1 Project

- Midterm Report Due: November 11th, 2020 (Midnight) – Submission Link
- Project Presentation Due: November 13th, 2020 (Midnight) – Submission Link
- Final Report Due: December 6th, 2020 (Midnight) – Submission Link

A main portion of this course is the research project. For the project, you have to write two reports (Midterm Report, Final Report) and give the final presentation. Given the home-works you should have enough experience to do well in all three aspects. For both reports you’ll be using the OSDI 2018 submission template. Any other template will result in deduction of marks.

For both reports, please adhere to the page limit unless you have written authorization. Any report which violates the page limit will not be graded (This is called a desk rejection).

What is the format of the mid-term report? The midterm report would be of (upto) 3 pages excluding references. It should ideally contain the following sections: (1) Background, (2) Design / Algorithm, (3) Initial Prototype, and (4) Related work. There is no explicit introduction in this version, you will have that in the final version when your system’s architecture/algorithm or measurement-study’s methodology and techniques are clear and finalized. For this, you’ll be submitting the PDF. Try to avoid repeating yourself between sections.

- Related work: This is a summarized version of your 5 page survey paper. To be more specific: In HW#4, you are supposed to survey related papers and identify limitations and opportunities for future directions. Your project should be solving some of these limitations and proving a solution to some of the future directions. Given these last two sentences, the related work section is summarizing HW#4 and also illustrating how our work is unique.

- Background: The background for each paper is going to be unique and it should provide background information required to understand your paper. You can assume that the audience understands microservices, observability, and service mesh. Given this assumption, You should not need to explain or reiterate what microservices or observability is. However, if you are working on a project which uses eBPF to more effectively capture metrics, then you would need to explain eBPF but you would not need to explain metrics. Similarly, if you are exploring techniques to extend sagas with distributed tracing. You would need to explain Sagas but not tracing. if you were testing sagas with chaos engineering, you would need to provide background on both.

Architecture:

- Architecture(Design/Algorithm/Technique): This describes your architecture’s design/algorithms/techniques. What is your architecture/algorithm/technique? What are you contributes and challenges in realizing them? To illustrate your contributions/challenges, a good way is to...
(a) identify options (pros and cons), the pros/cons will help specify the challenges
(b) justify your choice (i.e., how it’s better) this will help with the contribution,
(c) from (a) and (b) you should have enough to specify your contributions, i.e., the
techniques/algorithms and design choice you use to overcome the challenges.

1. What is the basic approach, method, idea or tool that’s being suggested to solve
your key problem? What exactly are the expected effects of the proposed solution?
(e.g., better security/performance/availability or just simpler)

2. What are the components of your system? How do they interact with each other?
(e.g., The workflow of our framework is presented in Figure 3. The framework
analyzes a pair of traces from loading a website with and without the web optimi-
ization, to extract a model (component #1) which captures the performance
profile of the optimization. To support client side (i.e., Browser) profiles, frame-
work include (component #2) which extends causal profilers to address challenges
identified in background, and to support network speedups.)

3. For each component, what are plausible design alternatives/choices? How likely
are they? Why did you pick your specific design choices? What’s good and bad
about them by comparison with what you picked and proposed? For example, if
you need to get data from node to a central component, there a few design choices:
should the nodes push data? or should the central component poll data? there are
benefits and challenges with each choice – for example, one may choose to poll to
keep the system simple.

• Initial prototype: Take a look at the paper’s that you’ve read in class. You will notice a
key difference between the architecture/design and the implementation/prototype. The
architecture/design is usually broad and general. Whereas the prototype/implementation
is a short summary of the implementation details and key highlights. For some of you,
you already have some results, you should include and summarize these results. For
others you do not have results, instead you should briefly describe:

1. What will be done to test out the hypotheses? How will this confirm (or deny)
the hypotheses? Why will the conclusions be believable?

2. What are the measures for success? How will we know to declare your project is
a success?

Submission Details The midterm report paper title should be <Group Name> : <Project
Name> and should include both the partners name and email addresses. Only the first au-
thor should submit the report. Note: if your submission is longer than three pages excluding
references, it will not be graded.
What is the format of the final presentation? The final presentation would be 15 minutes long (exceeding that would run in deduction of marks). You can take a look at [HotNets 2020 YouTube Streams](#) to get an idea on how to make your final presentations.

These presentations include:

- Motivation (1-2 slide)
- Background (1 slide)
- Problem statement/Challenge (1-2 slides)
- Solution (1-2 slides)
- Workflow/architecture/Design (4-5 slides)
- Preliminary results (1 slide)
- Future Work (1 slide)

Submission Details The slides title should be <Group Name> : <Project Name> and should include both the partners name and email addresses. Only the first author should submit the slide and video. Note: if your video is longer than 15 minutes, it will not be graded. You should name the files the same as your group name.
What is the format of the final report? The final report would be of (upto) 6 pages excluding references. It should be similar to a workshop paper. Please look at the following workshops for inspiration: [HotCloud], [HotOS] and [HotNets]. You should look at closely related papers from these workshops and try to tailor your paper to follow the same format, writing-style and overall structure. Note, the report should contain the following sections: NO Abstracts, Introduction, Background, Related Work, Design / Algorithm, Prototype, Evaluation and Conclusion. For this, you’ll be submitting the PDF along-with associated source code.

- How to write good intro: [Outline for intro].
- Evaluation mistakes to avoid: [Benchmarking Crimes].
- Common grammatical mistakes to avoid: [Bugs in writing].
- General writing tips: [Good systems papers], [How (and How Not) to Write a Good Systems Paper], [System’s writing style].

Final Report Examples: [1], [2], [3] and [4].

A few things you’ll notice:

- The related work is never longer than one column.
- Intro is generally not longer than one page.
- Evaluation is usually just one column.

Note: You should incorporate feedback from HW#4 into your related work section for the final report.

Submission Details The final report paper title should be <Group Name>: <Project Name> and should include both the partners name and email addresses. The file should be called "GroupName.pdf". Only the first author should submit the report. You will also need to submit your code. Note: if your submission is longer than six pages excluding references, it will not be graded.