Menooa Avrand

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EDUCATION

Bachelor of Science in Mechanical Engineering | University of California, Berkeley| GPA: 3.8/4.0 December 2025

SKILLS

- **CAD:** SolidWorks | Fusion 360 | Onshape | Autodesk Inventor | AutoCAD
- **Design & Fabrication:** SLA & FDM 3D Printing | CNC Router, Lathe, Mill | Plasma Cutting | Laser Cutting
- **Software & Others:** MATLAB | Python | FEA | G-code | Arduino | IoT | Simulink | Confluence & Jira

EXPERIENCE

Ferrari | Mechanical Engineer Intern July 2025 - Present

- Led the proposal and preliminary engineering study of **concealed windscreen wiper concepts**, generating and down-selecting multiple design pathways (cowl-concealed, telescoping, aerodynamic covers, transparent blades) by benchmarking aerodynamic, aesthetic, and functional trade-offs using **TRL, feasibility, rain performance, weight, cost, and robustness** as key metrics.
- Performed engineering analysis of selected solutions, including **CAD/FEA, material evaluation** (carbon-black elastomers, TPU, silicone, polycarbonate), and **integration feasibility** with Ferrari vehicle architecture.

UC Berkeley Cal Sol | Dynamics Project Manager Aug 2023 - Present

- Led a multidisciplinary team of **20+ engineers** in the **design, testing, manufacturing**, and **integration** of all solar vehicle dynamics systems, including suspension, steering, brakes, wheel shrouds, and array tilting—while coordinating across sub teams to ensure safety, performance, and regulatory compliance.
- Led a 4-person team in the **end-to-end development** of the **steering system** for the 11th-generation vehicle, overseeing design, analysis, and integration.

Industrial District Green| Mechanical Engineering Consultant Intern Sep 2022 - Nov 2022

- Conducted research using GIS & NPMS to analyze civil and substructure obstacles and automated the tree selection process for developers in the Los Angeles Industrial District

PROJECTS

Autonomous Fire Suppression Robot| *(SolidWorks, FEA, IoT, FDM Printing)* YouTube Link

- Designed and developed **πRo-Bot**, an autonomous fire suppression system with infrared sensing, real-time positioning, and remote operation, leading the **electrical system design**, including circuitry, power distribution, and microcontroller integration for seamless sensor-actuator communication.
- Led **manufacturing, assembly**, and **system integration**, validating **mechanical-electrical interfacing** and optimizing fire suppression accuracy through closed-loop feedback control.

Thermal Paste Performance| *(SolidWorks, GD&T,* IoT*/Sensors, MATLAB, Mill)* Full Report

- Designed and conducted a controlled experiment to evaluate **thermal paste conductivity** using custom aluminum blocks, K-type thermocouples, and ESP32-based data acquisition.
- Analyzed temperature gradients, revealing that the most effective thermal paste **reduced thermal resistance by 79%** compared to setups without paste and by **51%** compared to other industry-standard pastes.

3D Printed Wind Turbine Design and Testing| *(FEA, SolidWorks, FDM Printing)* Full Report

- Designed and tested turbine rotor blades and a support tower, achieving 8+ N/mm stiffness while maintaining a **weight below 350g** and generating **>2W of power**.
- Utilized FEA for stiffness simulations and optimized rotor blade profiles using 3D printing prototyping.

Microfluidic Exhaust Valve| *(SolidWorks, FEA, MUMPS)* Full Report

- Designed a MEMS-based microfluidic valve integrating yoke array of six electro-thermal actuators for precise fluid control, reducing leakage in microscale channels via an electrostatic latching mechanism