Zoox:

At Zoox Inc., during the summer of 2023, I took ownership of a stalled flow-mapping test rig project. Within a span of 9 weeks, I developed timelines, procured necessary components, and constructed the test rig, ultimately providing the team with essential flow data and design insights specific to the L5 cooling system. Additionally, 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 actionable design recommendations with the potential to increase system flow rates 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 tsorocopter airship intended for disaster relief missions. I created 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 tsorocopter, 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 during the early months of 2022. Using Star CCM+ multiphase flow, the design improvements maintained a separation efficiency of 99% and decreased the component's mass considerably from its original concept 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 handling powertrain CAD models, and preparing them for thermal simulations. The experience at Volvo also exposed me to a vast organizational setting and Agile team dynamics.

MASA (University Rocketry Team)

With the University Rocketry Team, MASA, between September 2019 and December 2021, I led a team of 12 focused on the design, simulation, and manufacturing of rocket fins for supersonic flight conditions. As the Aerostructure Lead, I spearheaded aero-thermal-structure interaction studies, achieving optimization of thermal-structural safety factors of 2 when facing 2-degree angle of attack at Mach 2.77, while reducing entire vehicle mass by 10%. I also conducted high-fidelity simulations to understand rocket aerothermodynamic behavior at high Mach numbers. Through aero-structural optimization, my efforts led to a substantial increase in the rocket's apogee by 30%. I also coordinated with external manufacturers, resulting in the creation of one of MASA's largest rocket fin assemblies in 3 month.