

# YANZI HE'S RESUME

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## Professional Summary

Engineering-focused senior with hands-on experience in robotic systems development, hardware prototyping, and mechanical design. Co-author of a NeurIPS workshop paper and former R&D intern at Ronovo Surgical, contributing to force analysis, robotic system optimization, and ergonomic modeling. Interested in building complex electromechanical systems and advancing humanoid robotics through iterative engineering and system integration.



## Education - Class of 2027

Sacred Heart Preparatory, Atherton, CA: Senior

- AP/Honors Courses
  - Freshman: Algebra 2/Trig Honors, Biology Honors, Spanish 2 Honors, AP Biology (self-studied)
  - Sophomore: Precalc BC Honors, Chemistry Honors, AP Music Theory, Spanish 3 Honors, AP US History
  - Junior: AP Chemistry, AP Physics I, AP Calculus BC, AP Comparative Government, AP Spanish Language, AP English Language and Composition
  - Senior: AP Physics C, Advanced Topics in Math Honors/Multivariable Calculus, AP Biology, AP Computer Science A, AP Economics, AP Spanish Literature & Culture, AP English Literature & Composition

## Activities & Achievements

### Outside of School:

1. Co-Author, "I Know Kung Fu: Synthetic Dexterous Hand Demonstration Collection via VR Teleoperation"  
*NeurIPS 2025 SpaVLE Workshop | 2025*
  - Co-authored research on a scalable VR-based teleoperation pipeline for dexterous robotic manipulation
  - Developed simulation-aligned data logging architecture capturing 6-DoF wrist pose, finger joint states, and object trajectories
  - Contributed to cross-embodiment retargeting framework and physics-valid demonstration augmentation strategy
  - Selected for SpaVLE Workshop at NeurIPS 2025; presented research to academic and industry professionals in San Diego
  - Reference:  
[https://openreview.net/forum?id=6emNJjnETY&referrer=%5Bthe%20profile%20of%20Cohen%20Lu%5D\(%2Fprofile%3Fid%3D~Cohen\\_Lu1\)](https://openreview.net/forum?id=6emNJjnETY&referrer=%5Bthe%20profile%20of%20Cohen%20Lu%5D(%2Fprofile%3Fid%3D~Cohen_Lu1))
2. Ronovo Surgical (Shanghai) – R&D & Clinical Development Intern  
<https://www.ronovosurgical.com/>  
*June 2025 - July 2025*
  - Collaborated with a 30-member R&D and clinical engineering team to optimize surgical robotics architecture for maneuverability, weight reduction, and precision
  - Redesigned robotic system configuration into modular arm units to improve task adaptability and operational efficiency
  - Contributed to the design and development of world-first uterine manipulator

- instrumentation; optimized 22 cm insertion mechanism and cervical-uterine interface positioning
- Conducted force analysis testing using Universal Robot (UR) platforms with embedded force sensors to quantify insertion forces and implement safety thresholds
  - Performed ergonomic modeling and anthropometric data analysis to improve surgeon reach envelopes and interface geometry
  - Independently executed SOLIDWORKS modeling and rapid prototyping via industrial 3D printing; researched and implemented medical-grade bonding solution after prototype fracture during testing
- 3. Stanford University - Lu Lab, Neuroscience Research Intern  
<https://med.stanford.edu/lulab.html>  
*Summer 2025 - present*
  - Conduct behavioral and neural circuit experiments in Drosophila (60D04 genotype), investigating the effects of CPT and antibiotics on fruit flies
  - Design and execute sleep deprivation assays; analyze locomotor and neural activity data
  - Contribute to experimental design, data collection, and manuscript preparation for submission to the Society for Neuroscience (SFN)
- 4. Founder & Engineer, Ripple - Sensor-Based Hand Rehabilitation System  
<https://github.com/blue374/ripple>  
*Summer 2025 - present*
  - Designed and fabricated a flex-sensor exoskeleton capturing real-time finger joint angles and mapping motion data for kinetic musical interaction
  - Engineered end-to-end hardware/software pipeline integrating serial communication, signal processing, and auditory feedback
  - Built a web-based application using JavaScript and the Web Audio API, deployed via GitHub for broad accessibility, alongside a Python/React desktop version integrating serial communication for live hardware input
  - Developed custom mapping algorithms translating biomechanical signals into controlled pitch, rhythm, and dynamics
  - Deploying system to senior centers; leading workshops teaching embedded systems, CAD design, and applied engineering principles
  - Designed to support motor rehabilitation, neuroplasticity, and accessible creative expression regardless of musical training or physical ability
- 5. VEX & FTC Robotics
  - FTC Robotics (team 13981, 19896) - Hardware Lead  
*August 2025 - present*
    - i. Lead mechanical design and hardware integration: CAD designing, coordinating sensor systems, motor control, and structural optimization
    - ii. Assist in software integration
    - iii. Recipient of Design Award and Control Award; qualified for State Championship
    - iv. Represented team at 2025 California Leadership Advocacy Conference, engaging with state legislators on Proposition 98 and LCFF funding to increase accessibility to STEM and robotics education
  - VEX Robotics - Team 315N Member  
*June 2024 - May 2025*
    - i. Led strategy development, hardware design, scouting analytics, and engineering notebook documentation
    - ii. Recipient of multiple Innovate (World Qualification), Excellence (State Qualification), and Design Awards
    - iii. Recipient of Innovate Award at VEX Worlds Championship
    - iv. Volunteered 22+ hours at regional and state tournaments as referee, scorekeeper, and field manager
  - VEX Robotics - Team 88909K Captain

*June 2023 - May 2024*

- i. Lead mechanical design and hardware integration, match strategy, engineering notebook documentation, and team coordination; driver of the team
  - ii. Recipient of Robot Skills Champion Award (State Qualification), qualified for VEX Worlds Championship
  - iii. Organized team meetings and fostered collaborative design process
6. Selective Engineering Summer Programs (AAASE Stanford, Tufts University)  
*Summer 2024*
  - Prototyped assistive wristband to improve color detection accuracy for colorblind users
  - Designed and CAD-modeled in-ear EEG-controlled wireless hearing device prototype (Future Leaders Award recipient)
7. Competitive Classical Piano
  - Multiple awards at CAPMT, USOMC, and other international competitions
  - Invited to perform at Solitär Mozarteum, Salzburg and Carnegie Hall, New York

### **In School:**

1. Women in STEM Club/Women's Group, Founder/President (9th Grade - present)
  - Organized guest speakers (eg. doctors and graduates from Stanford)
  - Organized seminars with entire student body on politics, research, etc.
  - Hosts tutoring sessions for the middle school's Science Fair Club and Math Olympiad Club
  - Guides students in preparation for olympiads like USABO
2. Shared Harmonies Club, Founder/President (10th grade - present)
  - Organize performances for senior centers and hospitals in the community
  - Share music with school community/perform in school events
  - Compile biographies of the elderly in the community

### **Skills**

- Mechanical & Fabrication
  - CAD Design
  - 3D Printing
  - Robotics hardware assembly (wiring, soldering, fastening)
- Programming
  - Python (basic scripting and robotics control)
  - Java (programming fundamentals)
- Technical Tools
  - Command-line/terminal navigation (Linux/Unix environments)