



Colorado Science and Engineering Fair

2024 Team Project Abstract Form

Title of Project: The Hydraulic Robotic Prosthetic Arm

Team Leader's Name: Isaac Mesfin Vercammer

Team Member 1: Oliver Hahn

Team Member 2: N/A

School and City: Flagstaff Academy, Longmont CO

Sponsor's Name: Mr. Rainer

Category: Biomedical & Health Sciences (BMED)

Division: Junior (6th - 8th grades)

Abstract (250 words or less):

This prosthetic arm will help improve the quality of an amputee, or double amputee's life. The prosthetic arm will be successful at being a prosthetic arm by being able to open doors, and pick up common day objects. Potentially help the world by giving the amputees and double amputees an affordable option to replace their lost arm. This is a goal to help better the disadvantage the world throws at people when being an amputee or double amputee. To the person reading this, two arms are easily available, and usable for use that's considered above the average person, the average person has about 1.9975 of an arm. After that fact most might think that this is not a big issue. That 0.1235 percent that is missing is equal to tens of millions of people in this world without an arm. This is a large disadvantage so after countless plans, this is the positive impact that this world needs. To build the arm first materials were gathered. Next the metal pieces of the arm were cut and/or drilled in the proper size, shape, and position. After the pieces were cut the frame of the arm was built. After that the circuit on the jacket was built. Then the spinning pieces were attached to the motors on the circuit. With both individual components complete they were connected to each other with the syringes and tubes. Finally the most important step could begin testing for flaws and then fixing them.

We hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. We also attest that the above properly reflects our own work.

Team Leader's Signature: Isaac Vercammer

Date: 2/29/24

Team Member 1's Signature: Oliver

Date: 3/1/24

Team Member 2's Signature: N/A

Date: N/A

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with your Finalist Verification/Permission Form. A signed copy of this form must be included in your notebook.