Grant Nations
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EDUCATION

MSc, Neuro-X Beginning February 2026
École Polytechnique Fédérale de Lausanne
Lausanne, Switzerland

BS, Computer Science *magna cum laude* August 2019 - May 2024
University of Utah
Salt Lake City, Utah, United States of America
- 4.0 Major/3.99 Cumulative GPA
- Physics minor

PUBLICATIONS

1. C. L. Nelson, **G. Nations** and D. S. Drew, "Empirical Study of Ceiling Proximity Effects and Electrostatic Adhesion for Small-scale Electroaerodynamic Thrusters," arXiv preprint arXiv:2410.19240, 2024.
2. **G. Nations**, C. L. Nelson and D. S. Drew, "Empirical Study of Ground Proximity Effects for Small-scale Electroaerodynamic Thrusters," 2024 IEEE International Conference on Robotics and Automation (ICRA), Yokohama, Japan, 2024, pp. 3868-3875.
3. **G. Nations** and J. Fletcher, "An Integer Programming Approach to Observation Scheduling for Space Domain Awareness," 2024 IEEE Aerospace Conference, Big Sky, MT, USA, 2024, pp. 1-12.

UNIVERSITY RESEARCH EXPERIENCE

Research Assistant — Electroaerodynamic Thrusters Jul 2023 - June 2024
University of Utah College of Engineering
Advisor: Prof. Daniel Drew
- Automate physical experiments with Python to collect over 180 million data points with a single command.
- Build Python API for simultaneous control of laboratory equipment: oscilloscope, load cell, high voltage power supply, programmable power supply, and 3D printer.
- Process millions of data points per experiment for plotting and analysis.

Research Assistant — Nuclear Materials Pyroprocessing Sep 2021 - Apr 2022
University of Utah College of Engineering
Advisors: Dr. Suhee Choi, Prof. Michael Simpson
- Assist in the research of high temperature reference electrodes for use in molten salt nuclear reactors.

- Run OCP, CV, and EIS analysis of three-electrode cell with high-temperature salt electrolyte for sets of working electrodes.
- Analyze electrolyte solution during long term tests using inductively coupled plasma mass spectrometry (ICP-MS) and auto titration.
- Use ICP-MS to detect metal concentrations within electrolyte solutions.

INDUSTRY EXPERIENCE

Software Engineer Nov 2024 - Jan 2026
Applied Intuition

- Lead system and algorithmic design as directly responsible individual (DRI) for an automated failure detection system in CI utilizing a distributed binary search algorithm.
- Build and maintain web services in AWS for (e.g.) Git LFS proxying and internal metrics collection.
- Develop an automated system for ingesting JSON logs from PostgreSQL into Snowflake database using version-controlled SQL data transformations.
- Build infrastructure for various systems including Buildkite, web APIs (e.g. Slack, TestRail), Docker, and web services.

Bioinformatics Intern Jun - Nov 2024
Iota Biosciences

- Use Numpy, Pandas, Scikit-learn, and PyTorch to implement random forest and neural network classifiers capable of predicting device manufacturing quality based on electrochemical data.
- Build an easily scalable, modular repository for the development of classification and regression models based on electrochemical data in Python with unit tests, linting, and code coverage.t
- Automate analysis and visualization of electrochemical data through Python workspaces designed for non-technical users.

Software Engineer Intern Aug 2022 - Oct 2023
KBR

- Research and develop parallelized scheduling algorithms for the observation of Earth-orbiting satellites from a network of ground-based sensors.
- Optimize code to reduce approximately 400,000 sensor transition calculations from over 1 hour to under 4 seconds.
- Use the Pyomo and GEKKO optimization libraries to construct and solve mixed integer, integer, and binary programming scheduling models.

LEADERSHIP/ACTIVITIES

Physics and Astronomy Network Mentor, Committee Member Aug 2022 - Jun 2023
University of Utah College of Science

- Prepare and lead group activities for freshman students to explore their opportunities within the Physics and Astronomy department and university.
- Discuss program activities with Physics and Astronomy professors and mentors to increase freshman seminar engagement.

NCAA Student Athlete Aug 2019 - May 2021
University of Utah Swimming and Diving

HONORS AND AWARDS

- **Undergraduate Research Opportunities Program Award**, University of Utah — Aug 2023
- **Bob and Mary Gilchrist Scholarship**, University of Utah College of Engineering — May 2023
- **Shane V. and Robin S. Robison Endowed Scholarship**, University of Utah College of Engineering — May 2023
- **Wilford and Dana Druk Scholarship**, University of Utah College of Engineering — May 2023
- **John Council Memorial Scholarship**, Foundation for IT Education — Nov 2022
- **Inspiring Futures Scholarship**, Mister Cares Foundation — Aug 2022
- **Academic Excellence Scholarship**, University of Utah — Aug 2019
- **National Merit Commended Scholar**, National Merit Scholarship Corporation — Jun 2019

TECHNICAL SKILLS

Programming Languages (in order of proficiency): Python, Typescript, Javascript, HTML, CSS, SnowSQL (SQL), Golang, C, C++, Java, MATLAB

Frameworks/RTEs/Libraries: Terraform, Playwright, Unittest, PyTorch, Numpy, Pyomo, Redux, React

Software Tools: Snowflake, Buildkite, Git, AWS, Docker, SolidWorks

Skills: Soldering, UV-laser micromachining, MIG welding, machining, SLA and FDM 3D printing, woodworking

RELEVANT COURSEWORK

- CS 5960: Human-AI Alignment
- CS 5353: Deep Learning
- CS 5350: Machine Learning
- CS 4150: Algorithms
- CS 4400: Computer Systems
- ECE 3610: Robotics and Cyberphysical Systems
- PHYS 2210 & 2220: Physics I & II
- PHYS 3760: Thermodynamics and Statistical Mechanics
- MATH 3150: Partial Differential Equations for Engineers
- MATH 3160: Applied Complex Variables
- FCS 3215: Development During Infancy and Childhood
- CHEM 1210: General Chemistry
- PSY 1010: General Psychology
- PHYS 3740: Introduction to Quantum Mechanics and Relativity

CERTIFICATIONS

- Mechanical Design Associate, Dassault Systèmes (SolidWorks)