CMPSC 580
Topics and Research Methods in Computer Science
Spring 2015

Assignment 18
Proposal Writing Workshop, Parts 1 and 2
Outline due at the end of class Friday, 13 March

During class on Tuesday and Thursday of this week, you will be working with a partner to produce an outline and first draft of your module three proposal. In addition to preparing a draft of your proposal, you should take this time to work with the course instructor and your partner to enhance your knowledge of technical document preparation in LaTeX.

Reminder About How Peer Editing Works

You and your partner will go through a cycle of "discussion," "development," and "review" modes. During discussion mode, you will present to each other a small component of your proposal and talk about it—"bounce ideas" off each other, ask questions, and take notes on one anothers' comments and concerns. This will be followed by a period of writing (development) when you will each try to create a small portion of formal text that solidifies some of the ideas you have discussed. Following this will be a period of review when you read over each others' writing and comment on it.

Each partner should have a fresh copy of the senior thesis proposal template (there is a copy in the `cs580s2015-share/proposal-template` repository folder).

Tuesday—First Round

Discuss: Share your idea for a senior project with your editing partner and listen carefully to your partner's idea. If you are unclear about the nature of the project, try to ask strategic questions about it that will elicit more specifics. Examples of good questions (you can think of more!):

- What would be a good title that summarizes the purpose and goals of the project?
- What will be the main "deliverable" of the thesis—a computer program or a mobile app? an experiment? an empirical study? a set of recommendations? a public Web site? an analysis of an existing program, process, or system? a piece of hardware? a case study? ...
- How will the correctness, validity, effectiveness, efficiency, etc., of the project be evaluated and measured—through experiments? using established benchmarks? through human subject testing? by mathematical analysis? ... (The word "metrics" is often used in conjunction with this—what metrics will be used?)
- Is there a very simple example of the problem or the form of the proposed deliverable?
- Is there a body of professional literature (e.g., books, journal articles) dealing with the topic?

Develop: Following this discussion (no more than 15 minutes initially), each writer should spend 10 or 15 minutes attempting to write a brief introductory paragraph describing the project. Please eliminate filler text, diagrams, and tables from the template so that only your new text appears.

Review: You and your partner should review one another's description, making suggestions about both the technical content and the writing style and using BIW and WFCS as appropriate.

Tuesday—Second Round

Discuss: Each student should try to outline the major components of a proposal on his or her chosen topic and should listen to and ask questions about the partner's outline. This should be a specific, rather than a generic, outline. For instance, "Review of Literature" is too general—instead, mention specific publications that should be reviewed. Examples of questions:

- What is the chief motivation for studying the proposed topic? Can this motivation be conveyed to the reader using statistics, anecdotes, hypothetical examples, or other means?
- Who will benefit from the proposed research—Web users? programmers? businesses? artists? environmental researchers? students in programming classes? ...
- Is there a concept that has not been discussed in the course that is central to understanding the proposal? If so, should it have its own section in the proposal?
- Is there a backup plan in case the proposed work turns out not to be feasible?

Develop: Try to organize the section headings in the proposal template according to the outline you and your partner have discussed, filling in text wherever possible. Remember that LaTeX allows subsections, so several levels of outlining are possible and often desirable.

Review: Critique each other's outlines, then print out your skeleton document and hand it in at the end of the class (you will receive given a "checkmark" grade for this). Remember to place a copy in your `git` repository and make sure that you have shared it with all members of the faculty.

Preparing for and Working on Thursday

Between Tuesday and Thursday, try to develop some of the sections you outlined in class on Tuesday. This would be an excellent time to track down some references and give them a first reading, and then begin to format them BibTeX-style. It would also be a great time to expand the introduction of your proposal based on the questions and suggestions you received from your partner.

You should particularly concentrate on producing a good example, demonstration, or other motivating device for your proposed topic. Instead of giving your personal motivation for investigating your chosen area, the proposal should include professional, technical, and mathematical motivations for pursuing the topic. You should also try to locate good references on both your topic and the broader topics that connect to it (e.g., general references on "multi-robot systems" or "autonomous agents" or "agent simulation" or "sensor networks").

Final Submission on Friday

By Friday, you should submit a rough draft of your proposal. This draft should contain a title, a preliminary abstract, an outline of all the sections in your proposal, a bibliography with at least five references, appropriate citations to these chosen references in the main text, and paragraphs of draft text in all of the main sections. Whenever possible, your draft should contain concrete examples, the statement of a hypothesis and evaluation metrics, a description of your method of approach, a plan for completing your work, and any other relevant components of a proposal.