

Aragya Goyal

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EDUCATION

University of Pittsburgh (Swanson School of Engineering)

Pittsburgh, PA

- B.S. - Computer Engineering (Autonomous Systems Focus); GPA: 3.99

August 2022 - April 2026

Courses: Data Structures and Algorithms, Embedded Processors, Microelectronics, Digital Circuits

PROFESSIONAL EXPERIENCE

Carnegie Mellon University Robotics Institute (Biorobotics Lab)

Pittsburgh, PA

- Undergraduate Research Intern (Part-Time)

April 2023 - Present

- Underwater Snake Robot:** (Link: <http://tinyurl.com/humrsCMU>)
 - Implemented High-Frequency Injection methods in BLDC thrusters to achieve control at low/zero speeds.
 - Working to implement station-keeping feature using AprilTags, IMU readings, and Nested PID Controllers.
 - Conducted major repairs on the robot and assisted in continual maintenance of the robot.
- Apple's E-Waste Recycling Project:** (Link: <https://tinyurl.com/applecmu>)
 - Created large datasets for Machine Learning Models to detect screws in e-waste images.
 - Integrated ROS and Python packages to track ArucoTags using a Realsense camera for localization of robotic arm.
 - Manufactured custom AprilTags using lasercutters and sheet metal manufacturing methods.

RELEVANT EXPERIENCE

Society of Astronautics and Rocketry

Pittsburgh, PA

- Chief Engineer (Student Led Organization)

August 2022 - Present

- Leading a group of approx. 30 students to design and fabricate a rover to participate in the University Rover Challenge. (Link: <https://tinyurl.com/roverimages>)
- Led the development of a prototype robotic hand using pneumatics. (Link: <https://tinyurl.com/hydraarm>)

FIRST and VEX Robotics

Exton & Royersford, PA

- Team Captain/Design Lead (Student Led Organization)

August 2018 - June 2022

- Designed six robots in **Solidworks** across four years. All robots qualified for higher level of competition including Worlds. (FIRST Link: <https://tinyurl.com/dewbot17>), (VEX Link: <https://bit.ly/3w7a6b1>)
- Mentored younger students about robot design and manufacturing through workshops and general building.
- Won the VEX Judges Award, FIRST Excellence in Engineering Award, FIRST Industrial Design Award, and the FIRST Chairman's Award.

PROJECTS

- STM-32 Elevator Simulator (ARM Assembly, Project Integration):** Designed and Implemented software architecture in ARM Assembly to operate a physical elevator simulator PCB. (Link: <https://tinyurl.com/stmelevator>)
- Custom Cane (Human Centered Design, Solidworks, Presentation):** Designed and manufactured a Walker-Cane Fusion to make bathrooms more accessible for wheelchair users. The project won first place at the Senior Design Expo within its category. (Link: <https://tinyurl.com/CustomCane>)
- Formula SAE E-Brake Bias (Solidworks):** Developed an e-brake bias system for a formula style racecar, utilizing Solidworks and 3D printing technology to enhance performance and usability. Won the FSAE Innovation Award for the design and implementation of the project. (Link: <https://tinyurl.com/ebrakeb>)
- String Art Generator and Optimizer (Research, Python):** Developed an innovative string art optimization tools and GUI using Python programming to improve upon existing string art generators. (Link: <https://tinyurl.com/goyalstring>)
- Silicon Prosthetic Hand (Research, Solidworks):** Designed and Manufactured prototype prosthetic hand with silicone soft actuators and tested with human participants for AP Research Project. (Link: <https://tinyurl.com/myprosthetic>)
- Bird Sanctuary Restoration (Eagle Scout Project, Volunteering):** Organized a project to restore parts of the Audubon Bird Sanctuary by painting fences, guardrails, and small buildings. (Link: <https://tinyurl.com/goyaleagle>)

SKILLS AND AWARDS

- Languages:** Python, C++, ARM Assembly
- Technologies:** Linux, ROS, Github, Solidworks, MATLAB, Microsoft Products, Arduino, Raspberry Pi, OpenCV
- Manufacturing:** Milling, Soldering, Laser Cutting, General Shop Tools
- Awards:** Dean's Honor List (2021-Present), Honor List (2021-Present), Eagle Scout