# ADHAM ELARABAWY

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## EDUCATION

**UC Berkeley**
***Incoming Freshman*** 2024 Expected Graduation

- *Major:* Electrical Engineering & Computer Science (EECS)
- Regents Scholar

**CANYON CREST ACADEMY**
***Graduated*** 2016-2020

- *Relevant Completed Courses (by end of 2019-2020 school year)*
  - Calculus 3/Linear Algebra, AP Physics C:EM, AP Computer Science A, AP Biology, AP Statistics, AP English Language, AP Physics 1, AP Physics 2, AP US History, AP Computer Science Principles, AP Calculus AB, AP Calculus BC, AP Chemistry, Honors Precalculus, Honors Chemistry, Honors Biology
- *Weighted GPA:* 4.75
- *Unweighted GPA*: 3.94
- ACT: 36 (English 36, Math 36, Writing 36, Science 36)
- SAT: 1560 (Reading/Writing 770, Math 790)

## EXPERIENCE

**HIBOTICS** *Startup in the area of mobile assistive robotics* San Diego, CA
***Software Engineering Intern*** August 2019- Present (10m)

- Responsible for developing computer vision system, control system, and electrical foundation of the ERAD Project (Elevated Robotic Assistive Device).
- Gesture Tracking via neural network to localize hands and fit their movement to a set of predetermined gestures.

**KELZAL** *Startup in the area of Low-Power Computer Vision & Machine Learning* San Diego, CA
***Paid Software Engineering Intern*** June 2019- Present (1y)

- Adapting machine learning techniques (i.e. convolutional neural networks) for object recognition and localization of Event Based Vision Sensor data and Frame Based Vision Sensor data.
- Designed neural networks with the YOLO object detection system and custom databases for proprietary object classification pipeline.

**GROGURU** *Startup in the area of IOT applications in agriculture.* San Diego, CA
***Paid Software Engineering Intern*** June 2017- August 2019 (2y11m)

- Built system for optimizing sensor placement through the use of NDVI composites from the Google Earth Engine API and machine learning.
- Built Management Web Application that monitors hundreds of sensors through multiple MySQL Databases.
  - Independently worked using Tomcat, MySQL, Java, Servlets for backend; JSP, HTML/CSS, JavaScript for frontend.

**EEG-CONTROLLED PROSTHETICS** *Independent research project* San Diego, CA
***Research Grant*** July 2018- Current(2y3m)

- Utilized EEG electrode cap to interpret high frequency brain activity for motor function, which I then used to direct a 3D-printed prosthetic. So far I have created 3 prototypes and I am working with local veterans to improve each iteration.

## PATENTS & AWARDS

- **PROVISIONAL PATENT: Improved Elevated Robotic System & Method**
  - Registration #: 62959086
  - Developed control system for assistive robotic vehicle that traverses a metal rail. Current applications: tracking an intruder around a house, optimized networking through dynamic router placement, educational platform for introducing computer vision.
- **2020 U.S. Presidential Scholar Candidate:** Selected as one of 4500 students in the nation in the running for the U.S. Presidential Scholars Program--one of the most prestigious merit-based awards given to high school seniors by the U.S. government.
- **National Merit Scholar (NMSQT) Finalist**
- **2019 First Place in Computer Science Division:** 65th Annual Greater San Diego Science and Engineering Fair
  - Created a machine learning model to predict crop yield output based on novel vegetation index computed from multispectral satellite images.
- **2019 CSEF Qualifier:** Selected as a qualifier for the California Science & Engineering Fair

- **2018 First Robotics Competition World Championship Division Finalist:** placed 7th in the FRC World Championship held in Houston, Texas (competed with 70+ countries, 1400+ teams).
- **2018 First Robotics Competition Regional Finalist:** placed 2nd in the San Diego FRC Regional Competition.
- **2018 Innovation in Control Award FRC(San Diego Regional):** lead programmer on robotics team that was awarded an Innovation in Control Award in the San Diego Regional First Robotics Competition.

## EXTRACURRICULARS

**First Robotics Team 3128** *International high school robotics competition* Canyon Crest Academy

***Head of Controls***

- Lead Programmer & Head of Controls in Controls Sector on a student-run, high-school robotics team from Canyon Crest Academy.
    - Implemented State Space Controller for elevator system, fourbar system, and drivetrain system.
    - Implemented Computer Vision System using HSV thresholding and solvePnP for automatic alignment with vision targets on field, live during a match
    - Heavily developed and researched drive characterization techniques
        - Proficient in developing full feedback-feedforward systems

**Programming languages:** Java, Python, C, C#, HTML/CSS
**Spoken Languages**: English (Native), Arabic (Native), Spanish (Elementary)