

# Michael Murphy

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## Education

### **2019 - 2023 Palo Alto High School, Palo Alto, California**

- 1550 SAT score (99th percentile)
- 2x Gold President's Volunteer Service Award Winner (2019 and 2020)
- GPA:
  - o 4.0 (Unweighted)
  - o 4.34 (Weighted)
- AP Scores:
  - o 5 - Calculus BC
  - o 5 - Physics C: Mechanics
  - o 5 - Physics C: E&M
  - o 5 - Statistics
  - o 5 - Computer Science A
  - o 5 - Computer Science Principles
  - o 5 - Macroeconomics
  - o 5 - Seminar - Portfolio: <https://michaeltm365.wixsite.com/seminarportfolio>
  - o 5 - English Language
  - o Awards: AP Scholar with Distinction
- Perfect score (5), "Mitigating Bias in the Use of Facial Recognition Technology by U.S. Law Enforcement", Individual Research Report (IRR), AP Seminar, College Board, 2022
  - o Teacher's note: "Strong contextualization. The line of reasoning is clear and you purposely chose evidence to support your reasoning for better training sets. Well done"
  - o Link: [Mitigating Bias in the Use of Facial Recognition Technology by U.S. Law Enforcement](#)

## Experience

### **Oshman Family Jewish Community Center (OFJCC)**

**Summers of 2020 - 2021**

*The Oshman Family Jewish Community Center is a multi-generational Jewish neighborhood and campus with a preschool, summer camps, fitness center, and more.*

### **Counselor in Training (CIT)**

**Summer 2020**

Working for ~140 hours, I was one of four counselors selected for the CIT role during the height of the pandemic, working with 3rd graders and senior counselors and taking extra safety precautions to prevent COVID outbreaks.

### **Counselor**

**Summer 2021**

After my work as a CIT, I was invited back to be a paid junior counselor, working with 3rd-4th graders. As the co-leader of a group of 16 children and a CIT, I was awarded a "top-counselor" award by a senior counselor.

### **DreamCatchers Youth Program**

**Spring 2022**

*The DreamCatchers Program offers academic help to underprivileged children in the Palo Alto Unified School District in order to close the opportunity gap in the district.*

### **One-on-One Tutor**

During the Spring of 2022, I was a math tutor and mentor for a 7th Grader new to Greene Middle School, building a relationship with him while helping him with his homework.

### **Founder of Leadership, Entrepreneurship and Economics Club (LEEC)**

**2022-2023**

*At the Palo Alto High School Leadership, Entrepreneurship, and Economics Club, members learn and share knowledge about the basics of business, finance, economics, and equity through case studies, group discussions, presentations, and guest speakers.*

Link: <https://bit.ly/leecpaly>

## Guest Speakers

Spring 2022

I reached out to experts in the fields of finance and business, including a former UC Berkeley Professor of Statistics and current CEO of Voleon (Jon McAuliffe), and organized 2 presentations in which these speakers detailed their experience in these fields and their recommendations for high school students interested in them.

## Fundraiser for DreamCatchers

Summer 2022

I coordinated with the leaders of DreamCatchers to host a club fundraiser. I organized my club's fundraising efforts (door-to-door, social media outreach) and we raised over \$2000 in one summer to purchase TI-84 graphing calculators for graduating members of the program to ensure they are adequately equipped for their high school STEM classes.

## Collaboration with International Diversity Club

Winter 2022

LEEC collaborated with the International Diversity Club at Palo Alto High School to create club presentations on the cultural, political, and economic conditions in different countries around the globe.

## Inspirit AI Scholars Course

Spring 2022

*Developed and taught by Stanford and MIT alumni and graduate students, Inspirit AI is an 8 week High School Intensive in Artificial Intelligence*

## Pneumonia Detection

Mentored by a graduate student from Columbia University, my group and I experimented with the use of AI to detect pneumonia in x-ray images of patients' lungs, learning how to control for the highest accuracy rates with neural networks, transfer learning, and data optimization in Python.

## Linderman Lab at Stanford University

Summers of 2022 - 2023

*The Linderman Lab is part of the Statistics Department and the Wu Tsai Neurosciences Institute at Stanford University and works "at the intersection of machine learning and computational neuroscience, developing models and algorithms to better understand complex biological data".*

## Internships

I interned at the Linderman Lab during the Summers of 2022 and 2023, advancing my knowledge of machine learning, statistical modeling, and neuroscience as I worked with two graduate students on modeling and visualizing laboratory motion data of a model organism for aging (African Killifish). In 2022 I performed Principal Component Analysis on the data and in 2023 I constructed linear and non-linear autoencoders (hand-coded from scratch using NumPy, Jax and matplotlib).

## COSMOS Program at UC Irvine

Summer 2022

*The California State Summer School for Mathematics & Science (COSMOS) is a prestigious 4-week summer program hosted at the San Diego, Irvine, Santa Cruz, and Davis UC Campuses.*

## Data Science Applications to Biomedical Science

After being one of the 20 students out of over 300 applicants to participate in the program, I spent 4 weeks at UC Irvine being mentored by Professor Babak Shahbaba. I constructed a logistic regression model normalized with the Lasso machine learning technique in R that can detect the onset of Alzheimer's Disease from different variables.

## Palo Alto High School Peer Tutoring Center

2022 - 2023

*"The Peer Tutoring Center is a welcoming place for all students to receive tutoring help, collaborate with other students, study quietly, and borrow books".*

## Peer Tutor for Physics and Math

Provided free Math and Physics tutoring to numerous students at my high school, using my experiences in these classes to help them with homework, lab reports, and more.

## FleetFeet Menlo Park

2023

*"Retail chain stocking athletic shoes, apparel & accessories geared toward runners".*

## Sales Specialist

I used my knowledge and experience as a distance runner to find the optimal shoes for our customers based on their mileage, foot shape, running form, and past injuries.

### **Personal / Extra Curricular**

- Citizenships: Ireland, Canada, United States
- Basic understanding of Spanish
- Certified Red Cross Lifeguard (Certified in CPR and First Aid)
- Certified Open-Water Scuba Diver
- Proficient in multiple programming languages including Python (self-taught), R, Java, and Snap!
- Varsity Cross Country and Track and Field runner for Palo Alto High School (2019-2023)
  - School record holder for 4x800m relay
- Interests: Statistics, data science, running, biking, finance, exploring, video editing, working with children