The CS 645 Research Proposal
Due August 28

1 Introduction

The lectures and readings in this class will cover a wide variety of topics in computer and network security. The project will allow you to study an area in depth and propose a research contribution to one or more of these fields.

Projects may be done in groups of 1-3 people. All members of the group will receive the same grade (unless there are extraordinary circumstances) and all projects will be graded to the same standard, regardless of group size. When you submit to a conference, you do not get extra credit with the program committee for working alone.

2 Project Proposal

The project proposal is a document with a maximum 2 pages of text (I advise using a tight two-column paper formatting). Your references may take up an additional page.

The proposal should have the following sections:

• Problem Statement and Motivation: What is the problem that you are solving? Why is it relevant and interesting? Why would the results you are proposing to achieve be significant?

  Does your research contribute to Computer Security in an interesting way? Could other people use your ideas/results and build on them? Does the project address a problem better than previous research?

  Does it provide unique data, unique conclusions on existing data, or a unique theoretical or pragmatic approach?

  This is probably the hardest criteria to satisfy, but the most important. One of the best ways to do significant work is to read recent papers in your area and think about what questions that work poses but does not answer. Are there additional experiments that could be done that could answer those questions? What if you wanted to use their ideas under different assumptions, or in a different environment?

  The main thing to remember here is that it is not enough to “build something cool.” You need to conduct research that answers a question and contributes to our knowledge.

• Approach: How do you plan to go about solving this problem? What system will you build/or algorithm will you design? What techniques are involved? This section will vary highly based on the type of project you are proposing, but should convince me that you know what you’re doing and that you have a plan for attacking the problem.

• Related Work and Novelty: What other work has been done on this topic and how is it related to what you are trying to do? What other research papers are closest to yours? This section should demonstrate that (1) you have explored the space in some detail and you know what’s out there and (2) your work is a novel contribution.

  This is very important. One of the main things you should be doing in your proposal writing process is determining whether your proposed work is novel and justifying it. If you discover that your work is
not novel part-way through the important thing to do is to be honest about this and set up a meeting with me. We will probably be able to find an angle on the work that still makes a contribution.

- Evaluation Approach: How will you (and I) determine if your approach solves the problem? Negative results (demonstrating that an approach does not work) are acceptable here, provided that the approach was promising. In research, we shouldn’t always know how things will turn out. This can be either theoretical analysis or experimental results.

- Milestones: How will you get the work done? Present a timeline of what and when various work will be accomplished. If you are working in a group, discuss how the work will be divided. Obviously, you do not actually have to stick to this, but you should have a plausible plan for how you would accomplish the work.

- Bibliography: containing the references cited in your proposal

3 Presentation

Each group will present their work on the final day of class (in the form of an uploaded presentation of 10 minutes). This is your opportunity to show off the work that you did. The presentation should be clear, engaging, and demonstrate your contributions. Think of it as an advertisement for your paper (But don’t leave us in suspense—in general, suspense is a bad thing in research papers. Tell us what you did up front. I promise I’ll read the whole thing).