Mass Spectrometer Interface

A Desktop Application for Reading Instrument Data

Cousins Photosynthesis Lab in the School of Biological Sciences at WSU



**Team Linnaea Borealis**

****

Kyler Kupp, Erik Holtrop

**Assignment Notes**

Length = minimum of 5 pages text + appendices as needed - though, this should be \*MUCH\* longer than 5 pages if you leverage all of your prior documents  
  
Sections that do not count to content for page limit:

* Cover page
* table of contents
* pictures
* tables
* images
* diagrams

Posted as a single self‐contained file (no links to outside resources.)

Posted as a PDF file.

Typed single‐spaced.

Typed with black text.

Typed with #11 font size.

Typed using Arial font or similar font.

Typed with one inch margins on sides, top and bottom.

**Please erase this page in your final document.**

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# Introduction

Your introduction should describe your project in sufficient detail such that the alpha-prototype description will be easy to follow. This should include material similar (lifted from and edited) from your Project Description document. The sections to focus on will be:

* Introduction - likely needs major editing since the project has evolved
* Background and Related Work
* Project Overview
* Client and Stakeholder Identification and Preferences

Add a brief paragraph to the introduction and explain the purpose of this document as a summary of the project’s progress and technical details about your engineering efforts.

# Team Members - Bios and Project Roles

Our team brings together a diverse set of skills and experiences, ranging from software engineering to data visualization and algorithm development. Each member contributes unique expertise and a shared commitment to delivering a robust and efficient data collection and visualization system. Below, you’ll find an overview of our team members, highlighting their academic backgrounds, technical interests, and specific roles within the project.

## ****Erik Holtrop**** Erik Holtrop is a dedicated computer science and mathematics student at Washington State University, where he is set to graduate in 2025. His academic journey has honed his skills in software engineering, algorithms, and mathematical computing, particularly through coursework like Cpt\_S322 Software Engineering (Python) and Cpt\_S350 Design and Analysis of Algorithms. Erik’s technical expertise includes Python, C/C++, C#, SQL, and Haskell, along with experience in Python libraries such as MatPlotLib, PyEDA, and PyQT. His responsibilities include managing data structures, debugging, project management, and integrating mathematical algorithms into the system.

## ****Kyler Kupp**** Kyler Kupp is a driven computer science student at Washington State University, aiming to complete his degree in 2025. He combines academic excellence with hands-on industry experience, having worked as a Software Engineer Intern at Monson Fruit Company. In this role, Kyler developed monitoring programs, automated reporting systems, and contributed to software managing critical production processes. His technical toolkit includes proficiency in Python, C#, SQL, and JavaScript, with familiarity in libraries like PyEDA and SFML. Kyler is responsible for UI/UX, stakeholder relations, and documentation oversight.

# Project Requirements

Use this section to define the requirements for your project. Lift materials from the Project Requirements document as needed, notably sections II and III. This will orient your reader to the quantified requirements expected from your final design and ensure they are ready for the Solution Approach.

While you can copy directly from your current Requirements document, make sure to have an introduction paragraph stating what this section includes.

# Solution Approach

Lift materials from your solution approach document. This should demonstrate to the reader what your project shall include, at least according to the current design. Just like the Requirements section, ensure you look over the Solution Approach document and take what fits in this narrative and update details as needed.

# Test Plan

Bring in your test plan materials. These should demonstrate how you will validate your solution to determine whether it works and if it satisfies the requirements of the project. Look over the plan to ensure your requirements all have at least some kind of unit or functional test that addresses them.

# Alpha Prototype Description

\*\*\*This is the first section that is truly new for this document\*\*\*

Describe your alpha prototype implementation. Please format this section according to what you think is the best way to describe your prototype. The following is just a suggestion.

Explain what parts/subsystems of your proposed architecture your team started to implement. Mention the current progress at each part, i.e., how much of the proposed functionality you have completed.

For the parts that you already started to work on, explain whether you have tried to integrate them with the rest of system. In other words, explain which of the interfaces in your architecture have you started to implement.

If you have performed any tests on your alpha prototype (or the subsystems of your prototype), briefly explain your findings.

I recommend to include plenty of images and pictures of the following where appropriate:

- any diagrams/figures that visualize various features of your prototype;

- the screenshots of your user interfaces;

- the screenshots of your test programs;

- pictures of your team testing and debugging the devices, programs, etc.

A well-thought and clear diagram is better than long and descriptive text.

If your document starts to be very long due to screenshots and diagrams, please put at least some of them into an appendix to this document.

For each subsystem that you have implemented in your alpha prototype, you may include the following sub-sections.

## [Subsystem Name]

### Functions and Interfaces Implemented

List and describe the implemented functionality. Explain the remaining work.

### Preliminary Tests

Report any test results for the unit and integration tests that you performed on your prototype. This subsection is a good place to include screenshot images from your tests (if applicable). A notable component here would be to include the results of your CI/CD status. Hopefully master still builds, right?

# Alpha Prototype Demonstration

Summarize the highlight of your prototype demonstration to your mentor. The items to discuss in this section may include the following. (Please include all other necessary details in addition to the following).

1. Summary of what you showed to your mentor.
2. Your mentor’s comments/suggestions on your prototype.
3. Your mentor’s questions to your team and your responses to those questions.

After testing your prototype and demonstrating it to your mentor, you will have a better idea whether the initial design you proposed earlier will work. Additionally your mentor might suggest modifications to your current design. In this section list and explain all design modifications that you plan to make based on your preliminary test results and mentor comments (if applicable).

# Future Work

List the major tasks for the second semester and briefly explain your plan to complete them.

# Glossary

Define technical terms used in the document.

# References

Cite your references here. -- Ensure you’re pulling them from your earlier works!

For the papers you cite give the authors, the title of the article, the journal name, journal volume number, date of publication and inclusive page numbers. Giving only the URL for the journal is not appropriate.

For the websites, give the title, author (if applicable) and the website URL.

Please use either Chicago or IEEE format for your citations

# Appendices

As needed, copy over your appendices for the various sections. You can have as many appendices as required. Normally, they’re numbered with letters:  
Appendix A  
Appendix B  
…  
Appendix *n*