

Team: Morning Star

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Introduction

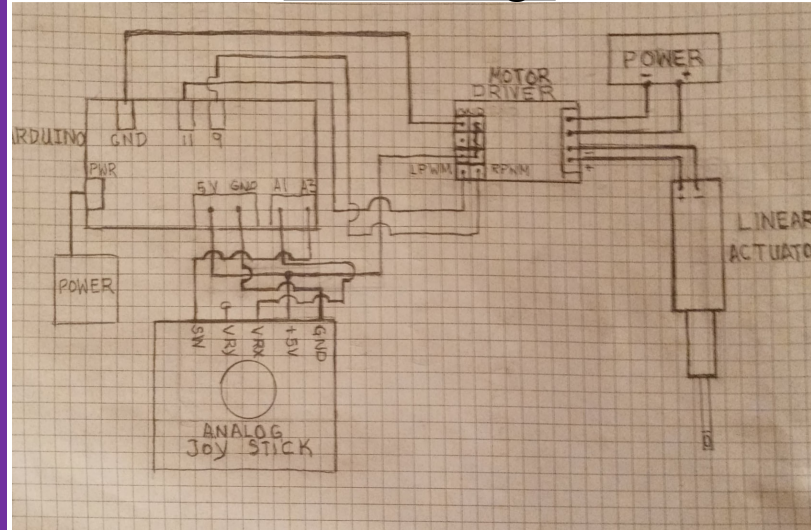
Our project started from a desire to help an amputee obtain greater access to a cost-effective prosthetic solution. The prosthetic must be:

1. Lightweight
2. Affordable
3. Comfortable
4. Easily operated
5. Able to pick up a beverage (Weight of full pop can = ~ 1lb)

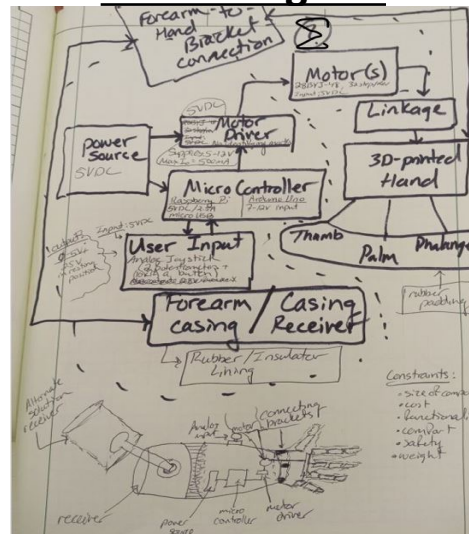
Method

Using an existing 3D hand model as a starting point, we created a fully functional prosthetic. This was done using several components including: A linear actuator, an Arduino Uno Microprocessor, a motor driver board, an analog joystick, and two 9-volt batteries. These components were placed inside of the modified 3D model, and programmed to allow control of the arm's extension and retraction via the joystick.

Circuit Design



Block Diagram



Physical Prosthetic



Hardware Components

- Arduino Uno
- Motor Driver
- Linear Actuator
- Ps2 Analog Joystick
- 9V Batteries

References

1. <https://www.firgelliauto.com/blogs/tutorials/how-do-you-control-a-linear-actuator-with-an-arduino>
2. <https://www.thingiverse.com/thing:4077033>