

# 6.375 Spring 2016 Final Report and Presentation

## 1 Final Report

The final report is your opportunity to describe the great work you have done on your final projects. For your final report to be effective it should give a coherent story about what you have done. The following is a suggested outline for the final report. Reports are expected to be around 10 to 20 pages in length.

**Project Objective** Describe the goal of the project. What problem are you trying to solve? How is the FPGA involved in the solution of that problem? Include relevant specific details such as the target frame rate, bit rate, frame dimensions, or message sizes.

**Background** Assume the readers of your final report are not intimately familiar with your project domain. Provide enough high level background about the domain or algorithms involved for the reader to get an idea of the scope of the project and understand significant design choices described later in the document.

Include the benefits of using an FPGA for this application.

**High-Level Design and Test Plan** Describe your system at a high level. What components are running in software, what in hardware, and how do they interact? What are the inputs and outputs to the system? How is the system used? How do you test the system? Include system diagrams.

**Microarchitectural Description** Describe the microarchitecture of your project. What are the component modules of your design and how do they interact? What significant design decisions led you to your microarchitecture?

**Implementation Evaluation** What challenges or surprises did you face in implementing your design? Did you end up making changes to your original microarchitecture? Did you encounter any problems moving the design from simulation to the FPGA?

Describe the results of your implementation. How many lines of Bluespec code did you have to write or modify? What existing IP blocks were you able to make use of in your design (DDR, dividers, etc...). What was the device utilization of your design, the clock frequency, and the high level throughput (frames per second, bits decoded per second, etc...). Did you meet your initial project goals? Why or why not?

**Design Exploration** Now that you have a working system, what trade-offs would you be interested in exploring?

If you didn't meet your performance targets, why? What are the limiting components in your design? A detailed analysis of the cycle latency and throughput of each component in your design may be appropriate. What changes would you experiment with to improve the performance of your system?

## 2 Final Presentation

In addition to the final report, you must prepare and give a final presentation of your project. The presentations will be 15 minutes each, with a few additional minutes for questions and answers. Your presentation should clearly convey the problem you were trying to solve, how you solved it, what challenges you faced, and the results of your project. Make it interesting. The structure of your presentation may be very similar to your report, but your descriptions should be concise enough to convey the information in just 15 minutes (8-10 slides).

Your audience will include your classmates, teaching staff, and other invited guests. You should give enough background on the application for everyone in the audience to have an idea of what's going on. For example, imagine you were explaining your project to an MIT friend not familiar with the application domain, what background would you need to give?

You may include a demonstration in your presentation if it will contribute to the presentation. If you choose to include a demo, you should clearly explain what it is you are demonstrating.