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*

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
- **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

Professional Experience

- **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.

Other Related 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)
  - 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

- **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/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)

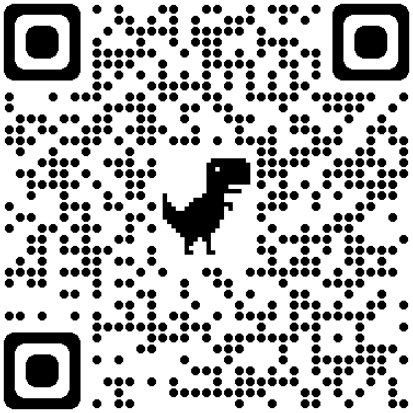

Figure 1: Underwater Snake Robot

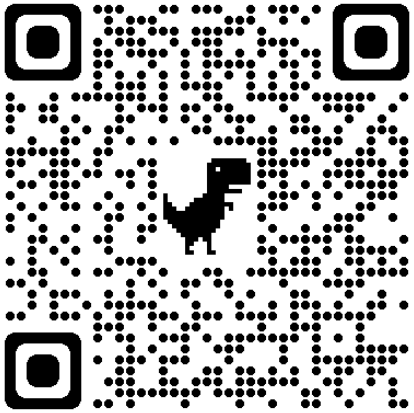

Figure 2: Apple Recycling Video

CMU Research

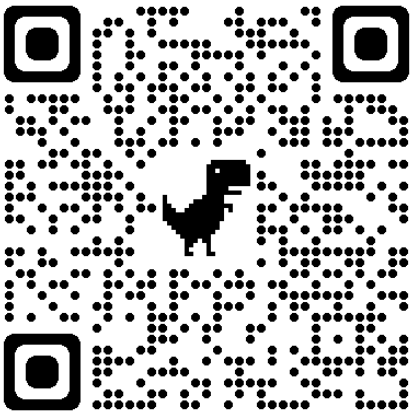

Figure 3: E-Brake Bias

Figure 4: Custom Cane

Finished Projects

Figure 5: Dewbot XVII

Figure 6: VEX Robotics

High School Robotics