Aviator Design Document

David Thoe, Joshua Kim, Zeke Ulrich, Juan Vargas

September 18, 2025

GTA: Zixiao Ma
Professor: Ryan Beasley

Figure 0.0.1: [Caption]

Contents

List of Figures

List of Tables

Revision Log

Date	Revision	Changes
5/3/2024	v0.1	Initial Release
[Copy]	[and]	[Replace]

Table 1: Revision Log

Glossary

- **3D audio technology** Simulation that creates the illusion of sound sources placed anywhere in 3 dimensional space, including behind, above or below the listener.
- **API** Application Programming Interface.
-

1 Introduction

1.1 Executive Description

[Type here. **DD1+**]

1.2 User Story

[Type here. **DD1+**]

2 Design Requirements

2.1 Requirements

1. [Type here **DD1+**]
2. [Type here **DD1+**]

2.2 Factors influencing requirements

2.2.1 Public Health, Safety, and Welfare

1. [Type here **DD1+**]
2. [Type here **DD1+**]

2.2.2 Global Factors

1. [Type here **DD1+**]
2. [Type here **DD1+**]

2.2.3 Cultural Factors

1. [Type here **DD1+**]
2. [Type here **DD1+**]

2.2.4 Social Factors

1. [Type here **DD1+**]
2. [Type here **DD1+**]

2.2.5 Environmental Factors

1. [Type here **DD1+**]
2. [Type here **DD1+**]

2.2.6 Economical Factors

1. [Type here **DD1+**]
2. [Type here **DD1+**]

3 System Overview

3.1 System Block Diagram

[**DD1+**]

Figure 3.1.1: System Block Diagram

3.2 System Activity Diagram

[**DD1+**]

Figure 3.2.1: System Activity Diagram

3.3 System Mechanical Design (Extra Credit)

[**DD3+**]

Figure 3.3.1: System Mechanical Design

3.4 Integration Approach

[**DD3+**] [Theory behind the system design, with reference to subsystem integration within your system – i.e., explain how it is supposed to work, but not whether it did actually work] [Type here]

3.5 System Photographs

[**DD3+**] [Photograph of assembled system, intended to highlight user interaction / controls. If system is split into multiple parts, show a composite of more than one photograph with all key user interactions / controls.]

Figure 3.5.1: [Photo Name]

4 Subsystems

4.1 Subsystem 1: [Subsystem Name]

4.1.1 Subsystem Diagrams

[**DD1+**]

4.1.2 Specifications

1. [Type here **DD1+**]

4.1.3 Subsystem Interactions

[Type here **DD1+**]

4.1.4 Core ECE Design Tasks

[**DD1+** Write tasks and course that helps accomplish that task]

- **ECE xxxxx**: [Type the relationship here.]

4.1.5 Schematics

[Type here **DD2+**]

4.1.6 Parts

- [Type here **DD1+**]

4.1.7 Algorithm

[Type here **DD1+**]

4.1.8 Theory of Operation

[Type here **DD2+**]

4.1.9 Specifications Measurement

[**DD3+** Every specification here should match the specification above.]

1. [Copy specification here.]
   [Explain the specification here. Add photoes if necessary.]

4.1.10 Standards

[**DD1+**]

- [**Standard Name**]: [Describe the standards and explain the connection]

Figure 4.1.1: Subsystem Block Diagram

Figure 4.1.2: [Schematic Name]

4.2 Subsystem 2: [Subsystem Name]

4.2.1 Subsystem Diagrams

[**DD1+**]

4.2.2 Specifications

1. [Type here **DD1+**]

4.2.3 Subsystem Interactions

[Type here **DD1+**]

4.2.4 Core ECE Design Tasks

[**DD1+** Write tasks and course that helps accomplish that task]

- **ECE xxxxx**: [Type the relationship here.]

4.2.5 Schematics

[Type here **DD2+**]

4.2.6 Parts

- [Type here **DD1+**]

4.2.7 Algorithm

[Type here **DD1+**]

4.2.8 Theory of Operation

[Type here **DD2+**]

4.2.9 Specifications Measurement

[**DD3+** Every specification here should match the specification above.]

1. [Copy specification here.]
   [Explain the specification here. Add photoes if necessary.]

