Senior Projects
Spring 2015
Guidelines for End-of-Year report

Each group must hand in an end-of-year report. I expect that reports will typically contain approximately 50 double-spaced pages (pages should be numbered), but this might vary to a large degree. Every report should include at least the sections listed below, in the order specified here, although you do not necessarily have to name the sections what I am calling them. The reports must include all appropriate references and citations (more on this later). Figures and tables should be numbered and include captions; both figures and tables should be referenced by number directly from the text (e.g., "As seen in Figure 2, ..."). There should be a table of contents in between the abstract and the introduction, indicating page numbers of sections and subsections starting at the Introduction. The Introduction starts on page 1. The intended audience should be any curious person with a relatively strong scientific background.

The reports must include:

1. A title page: This should include at least the title of your report and a list of the group members. I am not too picky with the other details; include whatever else you want.
2. An abstract: This should be a one page or less (but at least one full paragraph) summary of your entire report. No real details. What is the main idea behind your project? People generally read the abstract to determine if they want to read the entire document. Make it sound interesting.
3. An introduction: This should typically be 2 to 4 pages introducing your project. Talk about the main idea, and give a little history of the related topics or talk about work related to your project. Almost everything in the introduction will be repeated in more detail in later sections. The purposes of this section are to provide a motivation for your project, to give a hint about what is coming in more detail than the abstract (but still not a lot of detail), and to get the reader curious. Although I am numbering this as the third component of the report, it should be Section I of your report, and the page numbers should start here. Do not include the specific results of experiments in this section. (You are allowed to generally state whether or not you had good results, but just do not get too detailed.)
4. Background: Discuss and explain topics that the reader needs to know about in order to understand the rest of your report. This might include technical material involving a field of math, computer science, or engineering, if understanding any such topic is important to understanding your work. If there is a major machine learning component of your project, for example, explain it (although if you are using machine learning for a minor component, I do not think you need to go into too much detail). Does the reader need to understand about wireless technology? Principles of aerodynamics? Music theory? These are just examples. The background might also include the history of the topic your project is dealing with. What are the milestones that you are building upon? This does not have to be a single section, and it does not have to be named "Background" (it could be named after the specific topics you are writing about). This might consist of several different sections, or it can be one section with multiple subsections. For some projects, a single section might do fine. In all, this should probably range from 10 to 15 pages, but it may vary a lot depending on the nature of the project.
5. Related Work: What projects, similar to yours, are being worked on or have recently been worked by other researchers? Describe them. Explain their importance. Explain how your project is different. If nothing is too similar, talk about work involving some of the same technologies or procedures. This should probably range from 3 to 10 pages.

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6. Project Description: Describe the details of your project. What does your final project, system, or device look like? What does it do? How does it work? What are the components? What equipment is being used? Explain the process that you used in order to design and implement the project. What obstacles did you encounter, and how did you overcome them? This should probably range from 5 to 15 pages.
7. Results and Evaluation: The contents of this section largely depend on the nature of your project. If you performed experiments, talk about the outcomes of these experiments and evaluate the results by comparing them to those of other researchers, or to some set of baseline values, using standard metrics. If you built something, talk about how well your final device is performing. If applicable, show or describe examples of things that your system or device gets right and gets wrong. This should probably range from 3 to 10 pages.
8. Future Work: Talk about work that future students or researchers could potentially perform to follow up on your results. What didn't you do that you would have liked to do? What would make an interesting follow up project? This should probably range from 1 to 3 pages. (Alternatively, you could combine this section with Conclusions.)
9. Conclusions: This should be a final summary of the report. It should repeat the motivation of the project, summarize the results, and ideally leave the reader feeling excited by and impressed with the work. This should probably range from 2 to 4 pages.

Note: *Citations in this report are extremely important*. All references should be listed at the end of the report, and citations to these references should appear throughout your report (especially in the background and related work sections, but in other sections as well). *Any fact that has come from another source needs to be cited*, regardless of whether or not it is a direct quote. If an entire paragraph describes information that came from one source, you can put a single citation at the end of it. The citation should appear after a space and before the end-of-sentence punctuation (or sometimes it is OK to have a citation in the middle of a sentence directly after the piece of information you are citing). References should be listed at the end of the report in alphabetical order. Citations can either include the author and year, like this (John Do, 2006), this (John Do and John Smith, 2005), or this (John Do et al., 2002); or you can number the references and just include the number in brackets like this [5]. If you use the former approach (names and authors) and want to cite multiple sources in the same place, include the citations in the same set of parentheses separated by semicolons; if you use the latter approach (numbers in brackets), include the citations in the same set of brackets separated by commas. Use IEEE conventions for your references; examples of references to various types of sources can be found here: http://www.ieee.org/documents/ieeecitationref.pdf.

A first draft is due the night of Friday, April 17, before midnight. You can leave out the Results and Evaluation, Future Work, and Conclusion if they are not ready; the Project Description can be incomplete if necessary. *The final draft is due on Tuesday, May 5, by 2 PM*. Both drafts should also be submitted to me electronically via e-mail (sent to CarlSable.Cooper@gmail.com). For the final draft, I would also like one hard copy submitted per group.