

EDUCATION

University of Southern California	
Doctorate in Astronautics	Started Fall 2026
University of Minnesota	
Master of Science in Robotics	February 2025
Bachelor of Science in Computer Science	May 2022

FELLOWSHIPS AND AWARDS

NASA Space Technology Graduate Opportunity (NSTGRO) Fellow	2026-2030
Blue Origin: Lift-Off Award	June 2026
Awarded for substantial and highly impactful contributions to the Blue Alchemist project.	
International Rocket Engineering Competition: On The Spot Award	June 2023
Awarded for coordinating communication between base tent and launch pad during adverse weather.	
National Merit Scholarship Program: Finalist and Scholarship Winner	Fall 2018

RESEARCH EXPERIENCE

Next Generation Robotics Laboratory, University of Minnesota	September 2024 – June 2025
Graduate Researcher	Minneapolis, MN
<ul style="list-style-type: none">Developed novel clustering and ensemble based methods to isolate the percussive beats of the TRIDENT lunar drill from recordings of drill vibration.Explored the use of time-frequency features from wavelet analysis in vibration-based fault detection.Demonstrated that the frequency features of percussive drilling could be used to identify bit jamming faults 260 times faster than existing vibration-based systems, filling a need for high-frequency fault detection.	
Interactive Robotics and Vision Lab, University of Minnesota	September 2020 – December 2023
Graduate Researcher (January 2023 – December 2023)	Minneapolis, MN
<ul style="list-style-type: none">Researched N-Shot dynamic gesture recognition for Autonomous Underwater Vehicles (AUVs). Explored ensemble learning with XGBoost for the recognition system and shape-based methods for gesture encoding.Designed and prototyped internal mounting structures, health monitoring software, a leak sensing system, and magnetic power switches for a new open-source & low-cost AUV.	
Undergraduate Researcher (September 2020 – May 2022)	Minneapolis, MN
<ul style="list-style-type: none">Generated gesture training data from five initial examples by removing noise and identifying key points in gesture trajectories, clustering points via DBSCAN, and resampling from the resulting clusters.Managed robot preparation, robot operation, and collection of data for underwater gesture recognition research across pool and lake trials.	
Human Robot Interaction Institute, Carnegie Mellon University	Summer 2020
Undergraduate Researcher, Funded by National Science Foundation, Research Experience for Undergraduate Award	Virtual
<ul style="list-style-type: none">Created storyboards to isolate and explore human reactions to re-embodiment and profiling by robotic agents.Developed a data processing package in R to perform statistical analysis and visualization of key results from pilot studies.Recommended changes to storyboard content based on analysis of pilot study responses, ensuring storyboards accurately addressed the proposed hypotheses.	

INDUSTRY EXPERIENCE

Blue Origin	May 2024 – July 2026
Software Engineer I (February 2025 – February 2026), Software Engineer II (February 2026 - July 2026)	Los Angeles, CA
<ul style="list-style-type: none">Software lead for Blue Alchemist, a technology development project seeking to produce oxygen and solar panels from lunar regolith using molten regolith electrolysis (MRE).Planned tasks and priorities of a 2-5 person software team to support commissioning and maturation of multiple subsystems to meet project deadlines.Designed and implemented control and fault detection with ROS and python to handle diverse hardware configurations and varying levels of autonomy.Wrote procedures, led software tests, and worked with a multi-disciplinary team to perform a successful checkout of large TVAC system.	
Graduate Intern (May 2024 – August 2024)	Los Angeles, CA
<ul style="list-style-type: none">Modularized the software, established a control hierarchy, and added basic rule-based health monitoring to improve software safety during faults and support project expansion.	
ASTER Labs	May 2022 – January 2023
Research Scientist	Minneapolis, MN

- Developed firmware in C for localizing dentures using passive RFID.
- Proposed and helped write a successful grant application to the *National Institute on Aging* for Advancing Research on Alzheimer's Disease and AD-Related Dementia, resulting in roughly \$500,000 of funding. Project Number 1R43AG085709-01.
- Designed and built a 16" x 16" test platform and vision-based movement tracking system for Zumo robots to support swarm navigation research.

