

# Evan Zhang

The Harker School  
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## PROJECTS AND EXPERIENCE

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### Research Intern, Chortos Lab at Purdue University

June 2024 - Present

- AI-Driven Artificial Muscle for Cardiac Assist using Hydraulically Amplified Self-Healing Electrostatic Actuators (HASEL)
- Design, fabrication, testing and FEM modeling of HASEL actuators for medical applications
- Developed fabrication approaches using Direct Ink Write 3D printing of polymers, worked on nozzles for multimaterial DIW 3D printing

### Research Intern, Schnitzer Lab at Stanford University

December 2022 - Present

- Design of omnidirectional motion tracker for mouse movement
- Designed, fabricated, and built a 1P microscope used for viewing mouse brain slices
- Designed 3 degree of freedom adjustable side illumination system for microscopes
- Implemented circuitry for the reward delivery system of behavioral apparatus
- Designed a storage architecture capable of storing videos from microscopes

### Research Project: The Creation of SPIRo: An AI based Origami Soft Robot with Multidimensional Locomotion for Infrastructure Assessments

June 2023 - Present

- Design of an AI based pneumatic soft robot for pipe inspection in difficult to access or dangerous environments.
- Pneumatically Actuated and Modularized Soft Robot with Fully 3D printed TPU based scissor linkage mechanism, novel McKibben muscle actuator, origami inspired pouch motor to grip to pipe surface
- Created a novel ensemble learning algorithm for inspecting gas leaks in real time with increased accuracy and time efficiency as well as decreased costs, Used multimodal data fusion of thermal images using convolutional neural networks and gas sensor data using artificial neural networks

## RESEARCH AWARDS

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| • <b>International Science and Engineering Fair</b> (ISEF 2025) Finalist & <b>4th Grand Prize</b>                                    | <b>May 2025</b>   |
| • <b>California State Science Fair</b> 2025 Category Honorable mention   | <b>April 2025</b> |
| • <b>Pete Conrad Scholar</b> , Energy and Environment Category, Conrad Challenge 2025  | <b>April 2025</b> |
| • <b>Diamond Challenge</b> 2025 Finalist   | <b>April 2025</b> |
| • <b>Sigma Xi 2025 Student Research ShowCase</b> 1st Place in High School Division   | <b>April 2025</b> |
| • <b>Synopsys Science Fair</b> Santa Clara County 2025 Grand award (qualify for ISEF), Category 1st award, ASEI special award        | <b>March 2025</b> |
| • <b>National Junior Science and Humanities Symposium</b> 2024 National Oral Presenter and Northern California Regional Second Place | <b>May 2024</b>   |
| • <b>Synopsys Science Fair</b> Santa Clara County 2024 Category 2nd Award, IEEE special award  | <b>March 2024</b> |

## Activities and Societies

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### FTC 11311 Paragon (Mechanical Director)/FRC 1072 Harker Robotics

August 2021 - May 2024

- Mechanical, Machining, and Design Director of First World Championship Team
- Trained incoming students on CAD design and fabrication using 3D printers and CNC routers

### **Founder and President of Harker 3D Printing and Design Club**

**June 2024 - Present**

- Teach classes CAD Design and Print Slicing, trained members on 3D printer
- Organized fundraising and 3D design competitions

### **Co-president of Harker Aerospace Club**

**August 2024 - Present**

- Founded and led 2 teams of 10 students each to compete in The American Rocketry Challenge
- Organized club wide glider building and rocket building events

### **Varsity Debate Team Captain/Coach**

**August 2022 - Present**

- Competed on the national circuit, ranked in the top 100 nationwide
- Coached incoming freshmen and middle school students

### **Co-founder Cream of the Crop Non-Profit Organization**

**August 2021 - Present**

- Free classes and summer camp workshops on software, robot design, 3D design, radio control aircraft building
- Free Tennis Clinics for Elementary School Students

### **Enabling The Future Chapter Founder**

**August 2024 - Present**

- Leads a chapter of volunteers designing, fabricating, and assembling low-cost prosthetics delivered to patients around the globe.

## **EDUCATION**

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### **The Harker School**

**August 2022 - June 2026**

- Courses: AP Calculus BC, AP Physics 1, AP Chemistry, AP European History, AP Computer Science A, AP Chinese Language, Honors Multivariable Calculus, Honors Differential Equations, AP Physics C Mechanics, AP Physics C Electricity & Magnetism, AP US History
- 4.28 Weighted GPA

## **PUBLICATIONS**

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- Omnimobile Pneumatic Load Capable Soft Robot for Gas Distribution Pipeline Inspection (IEEE Robosoft 2025, April 2025, Full Oral Talk) Evan Zhang, Eddie Zhang
- Gas Pipeline Leakage Detection Based on Multiple Multimodal Deep Feature Selections and Optimized Deep Forest Classifier (Frontiers in Environmental Science 13, 1569621, April 2025) Eddie Zhang, Evan Zhang
- Mitigating Low-Speed Crawling and Jitter in Telescopic Hydraulic Cylinders Through Stick-Slip Dynamics Analysis and Friction Reduction Strategies (Journal of Tribology 147 (7), 2024) Z Ma, D Huang, S Lu, E Zhang, Y Wu, X Huang
- SPIRo: An AI Based Origami Inspired Soft Robot with Multidimensional Locomotion and Multimodal Data Analysis for Infrastructure Assessments (IEEE CCDC, May 2024) Evan Zhang, Eddie Zhang
- Development of A Multimodal Deep Feature Fusion with Ensemble Learning Architecture for Real-Time Gas Leak Detection (IEEE ICMI, April 2024, Won Best Paper Award) Eddie Zhang, Evan Zhang

## **SKILLS AND AWARDS**

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- **Skills:** Onshape, Fusion 360, KiCad, 3D printing, OpenRocket, Ansys, CNC, Java, Python, Wolfram Mathematica, LaTeX, Labview, TensorFlow, OpenCV, MyRIO and Arduino
- **Awards:** AIME Qualifier with Distinction, USACO Silver Qualifier, TEAMS Competition Nationals Qualifier, Nationals JSHS, FRC World Championship Qualifier Team, FTC NorCal Regionals Finalist, Presidential Volunteer Award Bronze, Scholastic Writing Silver Key (2023, 2024), Synopsys Science Fair 2nd Award