

Grant Nations

EDUCATION

University of Utah — BS Computer Science, Physics Minor (*magna cum laude*)

FALL 2019 - SPRING 2024

- 4.0 major/3.99 cumulative GPA
- UROP Scholar, Fall 2023
- 7x scholarship recipient
- National Merit Commended Scholar
- Varsity Swim and Dive student athlete, Fall 2019 - Spring 2021

WORK HISTORY

iota Biosciences — Sensor Research Intern

JUNE 2024 - PRESENT, ALAMEDA, CA

- Use Numpy, Pandas, Scikit-learn, PyTorch, etc. to implement machine learning techniques such as random forests and neural networks to predict manufacturing quality based on electrochemical data.
- Build an easily scalable, modular repository for the development and deployment of classification and regression models based on electrochemical data in Python.
- Automate analysis and visualization of electrochemical data through a modular repository with easy-to-use interfaces designed for non-technical user interaction.

University of Utah College of Engineering — Robotics Research Assistant

JULY 2023 - JUNE 2024, SALT LAKE CITY, UT

- Automate physical experiments with Python to collect over 180 million data points with a single command.
- Build Python API for 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.
- Publish and present research at the ICRA 2024 conference in Yokohama, Japan.

KBR — Software Engineering Intern

AUGUST 2022 - OCTOBER 2023, SALT LAKE CITY, UT

- Research and develop parallelized scheduling algorithms for the observation of Earth-orbiting satellites from a network of ground-based sensors.
- Publish and present research at the 2024 IEEE Aerospace conference.
- Optimize code to reduce approximately 400,000 sensor transition time 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.
- Write robust unit tests, run code coverage reports, and profile expensive operations to ensure fast and reliable code.
- Communicate progress and discuss future direction in team standup meetings.

PROJECTS

Abysm X-Bot | Python, OpenAI API, Selenium, X Dev Platform

- Build an X (fka Twitter) bot that automatically scrapes top US news sites and reports on daily events.
- Interact with OpenAI's GPT 3.5 API for site summaries and tweet generation.
- Scrape hundreds of news articles daily using a headless Selenium Firefox browser.

Drones Stress Me Out! | Python, PyTorch, Numpy, Pandas

- Designed and implemented LSTM RNN network capable of predicting human collaborator stress in response to simulated drone behavior using PyTorch.

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PUBLICATIONS

Empirical Study of Ceiling Proximity Effects and Electrostatic Adhesion for Small-scale Electroaerodynamic Thrusters

C. Luke Nelson, **Grant Nations**, and Daniel S. Drew; ICRA 2025 - *Under review*

An Integer Programming Approach to Observation Scheduling for Space Domain Awareness

Grant Nations and Justin Fletcher; IEEE Aerospace 2024

Empirical Study of Ground Proximity Effects for Small-scale Electroaerodynamic Thrusters

Grant Nations, C. Luke Nelson, and Daniel S. Drew; ICRA 2024

TECHNICAL SKILLS

Languages (in order of fluency)

Python, Javascript, HTML, CSS, Java, MATLAB, C++, C, C#

Frameworks/RTEs/Libraries

NumPy, Scikit-learn, PyTorch, Pyomo, Redux, React, Express, Node.js

Tools

Google Cloud Storage, Git, SolidWorks, Github, Docker, CodeCommit

SOFT SKILLS

Self-direction, creativity, communication, teamwork, problem-solving, leadership, adaptability

RELEVANT COURSEWORK

- Software Development I, II
- Computer Security
- Computer Systems
- Algorithms
- Human-AI Alignment
- Machine Learning
- Deep Learning

CERTIFICATIONS

- Mechanical Design Associate (SolidWorks), Dassault Systèmes