

ECE697AA – Computer Networks

Fall 2008 – Course Project

Prof. Wolf

For the course project, you may choose to do **one** of the following:

- A ONL-based project
- A literature review project

Detailed instructions are below. The project report for either assignment is due December 15, 2008 on SPARK. The project report must be formatted according to IEEE Transactions guidelines (see:

<http://www.ieee.org/web/publications/authors/transjnl/index.html>). Your report must not exceed 3 pages.

For either type of project, you need to get “approval” from me. The reason for this approval step is that I want to make sure you try to develop a good project or review paper. Thus, on or before December 2, you must email me your plans for approval (see details below).

Option 1: ONL-Based Project

In this lab assignment you are asked to design and perform an experiment to prove or disprove a hypothesis related to networking. The hypothesis should address a relevant question and the experiment should be reasonably simple (i.e., you should not have to develop a lot of code). Example hypotheses are:

- “Despite TCP eventually sharing bandwidth fairly, TCP connections that are started earlier achieve a higher link bandwidth.”
- “Extremely short buffers (e.g., 2kB) cause lower link utilization than large buffers (e.g., 1MB) when using TCP.”
- Etc.

Set up a suitable ONL experiment to test the hypothesis you have chosen. Ensure that you consider the impact of various parameters. A main focus should be on using an appropriate statistical test to analyze your data (e.g., statistical significance, confidence intervals, etc.). You may need to brush up on your statistics.

Your report could include the following:

- State your hypothesis. Describe your experiment. How many times to you plan to repeat your experiment? Discuss potential outcomes (e.g., “If the hypothesis is true, then I should observe...”, “If the hypothesis is not true, then I should observe...”, and “If ... happens then we cannot determine if the hypothesis is true or not.”)
- What are the results of your experiment?
- What statistical test can you employ to verify if your result is statistically significant (or not)? What assumptions do you make (e.g., assume normal

distribution)? What is the p-value of your statistical test? What is the interpretation of the p-value you have obtained?

Topic approval:

To ensure that you focus your efforts on a suitable experiment, you must email me the following to receive approval for your ONL assignment:

1. The hypothesis that you plan to test.
2. A brief description of the experiments that you plan and what data you will collect.

Option 2: Literature Review Project

This writing assignment aims at developing a single 3-page review paper that surveys existing work in a particular sub-area of computer networks. The main goal of this assignment is to test and hone your skills in explaining a technical topic and writing concisely about related work.

Guidelines for the final version of the writing assignment:

- Your paper must discuss the current state of the art in one sub-area of computer networks with a particular focus on topics that were touched upon in the course. The topic must be approved (see below).
- Your paper must provide an extensive introduction to the topic that is understandable to computer engineers outside the networking field.
- Your paper must review 5-10 conference articles or journal papers that present a representative view on your chosen topic.
- Your bibliography must cite all reviewed papers and any other relevant sources.

Suggestions for your paper:

- You may consider using the ACM Digital Library or IEEE eXplore to find relevant material.
- Figures are highly recommended when explaining a system, algorithm, etc.
- You should not do any original research. The goal is to survey existing work.

Topic approval:

To ensure that you focus your efforts on a suitable topic, you must email me the following to receive approval for your writing assignment:

1. The title of your paper and a 1-sentence description of what you plan to survey.
2. A list of at least 5 papers that you plan to review for your assignment. (You may add or remove some of those papers later.)

Note regarding plagiarism: It is not acceptable that you copy any text from any source without clearly stating what is quoted and where it comes from. Any text that is not explicitly quoted must have been written by you. If any form of plagiarism is detected, the assignment will be scored as a zero.