

Executive Summary

The original design problem was to find and test multiple compression algorithms that could be utilized on .csv files to encode and decode oscilloscope outputs. Part of the design problem was not just creating one that functioned, but a modular system that could implement multiple algorithms, run them on numerous test signals, and then find out which ones functioned best and summarize that data in an easily readable output.

We chose to break this problem down into initially designing algorithms, then standardizing their file IO protocols so they could all work together underneath one master program. This resulted in somewhat of a three phase process: algorithm research and design, protocol editing, and master program design. Algorithm design really happened largely independently as we focused on writing our own code, but a lot more collaboration happened from the second design phase onward. A key problem that came up, happened because of our writing and compiling code on different machines. A sizable chunk of our time went towards figuring out these issues, and how to correct them.

Key lessons we learned as a team included time management, and effective communication to avoid coding bugs. Time management was very important since our project involved designing individual pieces. These pieces would need to play nicely with other code, so if one was delayed it would slow down everyone. We were able to meet our deadlines, but working well in advance always resulted in a smoother process and better deliverable.

Additionally, communication about protocols and standards was key in implementing this project. It was more difficult since it was done remotely, which led to some issues with code on one machine not running on another due to a different coding environment. However, by utilizing good time management, there was enough time to troubleshoot these bugs and return the project to being on time.

(Project Timeline included below)

Waveform Compression

Roles:

Eric Willie
Compression Algorithm 3
Decompression algorithm 2, 3

Bailey Sauter:
Compression Algorithm 1,2
Decompression Algorithm 1

Joshua Wentzel:
Decompression Analysis
Segment Analysis
Waveform Segmentation

NOVEMBER 12, 2020

Project Charter Due: Project charter will include at a minimum:

- Cover page with team name, individual names and contact information
- A table of contents
- Executive summary
- Team communication protocols and standards
- Project timeline
- Scope and engineering requirements summary
- Risk register

NOVEMBER 19TH, 2020

Teamwork Reflection Paper:
You will need to share constructive, sensitive insights with your teammates in your team meeting for this week.

NOVEMBER 19TH, 2020

Block Diagram and Engineering Requirements Due

DECEMBER 3RD, 2020

Block Validation Due

DECEMBER 11TH, 2020

Technical Demonstration Due

