Design Report Tips

Digital Design Laboratory
Purpose of a Design Report

- A design report describes the process of implementing a solution to a given problem
  - the design process (underlying theory, design alternatives, trade-offs, etc.),
  - the implementation phase,
  - the results, and
  - the significance of the results.

- Your “given problem” was to implement and demonstrate a method of counting and localizing objects in a known space in a limited time.

- The process and implementation should generally echo the concepts described in your design project proposal.

- The results describe the performance of your design.
Audience of 2031 Documents

- Comparison & Recommendation Report:
  - Intended for your immediate peers, to get them up to speed on a technical concept.

- Design Proposal:
  - Intended for Dr. Collins and Kevin, to convince them that your plan is worth pursuing.

- Design Presentation:
  - Intended for your [future] peers and Dr. Collins and Kevin, to show what you accomplished, including your process and final results.
Audience of Your Design Report

• Main audience is future 2031 students
  - Definitely doing something with DE2Bot
  - Assume they’ve done the project intro, so they know the basics of the robot
  - Will be using your results to help them accomplish more in less time

• Report should still be understandable by other engineers
Structure of the DDL Design Report

● Abstract
  ○ Summarizes the entire paper

● Introduction
  ○ Defines the problem being addressed

● General Methodology
  ○ Gives a description of the steps you took to complete and test the design

● Technical Results
  ○ Presents the results of the project (incl. final demonstration)

● Conclusions
  ○ Provides your overall conclusions relating to the original purpose of the project
Abstract

- Used to quickly judge your paper:
  - In a database, the abstract is included in searchable text, and shown in search results
  - Informs the reader whether or not your paper fits their needs
- It summarizes the entire report
  - Have to write it last
- Similar to an Executive Summary, but more expository than pitchy.
Introduction

- Briefly discuss the problem being addressed (similar to that part of your proposal)
  - Include any information necessary to understand the context
- Summarize your approach to solve the problem
  - The actual one used, even if different than your proposal
- If the proposed approach was modified, explain briefly what was changed
- Foreshadow how well the project was accomplished
  - Did your demonstration meet the specifications outlined in your original proposal?
  - If not, why not?
General Methodology

- Give a description of the steps you took to complete and test the design
- Explain how the design was implemented
  - Design languages, schematic entry, etc.
  - Supporting device libraries or open-source code used
  - Integration and testing methodology
- Present the methods for reaching the design objectives
  - Include any mathematical analysis, simulations, etc.
- Include any significant modifications to the proposed design that were made during the design process
- Include a subsection called “Project Management” and show (or reference as an Appendix) your finalized Gantt Chart
Technical Results

- Quantify the results – just the facts
- Present outcomes based on laboratory testing and your final demonstration
  - Especially if your final demonstration was other than expected
- Include how your work should be used
- Include relevant graphs, tables, and figures
Conclusions

• Provide your overall conclusions of your final design relating to the original purpose of the project – can include subjective assessment

• Make any recommendations for future engineers undertaking this task that you feel are appropriate
  o Do not point fingers, such saying “if only we had more time, more help from the TAs, more competent team members, we could have had a better project”

• In retrospect,
  o How could you have optimized your design?
  o What would you do differently if you had to revisit this project in the future?
  o What are the strengths and weaknesses of your design?
Formatting

- 10 pages of text *maximum*
  - Like the proposal, this does NOT include figures or appendices
  - You can have about 90 total inches of text and as many useful figures as you can come up with

- 11-point Times New Roman, double-spaced, 1-inch margins

- Include the Logbook as an Appendix

- Use the Design Report Template on the UPCP site
Style and proofreading

- If your team has decided to assign various sections of the report to individual members, be sure that the tone, style, and content in each section is consistent. You are aiming for a cohesive document.

- In particular, whoever writes the abstract must have the entire, completed, paper.

- Each member of the team should proofread and edit the report to ensure a polished document with accurate content.
Submission details

- Turn in to Kevin Johnson by 3pm on Monday, April 25th.

- Required order:
  1. Evaluation sheet *(remember to get signatures!)*
  2. Design report
  3. Appendices
     1. Your appendices (things you reference in the report)
     2. Logbook: order pages as detailed on assignment sheet

- The final product will be quite thick. *I will have binder clips available at the turn-in.*