

Left Handed PC Controller

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Abstract

In competitive PC gaming, maintaining precision and fluidity is crucial. Our project addresses the limitations of the traditional WASD control scheme by designing a left-hand controller with a thumb-operated joystick, which allows for omnidirectional movement, and 6 buttons. Using CAD software, I developed technical drawings and an assembly model, including considerations for stability, functionality, and printability. My work showcases the potential of our controller, allowing a physically testable design.

Introduction

Building on our previous design, which aimed to create a left-hand controller offering omnidirectional movement and ergonomic comfort for PC gamers, this assignment focuses on translating that design into a physical prototype using CAD tools. The limitations of traditional WASD controls in gaming highlight a need for more fluid and intuitive movement solutions, which our joystick-based controller aims to meet.

Results

CAD Model and Components

I created a detailed CAD model of the controller, incorporating the joystick, buttons, and electronic components. Using Fusion 360, I developed individual parts for each component, then combined them into an assembly that allows users to visualize the complete device.

1. **Cable Management:** Optimized for simplicity, with open spaces allowing flexible wiring in the physical prototype.
2. **Enclosure and Stability:** Enclosure of the components was not a focus as I was anticipating Willow to assist and give feedback on what would be ideal for wiring.
3. **Ergonomic Design:** Due to constraints, ergonomics were limited to flat breadboard layouts accommodating essential components.

Technical Drawings and Exploded View

Each part of the controller, from the joystick housing to button pads, was represented in third-angle projection views (top, front, right, and isometric). An exploded view animation was created, illustrating how the parts fit together and aiding in the assembly process.

Bill of Materials (BOM)

The BOM includes the joystick, buttons, microcontroller, breadboards, and all the 3d printable parts, with each part labeled. Commercially available components were sourced from GrabCAD, while custom components were created in Fusion 360.

Conclusion

This assignment successfully translated our initial design into a comprehensive CAD model, providing a foundation for the final physical prototype. Through CAD, I managed to prototype the controller with consideration for efficiency, structural integrity, and functionality. Going forward, I'm unsure what comes next. This project has already been so challenging and moving forward by myself seems daunting.

Contributions

Dylan Mills

- Everything after Assignment 1

Willow Forte

- Unable to continue

REFERENCES

<https://grabcad.com/library/small-pushbutton-smd-6-x-6-mm-footprint-1>

<https://grabcad.com/library/breadboard-400-pin-1>

Can't complete due to willow dropping the class

Please check the Github for the video, and the Drawings
<https://github.com/DylanMills/ControllerDesign/tree/main>