Ethan Carroll

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EDUCATION

Harvey Mudd College
B.S. in Engineering
Aug 2018 – May 2022
Claremont, CA
Dean's List

Saint Francis High School
Aug 2014 – May 2018
Mountain View, CA
Maximum Cum Laude

RELEVANT COURSEWORK

Engineering
- Thermodynamics
- Fluid Mechanics
- Mechanical Design and Engineering
- Advanced Systems Engineering
- Engineering Mathematics
- Experimental Engineering
- Design and Manufacturing
- Continuum Mechanics
- Materials Engineering
- Chemical Engineering
- Digital Electronics and Computer Engineering
- Electrical and Magnetic Devices
- New Product Development and Entrepreneurship

Mathematics
- Calculus
- Statistics
- Linear Algebra
- Differential Equations
- Multivariable Calculus

Computer Science for Inquiry
Python

SKILLS

Tools
SolidWorks CAD, ANSYS Fluid Mechanics, MATLAB, System Verilog, RISC-V, COMSOL, Arduino, RStudio, LabView, GitHub, Adobe Creative Suite, Microsoft Office, G Suite, iCloud services

Programming languages
Python, Java

Other concepts CNC machining, 3D printing, laser cutting, waterjet cutting, circuit design

WORK EXPERIENCE

Toyota | Clinic Team Engineer
August 2021 – May 2022 | Claremont, CA
- Designed, constructed, and evaluated a new cooling system for Toyota's Class 8 Fuel Cell truck
- Involved mechanical prototyping of design alternatives and analysis in thermodynamics and fluid mechanics

Harvey Mudd College Research Lab | Research Engineer
May 2021 – May 2022 | Claremont, CA
- Developed a stable formula of machine and motor oil containing gas-phase synthesized graphene (GSG) as an anti-wear additive, resulting in a 16% reduction in wear compared to the leading synthetic motor oil
- Performed tribo-analysis of new formulations by conducting wear tests with a Universal Micro-Tribometer II and measuring volume of missing material with a 3D white light interferometer

Meggitt | Clinic Team Engineer
January 2021 – May 2021 | Claremont, CA
- Developed means for protecting linear variable differential transformers (LVDT) from aerospace conditions, especially extreme temperatures and electromagnetic disturbances

Converge Media Ventures | Media Intern
June 2018 – August 2018 | Sunnyvale, CA

TECHNICAL PROJECTS

Mechanized Loom | Spring 2022
- Designed and prototyped an electrically powered loom on SolidWorks
- Constructed the working loom by machining, laser cutting, waterjet cutting, and 3D printing parts

Aviation and Aircraft Construction | Fall 2021
- Worked with a team on the construction of a Vans RV12is Experimental Light Sport Aircraft with a 100 hp Rotax engine that will be fully operational and certified by the FAA

Machine Learning Two-Factor Identification | Spring 2020
- Developed a wearable system with a heart rate sensor and accelerometer.
- Used a neural network to verify identity using heart rate and gait characteristics.
- Achieved 95% identification accuracy.

Autonomous Underwater Robot | Fall 2019 - Spring 2020
- Designed and built an autonomous robot to collect data in a pool and in a lake.
- Incorporated thermocouples, turbidity sensors, pressure sensors, gyroscopes, and accelerometers. Measured temperature, turbidity, and depth.
- Tools included COMSOL (fluid dynamics), Arduino, LabVIEW, and oscilloscopes.

Diagnosed and Repaired a Used Car | Summer 2019 - Present
- Purchased a used car in a state of disrepair and diagnosed various automotive engineering issues relating the engine, brakes, and other complex systems.
- Repaired and restored the vehicle to perfect operating condition, having driven 20,000 miles since restoration without any critical failures.

ACTIVITIES

Claremont-Mudd-Scripps College Tennis Team | Member and Senior Leader 2022
- Awarded the Hank Krieger Trophy for being the best example of a team player
- ITA Scholar-Athlete award for 3.5+ GPA 2020-2022