

# Project Log Book

## October 20, 2024:

- I started researching potential projects for the science fair. I looked at previous winning projects to get inspiration and understand what makes a strong project. Looked different fields, such as robotics, biomedical engineering, and environmental science, before narrowing down my focus.

## October 22, 2024:

- Decided on designing a prosthetic hand as my project. Chose this because of my interest in biomechanics and its real-world applications. Also, I wanted to challenge myself by combining mechanical design, electronics, and coding.

## October 25, 2024:

- Researched existing prosthetic hand models currently available on the market. Looked into modern innovations, such as 3D-printed hands and robotic prosthetics controlled by muscle signals. Took notes on different mechanisms used for movement and control.

## October 26, 2024:

- Started looking for an online tutor to get guidance for the project. Also researched how to 3D print the hand, including materials, print settings, and software required. Looked at open-source prosthetic designs to see if I could modify an existing model or design my own.

## October 29 – December 6, 2024:

- Began taking online classes to learn the basics of electronics and motor control. My goal was to understand how motors work and how to integrate them into the prosthetic hand. Focused on learning how to control a DC motor, as it seemed like a simple starting point. Experimented with circuits and different power sources.

## December 9 – December 15, 2024:

- Realising a DC motor might not be the best choice due to control limitations, so I researched better motor types. Switched to a servo motor, as it provides better precision and is commonly used in robotics. Learned how to program and control servo motors using basic code

## December 27, 2024:

- Asked a friend with a 3D printer to print one finger of the prosthetic hand. The goal was to test how well the motor could move it and to see if any adjustments were needed before printing the full hand.

## January 4, 2025:

- Received the 3D-printed finger and assembled it with the motor. Realized I needed a better way to connect the finger to the motor to ensure smooth movement. Explored different materials, such as flexible joints, wires, and strings.

## January 9, 2025:

- Tried using string to connect the motor to the finger. This method worked but needed fine-tuning to ensure precise control.

## January 11, 2025:

- Wrote a simple code to control the movement of the finger. Tested it by running the motor and adjusting speed and positioning. This was the first step in making the prosthetic hand functional.

## January 23, 2025:

- Needed to find a new way to print the rest of the hand, as my friend was out of town and unavailable. Looked into alternative options for getting access to a 3D printer.

## January 25, 2025:

- Reached out to people in Facebook groups related to 3D printing and prosthetic designs. Found someone willing to print the entire hand for me. Send them the 3D model files and specifications.

## January 29, 2025:

- Got the fully printed prosthetic hand. Checked for any defects and tested how well the parts fit together. The design seemed functional, but I knew adjustments might be needed later.

## February 2, 2025:

- Assembled the entire hand and began working on integrating all five motors (one for each finger). Tested the fit and range of motion for each joint.

## February 3 – February 5, 2025:

- Designed and built a simple circuit board to control all five motors. Ensured the wiring was neat and the connections were secure. This step was crucial to making the prosthetic hand respond to programmed commands.

## February 6, 2025:

- Attached the circuit board to the prosthetic hand and finalized the wiring. Wrote and tested a basic control code to move the fingers. Debugged minor issues with motor synchronization.

## February 7, 2025:

- Presented my project at the school science fair! Showcased the prosthetic hand, demonstrated its movement, and explained how it works. Received feedback on improvements and future upgrades.