Final Project Submission

1 Expectations and Deadlines

This document provides the guidelines for the submission of your final project, which consists of your report, presentation slides, and source code. Each group is expected to complete these three items of the project, and each member of the group is expected to contribute equally. The deadlines are as followed:

- **Wednesday, Dec 5th, 2018, 11:59pm**: Deadline to submit your presentation slides on CMS.
- **Thursday, Dec 6th, 2018, 11:15am-1:15pm**: Final project presentations.
- **Tuesday, Dec 11th, 2018, 11:59pm**: Deadline to submit your report and source code on CMS.

2 Project Report

The report should be written assuming the reader is familiar with the lecture materials but has no prior knowledge of the topics of your project. Therefore, the report should have a cohesive flow from beginning to end to tell a story of how you progressed through the project. After reading the report, the reader should have a high-level understanding of the problem you are trying to solve, the algorithms used, how you implemented your design, what are the results, and any key insights from doing the project.

All project reports should include a title, the names of the students in the group, and the NetIDs of the students in the group at the top of the first page. The report should be in single-column and single-space format with 10 point font size. Page limit is 10. You may include citations and appendices at the end of your report beyond the 10-page limit. However, the report should be complete and comprehensible without the need to read these extra materials. The report should, at a minimum, contain the following sections:

1. **Introduction**: The introduction should include a summary of the objective of the project and quickly describe your progress and what you were able to achieve. The introduction should include a brief description of the relevant techniques and a high-level overview of your implementation. The introduction should also include a brief qualitative and quantitative overview of the results and point out a few key insights from the project.

2. **Techniques**: This section should provide a detailed description of the applications, algorithms, or hardware architectures realized in this project. Think critically about the important items to mention in order for the reader to understand how your design works without having to look into any code. For example, what are the inputs and outputs of the application (or architecture), what are the major steps (or modules), and what does each step (or module) achieve? It would be useful to include small examples, block diagrams, mathematical formulas, and other visualizations to help explain your techniques. Do not include detailed information about your source code as your report should be at a high level.

3. **Implementation**: This section describe how you implemented your designs. For example, what programming languages did you use? Did you take advantage of any third-party libraries? Is your implementation purely software, purely hardware, or a mix of both? Which software and/or hardware
blocks are included in your design, and what hardware device (if any) did you target? In most cases, it would be helpful to include block diagrams of your implementation illustrating the flow of data through your design, the interconnection between different blocks, and whether each block is implemented in software or hardware. As in the previous section, providing meaningful visualizations would help the reader better appreciate your work. Please also include one or two interesting aspects of your implementation, especially any specific implementation strategies necessary for creating a functionally correct design with good performance.

4. Evaluation: Students should describe the experimental setup used to evaluate their design. Students should describe the data inputs used to evaluate their design and provide an analysis of the achieved results. The results should be clearly summarized in terms of tables, text, and/or plots. Please provide qualitative and quantitative analysis of the results and discuss insights from these results. Results may include (but are not limited to) the execution time of an algorithm, hardware resource usage, achievable throughput, and error rate. It would be interesting, for example, to discuss why one design is better than another, why one design achieves a higher metric than another, or how you trade-off one metric for another. Consider going into detail for one particular instance of your experiment and analyze how it achieves the given results.

5. Project Management: This section should clearly identify the work division among the students in the group using a project timeline that lists the tasks and milestones of the project, the member(s) of the group responsible for each task, and the actual completion date of each task. This section should contain a description of how the overall project developed and any successes and/or challenges during the course of the project.

6. Conclusion: Review the overall objective and the relevant lecture topics of your project. As in the introduction, provide a quick summary of the algorithms, implementation, and results. What was the outcome of the demonstration of your project during the final presentation? Any questions raised by the audience and could you address some of them? How do you propose to extend this project for the future? Finally, conclude by re-iterating the lessons you learned in the course of the project and provide some suggestions on how the course staff can improve the project experience for future offerings of this class.

3 Project Presentation

Your presentation should be approximately 10 minutes followed by a 1-minute question-and-answer. You may have at most 13 slides for your presentation. Slides should be submitted in pdf to CMS. If you plan to use Google slides, please also email the link to the instructor. Your presentation should be a condensed version of your report. It should include sections on introduction, algorithm, implementation, and conclusion. Your presentation should be intuitive and easy-to-follow for the students in the class. Please avoid relying on a large amount of text as textual details should be reserved for the report. Instead, please make an effort to include visualizations and animations to help the audience better understand the flow of your design and the intuition behind your techniques. At the same time, avoid unnecessary visualizations that do not supplement your points. Focus on describing the key technical contributions of your project and avoid superficial contents.

4 Source Code

Please submit your source code in a single zip file. Your zip file should include a README file with instructions describing how the code should be run.