4.2.10 Standards

[**DD1+**]

- [**Standard Name**]: [Describe the standards and explain the connection]

Figure 4.2.1: Subsystem Block Diagram

Figure 4.2.2: [Schematic Name]

4.3 Subsystem 3: [Subsystem Name]

4.3.1 Subsystem Diagrams

[**DD1+**]

4.3.2 Specifications

1. [Type here **DD1+**]

4.3.3 Subsystem Interactions

[Type here **DD1+**]

4.3.4 Core ECE Design Tasks

[**DD1+** Write tasks and course that helps accomplish that task]

- **ECE xxxxx**: [Type the relationship here.]

4.3.5 Schematics

[Type here **DD2+**]

4.3.6 Parts

- [Type here **DD1+**]

4.3.7 Algorithm

[Type here **DD1+**]

4.3.8 Theory of Operation

[Type here **DD2+**]

4.3.9 Specifications Measurement

[**DD3+** Every specification here should match the specification above.]

1. [Copy specification here.]
   [Explain the specification here. Add photoes if necessary.]

4.3.10 Standards

[**DD1+**]

- [**Standard Name**]: [Describe the standards and explain the connection]

Figure 4.3.1: Subsystem Block Diagram

Figure 4.3.2: [Schematic Name]

4.4 Subsystem 4: [Subsystem Name]

4.4.1 Subsystem Diagrams

[**DD1+**]

4.4.2 Specifications

1. [Type here **DD1+**]

4.4.3 Subsystem Interactions

[Type here **DD1+**]

4.4.4 Core ECE Design Tasks

[**DD1+** Write tasks and course that helps accomplish that task]

- **ECE xxxxx**: [Type the relationship here.]

4.4.5 Schematics

[Type here **DD2+**]

4.4.6 Parts

- [Type here **DD1+**]

4.4.7 Algorithm

[Type here **DD1+**]

4.4.8 Theory of Operation

[Type here **DD2+**]

4.4.9 Specifications Measurement

[**DD3+** Every specification here should match the specification above.]

1. [Copy specification here.]
   [Explain the specification here. Add photoes if necessary.]

4.4.10 Standards

[**DD1+**]

- [**Standard Name**]: [Describe the standards and explain the connection]

Figure 4.4.1: Subsystem Block Diagram

Figure 4.4.2: [Schematic Name]

5 PCB Design

5.1 PCB Schematics

[**DD3+**]

Figure 5.1.1: PCB Schematic

5.2 PCB Layout

[**DD3+**]

Figure 5.2.1: PCB Layout

6 Final Status of Requirements

[**DD3+**] [If met, give a detailed explanation of the requirement. If partially met, mention what has been met and a reason for why the complete requirement couldn't be achieved. If not met, give an explanation for why the requirement couldn't be met in the product. Add as many requirements as you had in your earlier design documents here.]

1. Requirement 1: [Copy your requirement above here]
   Met: [Explanation]

2. Requirement 2: [Copy your requirement above here]
   Partially Met: [Explanation]

3. Requirement 3: [Copy your requirement above here]
   Not Met: [Explanation]

7 Team Structure

[**DD1+**]

7.1 Team Member 1

[Name Here]
Major: [FILL IN]
Contact: [user]@purdue.edu
Team Role: [Technical and Professional Roles in the team]
Bio: [Short Introduction here]

7.2 Team Member 2

[Name Here]
Major: [FILL IN]
Contact: [user]@purdue.edu
Team Role: [Technical and Professional Roles in the team]
Bio: [Short Introduction here]

7.3 Team Member 3

[Name Here]
Major: [FILL IN]
Contact: [user]@purdue.edu
Team Role: [Technical and Professional Roles in the team]
Bio: [Short Introduction here]

7.4 Team Member 4

[Name Here]
Major: [FILL IN]
Contact: [user]@purdue.edu
Team Role: [Technical and Professional Roles in the team]
Bio: [Short Introduction here]

8 Bibliography

[Here are some examples. IEEE format can be found on Purdue OWL.]

References

[1] "Data Platform - Open Power System data," Apr. 15, 2020. https://data.open-power-system-data.org/household_data/

[2] Author,"Title," *Journal*,volume,number, page range, month year, DOI.

[3] Author. "Page."Website. URL(accessed month day,year)

9 Appendices

[This section is mainly designed for code. You can directly generate a somewhat decent display of your code file or psuedo code by using the template provided below. You can have as many appendix as you want. In the document, you can refer to the code posted here instead of pasting the whole code in the body.]