

# Katana Rain Finlason

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## Education

### MASSACHUSETTS INSTITUTE OF TECHNOLOGY (M.I.T.)

Master of Science & Bachelor of Science in Mechanical Engineering.

Concentration in Product Development and Machine Design with a minor in Energy Studies. GPA: 4.9/5.0

## Skills

- CAD & CAM Software (SolidWorks & Fusion 360)
- Product Design & Design for Manufacturing
- Rapid Prototyping (FDM/SLA 3D Printing)
- MATLAB & C++
- Mechanical Analysis & Testing
- CNC & Manual Machining
- Plastic Injection Molding & Thermoforming
- Microsoft Office & Adobe Suite
- Technical Documentation
- Presenting & Public Speaking

## Job Experience

### Lead Mechanical Engineer

[Aug 2025 - Present]

GentleCare (Soft Robotics Company for Elderly Care)

- Designing, modelling, fabricating, and analyzing mechanical components/assemblies for medical devices consisting of pneumatic systems and pressure vessels
- Making breakthroughs in the field of Soft Robotics by contributing to the Intellectual Properties
- Coordinating pilot studies for critical feedback from users on the feasibility of the device
- Leading cross-functional teams in end-to-end robotic solution design

### Graduate Researcher

[Sep 2023 - Jun 2025]

MIT Mechanical Engineering Department (CADLAB)

- Conceptualized and developed incubators for species which exhibit temperature-dependent sex determination
- Ran thermal simulations to evaluate transient heat transfer when deployed in field
- Consulted with conservationist community partners in Jamaica to implement incubators for Hawksbill Sea Turtle eggs

### Instructor

[Jan 2023 - Jun 2024]

MIT

- Coached students in three of the most well-known mechanical engineering classes at MIT ('Product Engineering Process', 'Toy Product Design', and 'Introduction to Design')
- Compiled lecture/lab materials while simultaneously coordinating events with 1000s of attendees including industry partners

### Apprentice & TA

[Feb 2022 - Jun 2023] & [Feb 2025 - Jun 2025]

MIT Pappalardo Lab

- Worked as a machine shop apprentice and held weekly office hours to cover technical engineering content
- Assisted with robot construction in the class 'Design and Manufacturing I'
- Machined my own fully-functioning stirling engine, camelback straightedge, and anchor windlass wildcat

### Lab Assistant & TA

[Sep 2022 - Jun 2023] & [Sep 2024 - Dec 2024]

MIT Laboratory for Manufacturing and Productivity

- Taught the fundamentals of large scale manufacturing operations in lecture/lab for the class 'Design and Manufacturing II'
- Created documentation to help students gain a basic understanding of machine tools and injection molding

### Intern

[Jun 2022 - Sep 2022]

Undergraduate Research Opportunity Program

- Built the optical fluidics system for a digital holographic microscope to study soil biomes using 3D printing & laser cutting
- Adapted the technology for marine biomes as an underwater surveillance camera on an ocean lander that was deployed during the 2024 MIT Marine Robotics Program on Faial Island in the Azores

## Project Examples

**Desktop Lathe:** A portable lathe with a cutting repeatability specification within 100 microns

- Modeled the system to determine successful functionality saving weeks of excess prototyping thus keeping costs within budget
- Analyzed the compliant mechanisms with FEA software before machining the high precision metal parts

**Off-grid Chick Brooder:** An incubator that uses thermal batteries instead of electricity to warm chicks without supervision

- Conducted temperature regulation experiments to assess thermal battery performance
- Expanded the project by travelling to Cameroon to rebuild the brooder in collaboration with local African farmers

**Injection Molded Yo-yo:** A plastic yo-yo toy made entirely from scratch

- Designed the toy model and aluminum molds using CAD and CAM software before fabrication
- Refined the injection molding parameters to establish the optimal metrics for avoiding defects