

# Aragya Goyal

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## EDUCATION

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- **University of Pittsburgh** Pittsburgh, PA  
• *B.S. - Computer Engineering (Autonomous Systems Focus); GPA: 3.99* *August 2022 - April 2026*

## SKILLS

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- **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

## RELEVANT EXPERIENCE

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- **Carnegie Mellon University - Robotics Institute (Biorobotics Lab)** Pittsburgh, PA  
• *Undergraduate Researcher (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 and IMU readings.
    - **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.
  - **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>)
    - Quickly established oneself as a valuable contributor to the team's efforts, taking on a lead role in the development of the robotic hand using pneumatic technology. (Link: <https://tinyurl.com/hydraarm>)
  - **FIRST Robotics** Exton, PA  
• *Team Captain/Design Lead (Student Led Organization)* *January 2023 - May 2023*
    - Led a team of 40 students and qualified for the Worlds level of competition, the highest win percentage since 2005, and a top 5% ranking globally. (Link: <https://tinyurl.com/dewbot17>)
    - Utilized Solidworks to design and develop competition and award-winning robots.
  - **VEX Robotics** Royersford, PA  
• *Team Captain (Student Led Organization)* *January 2023 - May 2023*
    - Organized VEX robotics competition event for 60+ teams, hosted workshops to teach CAD to fellow club members, and received recognition for outstanding leadership. (Link: <https://bit.ly/3w7a6b1>)
    - Qualified for the State's level of competition for all 4 years of high school.

## PROJECTS

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- **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 award winning e-brake bias system for a formula style racecar, utilizing Solidworks and 3D printing technology to enhance performance and usability. (Link: <https://tinyurl.com/ebreakb>)
  - **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>)

## AWARDS AND SPECIAL INTERESTS

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- **General Awards:** Dean's Honor List (2021-Present), Honor List (2021-Present), Eagle Scout
  - **Engineering Activities:** FSAE Innovation Award, FIRST Chairman's Award, FIRST Excellence in Engineering, FIRST Industrial Design Award, VEX Judges Award



Figure 1: Underwater Snake Robot

CMU Research

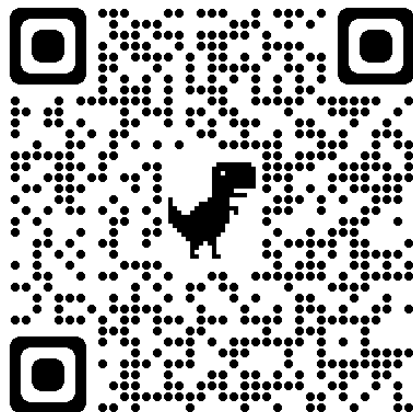


Figure 2: Apple Recycling Video



Figure 3: E-Brake Bias

Finished Projects

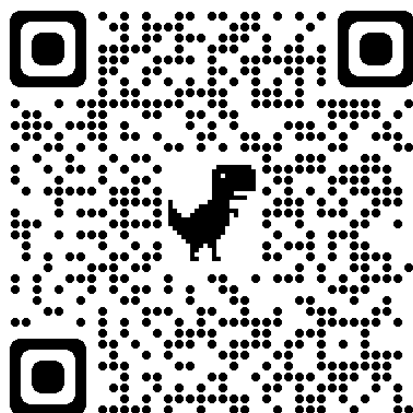


Figure 4: Custom Cane

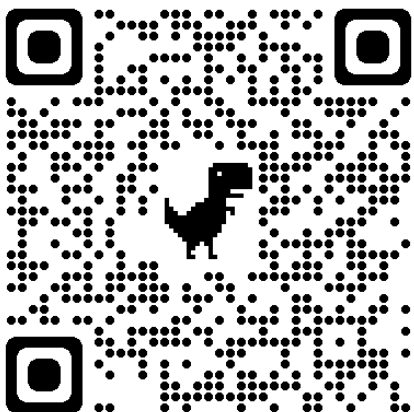


Figure 5: Dewbot XVII

High School Robotics

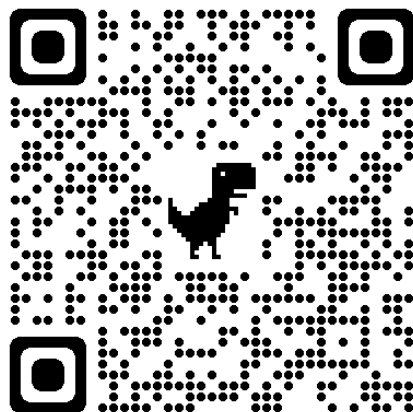


Figure 6: VEX Robotics