# **VINAY** BHIMAVARAPU

**MECHANICAL ENGINEERING STUDENT | ROBOTICS, AUTOMATION & DESIGN**

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## EXPERIENCE

### Robotics Research Intern — BIER Labs

*Oct 2024 – Present*

- Designs and fabricates components for two robotic units of a bio-inspired robotic fish platform (Tunabot) in SolidWorks, leveraging FDM 3D printing and Design for Manufacturing (DFM) principles for rapid iteration.
- Develops and deploys Python-based control algorithms for the platform, applying ArUco marker detection and DeepLabCut pose estimation to analyze swimming performance — up to 4 body lengths per second — and enabling remote operation via Tailscale.
- Collaborates with a labmate on ongoing experiments studying autonomous swimming behavior, within a five-person, two-PI lab, requiring rigorous testing and rapid iteration.
- Co-authors a research paper on the platform's design and performance.

### Engineering Intern — Spiro Medical

*May 2026 – Jul 2026*

- Disassembled, reprogrammed, and troubleshot the Lead Bend Fatigue Tester — a fixture cyclically bending implant leads 45°/90° through bell-mouth inserts to simulate years of in-vivo spinal motion — while reorganizing 25 CAD files and 16 drawings for its top-level assembly in SolidWorks.
- Created 60+ Test Equipment items and part/assembly items in Arena PLM; authored a DCO, IOQ, and BOM for the fixture.
- Automated a calibrated-equipment checkout system in Power Automate covering 80 instruments, tracking custody, location, and calibration due-status.

### Design Intern — Allevion Therapeutics

*Jul 2025 – Aug 2025*

- Designed and iterated on 3D CAD models (SolidWorks) for an electromechanical component, applying precision engineering and miniaturization principles.
- Managed and maintained the version control of all component and assembly CAD files, ensuring design integrity and quality control for a regulated system.

### Research Intern — Digital Alpha Platforms

*Jul 2023 – Aug 2023*

- Developed a Q&A chatbot and researched AI trends for Digital Alpha's company blog, including a published article on Data Mesh architecture.

### AI Researcher — Cornell Mentorship

*Mar 2023 – May 2023*

- Published a research paper in the Journal of Student Research on generative AI's impact on human productivity, under the mentorship of a Cornell PhD student.

## EDUCATION

**University of Virginia**

Mechanical Engineering, GPA: 3.7

*2024 – Present*

**Harvard Summer School**

Artificial Intelligence Student

*2023*

**Westfield High School**

Honors Student

*2020 – 2024*

## SKILLS

**Fabrication & Lab**

3D Printing, Soldering, Electronic Assembly, Prototyping

**CAD Design**

SolidWorks, Fusion 360

**PLM & Automation**

Arena, Power Automate

**Programming**

Python, C++, Java, HTML, Flutter

## AWARDS & ACCOMPLISHMENTS

Presenter at SICB 2026 Annual Meeting

## EXTRACURRICULARS

**MARS — Mechatronic and Robotics Society at UVA**

Developed one of three candidate robot concepts — a bucket-drum excavator — for NASA's Lunabotics Challenge, contributing design, sizing calculations, assembly, and design-review presentation within a 20–30 person team.

**FIRST Robotics Competition**

Designed and assembled the structural frame of the team's 2023 CHARGED UP competition robot within a 15-member mechanical subteam.