LUCCA CORREIA

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EDUCATION

CORNELL UNIVERSITY, Mechanical Engineering; Cum. GPA: 3.99/4.3, Dean's List all Semesters — Expected May 2026
CORNELL UNIVERSITY, Masters of Engineering - Systems Engineering — Expected December 2026
HORACE MANN SCHOOL (New York) - Cumulative GPA: 3.88/4.0 — 2015 - 2022

PROFESSIONAL EXPERIENCE

FOUNDATION - Mechanical Robotics Engineering Intern (San Francisco, CA) — May 2025 – Aug 2025
Accelerated humanoid development by optimizing build workflows and fixtures, advancing mission to scale next-gen robot
- Assembled full Phantom MK1 humanoids including structures, linkages, encoder soldering, signal harness fabrication, and actuator calibration; led independent debugging and bring-up.
- Designed CNC work-holding fixtures in CAD, generated G-code in CAM, operated 3-axis mill to fabricate encoder housings
- Authored comprehensive CAD-based build instructions for the humanoid and optimized workflows with process engineers

MITRE CORPORATION - Mechanical & Systems Engineering Intern (Bedford, MA) — May 2024 – Aug 2024
Optimized and modeled defense aircraft cooling module system to advance next-generation communication technology
- Independently modeled and analyzed aircraft component model via Solidworks & Ansys Icepak FEA Software
- Proposed variables and conditions to optimize cooling and ran simulations for each (altitudes, materials, geometries, fans, boundary conditions) - Confirmed solutions with heat transfer hand calculations
- Developed comprehensive MSOSA SySML (detailed BDD's, IBD's, Activity Diagrams, & Simulations) models of complex aircraft electronic system

DCC AUTOMATION - Mechanical Engineering & Robotics Intern (Brewster, NY) — July 2023 – Aug 2023
Enabled rapid prototyping by converting drawings into production-ready models for CNC manufacturing
- Modeled SolidWorks parts and assemblies from complex engineering drawings and created motion studies from systems
- Created part drawings for production with in-house CNC five-axis mill and lathe, welding tools, and overall assembly

ENGINEERING AND ROBOTICS EXPERIENCE

Helbling Robotics Research Lab (https://helbling-lab.github.io/) — Sep 2025 - Present
Developing autonomous insect-scale robots to perform sustained, intelligent operation in real-world environments
- Responsible for designing, testing, and integrating dynamic braking mechanism for water surface-skimming robot (*GammaBot)*
- Generating CAD designs in Solidworks to meet strict mass and system-level constraints informed by research paper analysis
- Developing Matlab scripts to model insect-scale fluid dynamics and optimize breaking performance

NEXUS - Mechanical Subteam Lead — Sep 2022 - Sep 2025
Cornell Engineering Project Team pioneering autonomous rover to filter and collect microplastics from beaches
- Led design, machining, and assembly of a swerve drive and active intake/filtration system to filter microplastics from beach
- Defined executable system level requirements and test cases across electrical, software, and business subteams; Integrated mechanical and electrical systems (intake, filtration, drivetrain, battery, motor drivers/encoders, PDB & PCBs, GPS) on rover
- Developed MatLab scripts to calculate required torque for robot drive motors to perform on complex terrain with filtration

CORNELL MAE 4190 FAST ROBOTS COURSE — Jan 2025 - May 2025
- Designed and fabricated a fast autonomous car with dynamic system modeling and integrating reactive gyroscope and time-of-flight sensor feedback on an embedded processor – extensive programming in C++ and Python
- Achieved fully autonomous navigation and path planning via real time localization and linear/angular PID control
- Hands-on experience with rapid prototyping, system debugging, and partial off-board computation

ACTIVITIES

SOCCER (Cornell United Club Team, HM Varsity Team, US Licensed Coach) — 2018 – Present
USSA AND FIS SKIING (HM Varsity Team & Blue Mountain Ski Racing Team, USSA U16 State Champion) — 2012 – 2022
FIRST® ROBOTICS (FRC) HIGH SCHOOL TEAM (Team Captain, World Championship Qualifier) — 2018-2022

TECHNICAL SKILLS & ADDITIONAL

- Machining Experience: 3D printer, CNC three-axis mill, lathe, band saw, laser cutter, drill press, hacksaw, and jigsaw
- Software & Modeling: SolidWorks, MatLab, MSOSA SysML, Ansys (Icepak & Mechanical), Python, C++, LaTeX, CAM