Olivia Tolliver

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EDUCATION

Cornell University, College of Engineering, Ithaca, NY **Expected May 2027**
Bachelor of Science, Mechanical Engineering | Computer Science Minor

Relevant Courses: Fluid Mechanics, System Dynamics, Mechanics of Engineering Materials, Linear Algebra, Foundations of Robotics, Mechanical Design, Dynamics, Thermodynamics, Statics and Mechanics of Solids

RELEVANT EXPERIENCE

Cornell Mars Rover Project Team, *AstroTech Subteam Member* **Feb 2025 – Present**
- Work on the AstroTech Mechanical subteam, collaborating with engineers, physicists, biologists, and chemists to design and develop an innovative in-situ life-detection lab for the University Rover Competition
- Designed a 3D-printed mechanism attached to the rover's arm to enhance visibility of key tasks performed

HAPPI Lab, Cornell University, *Undergraduate Researcher* **Mar 2025 – Present**
Research Project: Joint Pneumatic-Electromechanical Harvesting System Powered by Human Movement
- Optimize wearable pneumatic turbine system for energy harvesting through walking, using DAQ for analysis
- Fabricate turbine casing with resin printers, iterating designs and materials to balance comfort and wearability
- Continued research under the **ELI Summer Research Grant (2025)**, making small design iterations to airflow and pouch mechanisms to optimize turbine output, flow rates, and pressure profiles for the pneumatic system

FIRST Robotics Challenge Team, Marist School, *Member* **Aug 2018 – May 2023**
- Led mechanical design iterations as **Team Captain (2022-23 season)**, achieving top 5% regional performance
- Optimized robot design and fabrication using modeling software and assembly drawings to improve efficiency
- Collaborated with software subteam to program and test the robot's autonomous functions for competition
- Transitioned robot drivetrain from tank drive to swerve drive, enhancing maneuverability and driver control
- Conducted extensive research and testing to integrate pneumatics into the robot, enabling precise control

PROJECTS

Health and Wellness App, *Developer* **May 2024 – Present**
- Developed a mobile app using React Native and Expo to document users' food consumption and acne journey
- Gained experience in front-end development with Firebase authentication and cross-platform debugging
- Designed app features aimed at analyzing user input to identify potential links between food and acne triggers

ADDITIONAL EXPERIENCE

Girls Who Code, Marist School, *Co-President/Founding Member* **Aug 2021 – May 2023**
- Spearheaded creation of Redbook, a custom website digitizing 80% of school safety protocols for 100+ faculty
- Designed curriculum for 15+ members with a focus on HTML and CSS, increasing project completion by 40%
- Organized coding workshops and hackathons, expanding student engagement in programming and web design

Robotics Team, Christ the King Catholic School, *Coach/Mentor* **Aug 2021 – Feb 2023**
- Mentored 15 middle school students, improving competition readiness by 40% through hands-on practice
- Led instruction in Java programming, 3D modeling, and engineering principles, fostering skill development

REACH for Excellence, Brookhaven, GA, *Teacher's Assistant* **Jun 2020 – Jul 2023**
- Produced interactive computer programming and robotics curriculum for ~120 middle school students
- Assisted teacher in planning Python and Java classes, increasing student engagement in programming by 35%

CAMPUS INVOVLEMENT

Bowers CIS Student Services, Cornell University, *Administrative Assistant* **Jan 2024 – Present**
National Society of Black Engineers, Cornell University**,** *Membership & Alumni Chair* **Aug 2023 – Present**
Society of Women Engineers, Cornell University**,** *Member* **Aug 2023 – Present**
The Cornell Tradition, Cornell University, *Fellow* **Aug 2023 – Present**

SKILLS

Software: Fusion 360, SolidWorks, Inventor, Java, Python, MATLAB, ROS, C++, React Native, HTML/CSS
Manufacturing: 3D Printing (PLA & Resin), Mechanical Assembly, Soldering, Technical Drawings, DFA/DFM