

LUCCA CORREIA

New York, NY | (201) 360-1445 | lec254@cornell.edu | <https://correial.github.io/>

EDUCATION

CORNELL UNIVERSITY, Masters of Engineering - Systems Engineering Expected December 2026
CORNELL UNIVERSITY, Mechanical Engineering; Cum. GPA: 3.99/4.3, Magna Cum Laude May 2026
HORACE MANN SCHOOL (HM) (New York) - Cumulative GPA: 3.88/4.0 2015 - 2022

PROFESSIONAL EXPERIENCE

AMAZON ROBOTICS - Robotics Hardware Development Engineering Intern (North Reading, MA) SUMMER 2026

Selected, tested, and integrated sensors into robotic mechanism, using sensor feedback to develop closed-loop impedance control

- Researched, benchmarked, and Instron-tested capacitive and force-sensitive resistor (FSR) sensors against key performance metrics; consolidated findings into requirements for custom sensor evaluation and development.
- Integrated sensors into a load-bearing mechanism, using Ansys Mechanical FEA to optimize placement; achieved 1 mm center-of-pressure accuracy across 80×120 mm sensing area and 2 N force accuracy (0.66% error) across full-scale range.
- Built a Python digital twin to simulate sensor readings and developed a closed-loop impedance controller using Pinocchio Speedgoat for torque and position regulation
- Collaborated with manufacturers and sensor suppliers on scalable production; secured an approved sensor supply agreement.

FOUNDATION - Mechanical Robotics Engineering Intern (San Francisco, CA) SUMMER 2025

Accelerated humanoid development by optimizing build workflows and fixtures to advance mission in scaling next-gen robot

- Assembled Phantom MK1 humanoids, including mechanical structures, wiring harnesses, encoder soldering, and actuator calibration; debugged electromechanical failures during hardware testing.
- Designed and machined assembly fixtures using CAM and a 3-axis mill to improve assembly repeatability.
- Developed build instructions and manufacturing workflows with process engineers, reducing manufacturing time by 25%.

MITRE CORPORATION - Mechanical and Systems Engineering Intern (Bedford, MA) SUMMER 2024

Optimized and modeled defense aircraft cooling module system to advance next-gen communication technology

- Modeled aircraft cooling systems in Ansys Icepak and performed parametric trade studies across materials, geometries, fans, altitudes, and boundary conditions to guide system design.
- Developed MSOSA SysML models spanning mechanical, electrical, and airflow domains to define subsystem interfaces and support multidisciplinary system analysis.

ENGINEERING AND ROBOTICS EXPERIENCE

HELBLING ROBOTICS LAB (<https://helbling-lab.github.io/>) Sep 2025 - Present

Developing an autonomous insect-scale water-skimming robot for sustained intelligent operation in real-world environments

- Design, test, and integrate a braking mechanism in SolidWorks with a custom-built voice coil actuator and linkage, meeting a strict mass requirement below 0.7 g to stop the robot from top speed in 4 cm.
- Develop MATLAB force and kinematic simulations to determine actuator force requirements and design the linkage.
- Develop a SysML robot model and braking system, defining requirements, use cases, tests, and environmental interactions.

NEXUS - Mechanical Subteam Lead Sep 2022 - Sep 2025

Cornell Engineering Project Team pioneering autonomous rover to filter and collect microplastics from beaches

- Led the mechanical team from initial design through a working autonomous beach-cleaning rover, designing, detailing part drawings, machining, and assembling the swerve drive and intake/filtration mechanisms.
- Defined system requirements and test cases across subteams; integrated mechanical systems with power, GPS, motor drivers, encoders, and PCBs, and led initial field testing, failure diagnosis, and iterative improvements.

CORNELL MAE 4190 FAST ROBOTS COURSE (completed and class TA) Jan 2025 - May 2025

- Built an autonomous car with gyroscope and time-of-flight feedback, programmed embedded processor in C++ and Python.
- Implemented sensor fusion, real-time localization, and linear/angular PID control for autonomous navigation and path planning; debugged control instability and sensor failures.

TECHNICAL SKILLS & ACTIVITIES

- **Design:** SolidWorks, Ansys Mechanical & Icepak, 3D Printing, CAM & CNC machining, engineering drawings, laser cutting
- **Systems:** Electro-mechanical integration, SysML, requirements engineering, test planning & execution, hardware debugging
- **Controls & Software:** Python, C++, MATLAB, Pinocchio, impedance/PID control, tactile/ranging/inertial sensors
- **Soccer** (Cornell United Club Team, High School Varsity Captain) | **Ski Racing** (USSA U16 State Champion)