# ANDI ZHOU

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Dear Ms. Ebonie Ayers,

Thank you so much for reaching out and introducing me to Gecko Robotics! After your initial message, I did a deep dive on Gecko and found its mission to be not only fascinating but well-rooted and extremely relevant to today's world's aging infrastructure. I am submitting my application today to express my sincere interest in the new graduate position as a Test & Reliability engineer!

While my experience and educational background may seem unconventional for a robotic engineer, the principles and mathematical relations that pave the engineering foundation remain universal regardless of industries. I am convinced that the rigorous, fast-paced, testing acumen I developed in the automotive realm will serve as a valuable asset in robotic testing and reliability assessments.

My internships at companies like Zoox, Solar Ship, and Volvo Truck were examples where my passion for testing manifested itself in tangible results. At Zoox, using a combination of hands-on manufacturing, electrical harness assembly and testing automation, I took charge of a coolant test rig that had been stagnating for the past 2 years and completed it within 9 weeks. In addition, I also made design recommendations to the cooling system schematic based on testing data that improved the system flowrate by 7.5%. My internship ended with my manager highlighting that I had generated more data in those 9 weeks than the project had in the previous 2 years.

Robotic inspection, in my opinion, is a rather underappreciated sector within the field of robotics engineering. While the spotlight often shines on more consumer-oriented robotic applications, Gecko focuses on the foundational infrastructure that our modern society so dearly relies on. My internship experience at Zoox has taught me the immense potential of autonomy. As humanity inches towards the third industrial revolution in artificial intelligence, it is only natural that we leverage the immense power of AI to inspect and maintain our infrastructure that dates back almost a century. I am eager to join Gecko Robotics on this journey that transforms the underlying foundation of our society.

Thank you for your consideration and looking forward to hearing back from the team!

Sincerely,

Andi Zhou

# ANDI ZHOU

Canadian Citizen
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## Education

**University of Michigan Ann Arbor** **Ann Arbor, MI**
**M.S.E Aerospace Engineering** **GPA 3.86/4.00**
*Master of Science in Engineering* Graduating December 2023
**B.S.E Aerospace Engineering** **GPA 3.7/4.00**
*Bachelor of Science in Engineering* Graduated May 2022
**Clubs/Programs –** Michigan Aeronautical and Science Association (MASA), Sigma Gamma Tau, Michigan Active Aeroelasticity and Research Laboratory, AIAA, Private Pilot License (PPL)

## Skills

**Engineering Skills:** Mechanical Design/Testing, CFD, FEA, Heat Transfer, Multi-Phase Flow, Data Inferencing
**CAE Software:** ANSA, CATIA, IPEMotion, Star CCM+, PowerFLOW, Solidworks, ANSYS, NASTRAN, Linux OS
**Coding Language:** MATLAB, Python, C++, Simulink
Awards: **Dean's Honor List & University Honors (2018 – 2022)** | **Sigma Gamma Tau –** National Aerospace Honor Society

## Work Experience

**Zoox Inc.** Foster City, CA
*Thermal System Intern* *May 2023 – August 2023*
- Led and completed a 2-year stagnating coolant flow test rig in 9 weeks, yielding key fluid data for the battery and powertrain cooling system.
- Made P&ID design recommendations that increased system volumetric flowrate by 7.5%.
- Accelerated testing time from 3 hours to 30 minutes using Python/VBS automation script.
- Designed flow testing instrumentation diagram; worked extensively with pressure sensors and flowmeters.
- Managed the entire project from end to end; collaborated with the battery, compute, and powertrain team to obtain updated component data and specialized hardware.

**Solar Ship Inc.** Toronto, ON
*Mechanical, Test Engineer Intern, and Drone Test Pilot* *May 2022 – August 2022*
- Designed an 11-G crash-resilient extendable yoke mount for an airship cockpit, ensuring safe, reliable and ergonomic control for all pilots.
- Optimized avionics integration using Solidworks CAD, shrinking avionics bay size by 40% and reducing vehicle weight by 5%.
- Designed and conducted flight tests of a 3-m diameter tsorocopter at highly irregular hours, while maintaining maximum safety for other operators

**Volvo Group Truck Technology** Greensboro, NC
*Powertrain Simulation Intern* *January 2022 – May 2022*
- Optimized a swirl air-coolant separation tank using Star CCM+, achieving 99% separation efficiency and reducing its mass by 40%.
- Refined numerous powertrain CAD models using ANSA, repairing surfaces, and creating efficient meshes for thermal simulations via ANSA.
- Partnered with Dassault Systèms to enhance truck air intake water drainage, meeting SAE J554 standards using PowerFLOW.

## Leadership Experience

**MASA (University Rocketry Team)** Ann Arbor, MI
*Testing Engineer Lead* *September 2021 – December 2021*
- Led a team of 6 in mechanically testing the largest fin assembly (3-ft wide, 4-ft tall) that MASA has ever built.
- Validated fin surface static tests against Finite Element Analysis (FEA) model, obtained an error margin under 20%.
- Studied aerodynamic roll behaviors in a 5'x7' wind tunnel, quantified moment, and angular acceleration due to aerodynamic effects.
- Optimized team design cycles; accelerated design duration by 70%.

*Rocket Fin Lead* *September 2019 – December 2021*
- Led a team of 12 in designing, simulating, and manufacturing the largest rocket fins in organization history that could take on supersonic flight loads.
- Achieved a thermal-structural SF of 2 at Max-Q via aero-thermal-structural optimization using ANSYS Suite.
- Elevated rocket apogee from 40,000 to 60,000 feet via aero-structural mass optimization.
- Partnered with external manufacturers to craft MASA's largest-ever rocket fin assembly (3-ft by 4-ft) in 3 months.