

## **ECE484 Spring 2021 Presentation Guidelines**

Each presentation will be ~12 minutes long. You are free to organize your presentation as you see fit, but you must provide a motivation and introduction to your project, a description of the overall system, methods you have used, and your results thus far.

You will be graded by the course staff on your (1) pitch / motivation; (2) clarity of the system description; (3) novelty of the method; (4) thoroughness of (proposed) analysis and results (if finished); and (5) presentation style.

These items will be scored on a scale of 0-5, with the average being a 3. The maximum points you can accumulate is 20.

You will be graded by your peers on an (1) overall score / assessment of the project; (2) presentation style; and (3) perceived difficulty (i.e., does the project scope match the team size?).

If you present on Tuesday, you will receive 1 bonus point.

## ECE484 Spring 2021 Final Report Guidelines

To describe your project and findings, you will write a formal technical report that motivates your problem, describes your design methodology, and summarizes your results. Your report should be in IEEE conference format (two-column) and be *at least* five pages *excluding* references. Your report should be well-organized, cleanly formatted, and well-written.

Your report must have the following content:

- 1) Abstract
  - a) The abstract should be ~200 words summarizing the report. It should include a short motivation, discussion of challenges, methods used, and quantitative results.
- 2) Introduction
  - a) Similar to your project pitch, this section should motivate your project and justify its innovations. You should include: **motivation** (why your project is important), **challenges** (why is the problem hard), **existing methods** (what methods exist to solve your problem), and **justification** (why you decided to apply your method / take a particular approach).
  - b) This section should also include a short literature review, with at least five legitimate references.
- 3) Methods
  - a) Provide a detailed summary of the system you designed this semester and formally describe the model that captures your project goals. Carefully list out the assumptions you are making about your system and discuss whether or not you can formally verify safety.
  - b) You should clearly describe how you designed and integrated each module of the autonomous stack and provide a block diagram showing your system design. As is relevant to your project, describe the following:
    - i) Vehicle platform (e.g., sensors used, interface, etc.)
    - ii) Perception system (e.g., detection, prediction, localization)
    - iii) Planning
    - iv) Decision-making
    - v) Control
    - vi) Validation tools
  - c) If you used any existing or opensource code, describe the codebase in detail.
- 4) Experiments
  - a) Justify how you plan to validate your system to convince the reader that you achieved your goal and/or that your system functions and is safe.
  - b) Explain the experiments you ran to test your autonomous system with enough detail that they could *nearly* be replicated. What parameters will you vary to test your system? How will you determine if the experiment is successful?

- c) Provide a short summary of implementation details. Where there any parameters or design choices made that did not come up in the methods section? Are there computational requirements / concerns when running your system?

5) Results

- a) Provide quantitative and qualitative results that measure performance (e.g., efficiency, task completion, whatever the motivating goal of the project is) AND safety.
  - i) Quantitative: What metrics will you use to measure performance and safety? Did you collect a statistically significant sample? (Note: this is challenging for the hardware track, but worth thinking about and justifying why your experiments validate your claims!) Provide a graph / visualization of the metrics.
  - ii) Qualitative: Visualize an example run of your experiment. What observations and/or insights can be made from this example?
- b) Did you project succeed / go as planned? What are the insights / key takeaways from your analysis?

6) Discussion

- a) Summarize the overall goal of the project and your findings. How does this project link back to the course material? What were the biggest challenges and how did you overcome them? If you were to do this again, what would you do differently?

7) Link to video

- a) Provide a link to a final demonstration of your project. This can be the same as your in-class presentation if nothing has changed.

Note that you are not required to follow this specific section format as long as the associated content is present. Also note that you are not explicitly grading on “success” but on careful description of your system and a thorough analysis of performance and safety.

The points for this report will be allocated as follows:

Item	Points
Abstract	5
Introduction	10
Methods	20
Experiments	15
Results	20
Discussion	10
Video	2
Formatting	5
References	5
Figures	8
<b>TOTAL</b>	<b>100</b>