



## Colorado Science and Engineering Fair

## 2025 Individual Project Abstract Form

**Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.**

Title of Project: Making a Robotic Hand

Finalist's Name: John Finnessy

School and City: Challenge School

Sponsor's Name: Michael Finnessy

Category: Engineering

Division: Junior (grades 6 - 8)

Abstract (250 words or less):

In my project, I made a robotic hand that can pick up objects. I did this by attaching a pressure sensor to the fingerprint of the middle finger. The need for pressure sensors is that they give feedback to the motor through the code I wrote. This means it tells the microcontroller if there is something pressing on it and how hard it's pressing on it in an amount that is in numbers from 0 to 1200 based on how many volts pass through the pressure sensor, and the microcontroller tells the motor. So this means the motor moves less when the reading on the pressure sensor is higher because when the reading is higher, the amount of force is greater. However, I had to use other prototypes to get to my three fingered hand. From these other prototypes, the data showed that the final Thermoplastic Polyurethane (TPU) hand was the leading model at picking up objects, this was mainly because the other grabber that I tried to use was too hard to pull closed for the 5 volt motor. The other prototypes also shaped my understanding on what factors play into making a good robotic hand.

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

Finalist's Signature:

Date:

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 you Finalist Verification/Permission Form. **A signed copy of this form must be included in your notebook.**