Final Project

Goal: Gain a deeper understanding of networking research through in-depth analysis of a recent paper and reproduction and extension of its key results. In project 3, you selected a paper to focus on, analyzed it, and developed a plan for recreating and extending (some of) its results. In the final project, you will execute your plan, conducting your proposed experiments and producing a final report describing your results and explaining your findings.

Your project team should remain the same as it was in project 3 (i.e. you should not switch partners). If that poses a problem, please let the instructor know as soon as possible.

For the final project, you will need to submit a final report (4-6 pages is expected, although there are no strict length requirements or limits) and present a 7-8 minute summary of your work to the class (with 1-2 minutes of Q&A after).

Important dates
Presentation slides due in Canvas: Monday, December 13, 3pm
Presentations: Monday December 13 and Wednesday December 15, 4:30-5:45pm (normal class time)
Project Reports due in Canvas: Wednesday December 15, 11pm

Final project **presentations** will take place in the last week of class**, December 13 and 15**, during our regularly scheduled course meeting. You must submit your presentation **slides** in advance, **by December 13, 3pm**. In order to minimize transition time between presentations, I will load all of the presentations onto my laptop and you will present from there, so I need to receive them with enough time before class to do that.

Note: **Both teammates must participate in the presentation**. If an accommodation for a remote presentation is necessary, you must let me know at least 24 hours in advance. In case of an emergency that makes that impossible, an alternative presentation date may need to be arranged.

The final submission date for your **report** is **Wednesday, December 15, 2021, 11pm**. Note that since presentations will be scheduled for December 13 and 15, you must have your results ready to present by December 13 to be prepared for your presentation. The deadline for the report is slightly later only to give you time to polish the writing and submit your best work.

Given that this is the very end of the semester, all deadlines are strict – no extensions are possible.

Project Report

You should produce a final report describing your project's goals, approach, and outcomes. I expect your report to be about 4-6 pages, but there is no strict minimum or maximum length. You should strive to present your work completely, clearly, and concisely.

Contents

Your report should:

1. Introduce your project: Put your work in context and give an overview of your goals, approach and results. This should:
    a. Clearly state the problem the original paper was solving, and why it was important. This should be self-contained: a reader should understand your report without having read the original paper
    b. Briefly state the main results of the paper (this should only be a few sentences). You do not need to restate the whole paper, just summarize the key results that are relevant for your project
    c. Briefly describe the goals of your project (what findings from the original paper did you attempt to validate or extend, and why?)
    d. Briefly give an overview of your methodology (just a couple sentences; you will go into more detail later)
    e. State the high-level results/findings/outcomes of your work (again, just a couple sentences; you will go into more detail later).

    Please review the introductions of papers that we've read in class – your introduction should be written in a similar style.

2. Present your experimental setup and methods in detail. You should provide enough detail that someone else could replicate your work based on your report.

3. Present your results, using text and figures. Discuss the meaning of the results. What do they show? What should the reader take away? What are possible explanations for any unexpected results?
    a. Note: your report should be self-contained. Don't make the reader go look up a result or figure in the original paper. If you want to make a comparison, state what the original result was, or include and reference the original figure (with citation).

4. Discuss limitations and propose a plan for future work. What are possible limitations or weaknesses in your work? What would you do next if you had more time?

5. Provide an appendix with detailed instructions for reproducing your work
    a. The body of your report (addressing points 1-4 above) should generally be written in the style of the papers that we've reviewed in class. The appendix should include detailed steps for running your experiments, which would not typically be included in the body of the paper (but are often provided along with open-source releases of the associated code/artifacts).
    b. This should include the specific steps/commands needed to set up and run your experiments
    c. If you wrote scripts to help with running your experiments, or modified the original code, you should also submit these artifacts in a tar file in Canvas and can refer to them in the appendix (you may optionally include a Github repo link, but even if you do that, your Canvas submission should still include an export of your repo so the submission is self-contained).

You may choose how to organize your content, but as a starting point, consider organizing sections similar to the following:

1. Introduction (about ½ to 1 page)

2. Experimental setup (about ¼ to ¾ page)
3. Experiments and results – this will be the bulk of your report (about 2-4 pages)
    a. Subsection for each experiment that contains the method, results, and analysis for that experiment
4. Discussion and Future work (about ½ page)
5. Conclusion (1 paragraph, < ¼ page)
6. Appendix (as long as needed)

Formatting and Submission

Please format your report using the IEEE two-column format. You can find MS Word and Latex templates (including an Overleaf template) here:
https://www.ieee.org/conferences/publishing/templates.html

Your report should be submitted in Canvas as a single pdf file. Any accompanying code or other material needed to reproduce your results should be provided in a tar file submitted in Canvas.

Presentation

You should prepare a 7-8 minute presentation of your work. Given the time constraints, you will not have time to explain *everything* in your report. Instead, you should focus on explaining 1 or 2 of the most interesting or important outcomes/results from your project. The goal is to teach the class about something that you learned through your project.

You should explain at least 1 of your experiments, its results, and what we can learn from those results.

If you are working with a teammate, **both teammates must present some part of the work**.

You should plan to do a dry-run of your presentation before December 13 to ensure it fits the time allotted. To make sure everyone has equal time to present their work, I will be strictly enforcing time limits.

You should submit your slides in Canvas in both pdf and original (e.g. .pptx) form.

Acknowledgment: Final report format is adapted from Nick McKeown's CS244 project at Stanford.