Sage Singh

sahajs@uci.edu Portfolio: sagesingh.com linkedin.com/in/sahajs/

Education

University of California, Irvine **June 2025**
B.S. in Mechanical Engineering, specialized in Aerospace | 3.42 GPA

Coursework: Mechanics of Structures, Vibrations, Theory of Machines and Mechanisms, Lightweight Structures, Mechanical Engineering Design, Computer-Aided Design and Simulation, Aircraft Performance, Fluid Dynamics, Compressible Flow

Projects

UCI Zotsun (American Solar Challenge) **April 2023 - August 2025**
Lead Mechanical Engineer

- Conceptualized, designed, and constructed UCI's first solar-powered race car 'SolEater' within two years, from scratch, designed to travel indefinitely under solar energy with a single occupant
- Conducted FEAs (finite element analyses) on a chromoly-steel chassis and occupant cell to withstand 10G impact scenarios and road safety standards, using SolidWorks, to create models, technical drawings, and Bill of Materials
- Designed a high-performance insulated enclosure for the 4 kWh (96V) battery pack and related components in SolidWorks to survive 5G impacts and support quick maintenance
- Remodeled the high voltage panel in SolidWorks Electrical with precise wire routing, terminal blocks, fuses, and current sensors to optimize space within the front section of the chassis to achieve better weight distribution
- Managed and coordinated a team of over 60 students to design and manufacture SolEater's aerobody, chassis, controls, electrical enclosures, and suspension for endurance racing in compliance with American Solar Challenge regulations

UCI Zotsun (American Solar Challenge) **July 2022 - May 2023**
Lead Suspension Engineer

- Designed and fabricated a double-wishbone front suspension with parallel control arms which reduced body roll and the camber change rate, significantly reducing tire wear and enhancing driver confidence
- Innovated a rear trailing arm inspired by sport motorcycles which could support the in-hub motor's unique mounting and load requirements
- Defined all the initially desired vehicle characteristics for our solar vehicle to be competitive at FSGP including suspension parameters, >200mi driving range, <600lb weight, 6in ride height, and handling dynamics

Senior Capstone Project **January 2025 – June 2025**
Embedded Systems Engineer

- Researched and developed two-phase liquid cooling cold plates for high wattage computer chips using 3M Flourinert liquid
- Designed and manufactured high-performance modular testing platform capable of generating uniform surface heat flux ranging up to 100 W/cm^2 over a 40 mm x 40 mm copper heated surface
- Used a 90% Copper / 10% PLA blend filament in a FDM 3D printer, followed by a sintering process to manufacture complex coldplate geometries and prevent film boiling at high temperatures.
- Created a custom data acquisition & PWM pump control system with Python, utilizing thermocouples and pressure transducers to automatically record data throughout testing process used to validate cold plate performance by calculating temperature at the heat exchange surface and pressure drop through the cold plate

Anteater Electric Racing **August 2022 - January 2023**
Human Interface & Brakes Engineer

- Conducted FEAs on a fiberglass-composite racing seat to ensure driver safety under 5G loads
- Tested for brake fade occurrence and heat buildup on front and rear brake systems with prototype car using an IR thermometer and sensor
- Flared copper brake lines and mounted brake rotors and calipers to SAE standards

Skills

Fabrication:
Metal machining (mill & lathe), MIG welding, laser cutting, CNC plasma cutter, 3D printing, GD&T, automotive work

Software:
SolidWorks (Electrical and Simulation), Autodesk Fusion, MATLAB, Ansys, C++, Python, JavaScript, Microsoft Office