**Zoox:**

At Zoox, my primary responsibilities included building and running thermal validation tests for the L5 vehicle powertrain and battery cooling loop. My project involved taking charge of "Cool Bot", a cooling system test stands that serves to validate 1D flow simulations conducted previously by my team.

I designed P&ID instrumentation diagrams, worked on the setup and troubleshooting of various sensors, and developed an automation script in VBS that significantly reduced testing times from 3 hours to 30 minutes. My analysis of system flow, based on multiple combinations of pump duty cycles and valve positions, resulted in design recommendations which increased system flow rate by 7.5%

**Solar Ship**

During my time at Solar Ship Inc., I collaborated closely with a team of 6 engineers to design the gondola for an 11 m diameter solar-electric airship intended for disaster relief missions.

I designed a lightweight, crash-resilient, extendable controller mount for the airship, which factored in the comfort and safety of the pilot.

Further responsibilities included modeling and integration of avionic components, resulting in a substantial size reduction of the avionics bay by 40% and an overall decrease in vehicle mass by 5%.

I also conducted flight tests of a smaller 3m diameter airship, ensuring the operations were conducted safely.

**Volvo Group Truck Technology**

At Volvo Group Truck Technology, I was tasked with the design, investigation, and optimization of a swirl air-water separation tank.

Using Star CCM+ multiphase flow, the new tank maintained a separation efficiency of 99% and decreased the mass from the original design by 40%.

Collaborating with Dassault Systèms, I further optimized water draining mechanisms in truck air intakes using the PowerFLOW multi-phase flow, aligning the system with SAE J554 standards.

My role also extended to cleaning and repairing powertrain CAD models using the CAD surfacing tool ANSA and preparing them for thermal simulations.

**MASA (University Rocketry Team)**

I led a team of 12 focused on the design, simulation, and manufacturing of a 4ft tall and 3ft wide rocket fin assembly for supersonic (Mach 4) flight conditions.

As the Aerostructure Lead, I spearheaded aero-thermal interaction studies using ANSYS Fluent Conjugate Heat Transfer, achieving an aero-thermal safety factor of 2.

Through aero-structural optimization using ANSYS Fluid-Structure Interaction, I increased the rocket's apogee by almost 30% through structural weight reduction.

I also coordinated with external manufacturers, resulting in a completed prototype of MASA's largest rocket fin assemblies in 3 months.