

# Katherine Robertson

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## EDUCATION

**California Institute of Technology (Caltech)** - Pasadena, California Graduating in June 2028

- Anticipated EE Major; Robotics minor

**Sage Hill School** - Newport Coast, California Graduated in June 2024

- GPA: 4.69 (weighted)

## SELECTED PROJECTS

### Software for Semi-Automatic Generation of Low-Cost Partial Hand Prostheses

- Built 3D procedural modeling software to easily create custom 3D-printable partial hand prostheses from a residual limb scan (*Python, VTK, PyQt5, Pyvista, Numpy, Pandas*) | [GitHub Link](#)
- Focused on accessibility through intuitive UI and computationally efficient and parametric algorithms

### Predictive Stock Algorithms

- Developed predictive stock algorithms using transformers, TKANs, and LSTMs achieving 5% return in one month (*Python, Tensorflow, Pytorch, Scikit-learn, Numpy, Pandas, Matplotlib*)
- Used above algorithms in financial strategy to achieve semifinalist in Wharton Global Youth Investment Competition (top 50 of 1600 international teams)

## EXPERIENCE

**Haptics Researcher** (with the HaRVI Lab at USC) 2023 - 2025

- Designed accessible haptic toolkit and adjacent generative 3D visualization software packaged on PyPi with CLI tooling (*Python, Pyvista, PyQt5*) | [GitHub Link](#)

**Software Lead at Capture Thought** 2024-2025

- Developed web app that interfaces with LLMs to automatically process and grade student video submissions of math problems (*AWS, AWS Cdk, FastAPI, Next.js, ReactJS, PostgreSQL, Typescript, TailwindCSS, Python, OpenAI API, OpenAPI*)
- Employed AWS services and web app features like CRUD and JWT-based user authentication for RBAC

**AI Education Researcher** (with Professor Yeh at University of Colorado Boulder) 2024

- Published short form videos demonstrating the math behind neural networks for a K-12 audience

**Science Fair** 2018 - 2024

- International Science and Engineering Fair: 2024 3rd place in Systems Software, 4th place special award
- California Science Fair: 2019 winner; 2018 2nd place; 2024 honorable mention
- Orange County Science Fair: 4-time category winner; 2-time 2nd place

**Coder School** | *Programming Instructor* - Irvine, CA Summer of 2024

- Taught middle and high school students fundamental skills in programming and computer science

**Sage Hill Robotics Team** | *Co-Leader* 2020 - 2024

- Responsible for CAD of 125 lb robot in First Robotics Competition; majorly contributed to machining, assembly, and electrical systems

[Sage Tech-X Magazine](#) | *Editor-in-Chief, Lead Graphics Designer, Writer* 2020 - 2024

- Managed student-led magazine cultivating STEM interests through bi-yearly editions of 30+ pages

**Programming Skills:** Python, Tensorflow, Pytorch, Swift, C#, Java, AWS, Unity, HTML/CSS, Typescript, Javascript, SvelteKit, Node.js, Next.js, React, TailwindCSS, FastAPI, GSAP

**Other:** Fusion 360, KiCAD, CAM, Blender, TIG & MIG welding, 5+ years machine & wood shop experience