

# LUCCA CORREIA

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## EDUCATION

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

## PROFESSIONAL EXPERIENCE

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**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 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 and Systems Engineering Intern (Bedford, MA) SUMMER 2024

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

- Independently modeled and analyzed aircraft component model via Solidworks and Ansys Icepak FEA Software
- Proposed variables and conditions to optimize cooling and improved performance through multi-factor simulations for altitudes, materials, geometries, fans, and boundary conditions; verified solutions with heat transfer hand calculations
- Developed comprehensive MSOSA SysML models of complex aircraft electronic system, including detailed BDD's, IBD's, Activity Diagrams, & Simulations

**DCC AUTOMATION** - Mechanical Engineering and Robotics Intern (Brewster, NY) SUMMER 2023

*Accelerated 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

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**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*

- Leading design, testing, and integration of dynamic braking mechanism for water surface-skimming robot (*GammaBot*)
- Modeling 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

- Achieved fully autonomous navigation and path planning via real time localization and linear/angular PID control
- Designed and fabricated a fast autonomous car with dynamic system modeling, integrated reactive gyroscope, and time-of-flight sensor feedback on an embedded processor; extensive programming in C++ and Python
- Hands-on experience with rapid prototyping, system debugging, and partial off-board computation

## LEADERSHIP AND ACTIVITIES

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**SOCCER** (Cornell United Club Team, HM Varsity Team Captain, US Licensed Coach) 2018 – Present

**USSA/FIS SKIING** (HM Varsity Team Captain & Blue Mountain Ski Race Team, USSA U16 State Champion) 2012 – 2022

**FIRST® ROBOTICS (FRC) HIGH SCHOOL TEAM** (Team Captain, World Championship Qualifier) 2018 - 2022

## TECHNICAL AND OTHER SKILLS

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- 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