



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY**

Name(s) Matthew Fogel	Project Number S1002
Project Title 3D Printing and Programming an Affordable Prosthetic Arm	
Abstract Objectives/Goals The purpose of this project is to create a prosthetic arm that is affordable, easy to control, and easy for anybody to make themselves. The design constraints were for it to be under \$100, able to fit the electrical parts inside, and similar to the shape of a real arm. Methods/Materials I designed a forearm on Autodesk 123D in addition to using a pre-designed 3D model of a hand. I 3D printed the parts and wired the electrical components to an Arduino. I wrote a program using a version of C++ to close each finger when a button is pressed. Results The prosthetic arm met the design constraints. It was able to successfully grab and hold a 12 oz water bottle, or about 3 quarters of a pound. The total cost of the materials used was about \$65. Conclusions/Discussion This arm is an affordable alternative to currently available prosthetics.	
Summary Statement This project focuses on creating a prosthetic arm that is affordable, easy to control, and easy for anybody to make themselves.	
Help Received Used 3D printer at Loma Linda University Medical Center under the supervision of Michael Davidson, MPH, CPO	