TEACHING AND LEADERSHIP EXPERIENCE

Mechanical Engineering Department, University of Minnesota

Spring 2024

Graduate Teaching Assistant

Minneapolis, MN

- In four weeks, developed a new flashlight assembly lab using UR5 robot arm, which involved CAD design, part prototyping, fixture development, coordination with machine shop, assembly sequence programming, and testing.
- Investigated small assembly process inconsistencies and determined the tool calibration process used in past years was incorrect. Documented correct procedure and ensured robots were properly calibrated for all following labs.
- Wrote lab manuals, presented labs to class, graded assignments, held office hours, and fixed issues with robots in a timely manner.

High Power Rocketry Team, University of Minnesota

September 2019 – December 2024

Graduate Mentor (January 2023 – December 2024)

Minneapolis, MN

- Advised team on revisions to flight computer firmware, hardware and mounting structure, with respect to modularity, integration, testing, vibrations, RF transparency, and heat.
- Provided technical and project planning mentorship to eight students, six of which went on to leadership positions in the following years. Mentored an additional fourteen students on how to build and launch a Level 1 rocket.
- Helped students develop their resumes, prepare for interviews, find professors to work with, and practice election speeches.

Firmware Lead (May 2020 – August 2024)

Minneapolis, MN

- Led firmware development of a 3U form-factor flight computer for rockets targeting 30,000 ft.
- Designed modular and fault-tolerant software to ensure data collection, transmission, and safe interactions with rest of vehicle during off-nominal flight or in the event of avionics failures.

General Member (September 2019 – August 2024)

Minneapolis, MN

- Trained a GANN to process pressure readings from custom pitot tube into mach number and angle of attack/sideslip.
- In three weeks, conceptualized and produced flight software and hardware for an APRS-based GPS transmitter to ensure descent tracking and recovery of a rocket intended to reach the Kármán line.
- Obtained certifications for motor casting, then helped cast and process grains for multiple O-class motors and one R-class motor.

Code the Gap, University of Minnesota

September 2020 – May 2022

Board Member, Founding Year

Minneapolis, MN

- On-boarded, trained, and managed volunteers who taught weekly computer science lessons to students at a local middle school.

RELEVANT COURSEWORK

Advanced Machine Learning • Machine Learning Fundamentals • Robot Vision • Computer Vision • Probability and Stochastic Processes • Optimal Estimation • Introduction to Robotics • Robotics • Aerospace Positioning, Navigation, and Timing

SKILLS

Languages: C, C++, Python, Java, R.

Libraries: OpenCV, ROS/ROS2, Tensorflow, Pytorch, Keras.

Fabrication: 3D Printing, Soldering, Laser Cutting, Lathe, Waterjet.

Software: Anaconda, LaTeX, Altium, Git, Bash, Docker, Matlab, Solidworks, Ansible.

Platforms: Linux, Microchip & STM Microcontrollers, Windows, FreeRTOS.

CERTIFICATIONS

High Power Rocketry: Level 2, Motors A-L

Amateur Radio: Technician License (KF0MYM)

MEMBERSHIPS

Tripoli: Since 2021 • **AIAA:** Since 2026

PUBLICATIONS AND PRESENTATIONS

Diagnostics for Drilling Fault Prediction in Planetary Drills

September 2025

S. Boelter, G. Brown, T. Stucky, E. Forberger, G. Wilson, M. Gini, B. Glass

Potsdam, Germany

9th International Symposium on Ice Drilling Technology

Fast Vibration-Based Autonomous Fault Detection for Extraterrestrial Drills

June 2025

E. Forberger, S. Boelter, B. Glass, M. Gini

USA, Los Angeles

2025 RSS Workshop on Resource Constrained Systems

A Concept for Planetary Drilling Autonomy

June 2025

S. Boelter, E. Temesgen, G. Brown, E. Forberger, B. Glass, M. Gini

USA, Atlanta

2025 ICRA Workshop on Field Robotics

Abstract: Autonomy and Arctic Analog Testing for Planetary Drills

May 2025

S. Boelter, E. Forberger, L. Weber, B. Glass, M. Gini

USA, Minneapolis

4th Ice Core Community Meeting (ICECOMM)

Social Robots in Service Contexts: Exploring the Rewards and Risks of Personalization and Re-embodiment

June 2021

S. Reig, M. Luria, E. Forberger, I. Won, A. Steinfeld, J. Forlizzi, J. Zimmerman

Virtual

2021 ACM Conference on Designing Interactive Systems