typewritten pages.
- The proposal should have “introduction”, “methods”, and “potential issues” sections.
- Short in class presentation with feedback from all class members

Slides – 5 minute class presentation (3 slides)
written report
Structuring the Project

B. Halfway Milestone

One page report describing progress or a change in plans/course given work done. Should show roughly half completion as described in the initial proposal.
C. Final Report and Demonstration of Results

- A final description of what was attempted, what was accomplished, and what was learned from the project.

- Ideally, this will be a revision of the proposal, changing the descriptions of proposed work to descriptions of accomplished work; refining the goals and objectives, including a brief literature survey for completeness and extended with some final conclusions and observations. The idea is for this to be the culmination of previous steps, not an entirely new document.

- The demonstration should provide some working evidence of the work accomplished, ideally demonstrating some point to the project, i.e. the performance of some critical aspect to the design, etc.

- Note: negative results that indicate something did not work are welcome.

- It is important to recognize the limitations of the results

- The final report should have an “introduction”, “methods”, “results”, “discussion”, and “future work”
Submission of project components

PROJA - March 25, submit TWO files
   Slides – 5 minute class presentation (3 slides)
   Written report

PROJB – Halfway Milestone - April 15

PROJC – submit to PROJC TWICE
   Class Presentation and Slides – May 6 & 8
   Final Project Report – May 8
Project Ideas

- Use material learned in class
- Re-read some papers, look through slides, and explore follow up papers
- Meet with Prof and hash some ideas out -- early feedback will help you shape the ideas sooner than later
- Group projects are welcome, provided there is enough work for the group and the group agrees on the division of labor
Project requirement material used from http://web.stanford.edu/class/cs249b/projects.html