Grant Nations

Computer science and physics student.

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EDUCATION

University of Utah, Salt Lake City — BCS Computer Science, Physics Minor

FALL 2019 - SPRING 2024

- 3.99 cumulative/4.0 major GPA
- Academic Excellence full tuition scholarship recipient
- National Merit Commended Scholar
- Varsity Swim and Dive student athlete, Fall 2019 - Spring 2021

WORK HISTORY

KBR — Operations Research Engineering Intern

August 2022 - PRESENT, SALT LAKE CITY, UT

- Research and develop a mixed-integer programming model and parallel machine scheduler for observations of Earth-orbiting satellites to produce quality schedules.
- Research and develop algorithms implementing logic-based benders decomposition to reduce the time needed to solve programming models.
- Implement MIP models and decomposition algorithms in Python using the Pyomo and GEKKO optimization libraries.
- Adapt the open-source Python package Astroplan to be usable within space domain awareness applications.
- Modify satellite observation scheduling API to handle requests from multiple telescopes in different geographical locations.
- Communicate progress and discuss future direction in biweekly team meetings.

University of Utah College of Science — PANDA (Physics AND Astronomy) Network Mentor

AUGUST 2022 - PRESENT, SALT LAKE CITY, UT

- Prepare and lead group activities for freshman students to explore their opportunities within the Physics and Astronomy department and university.
- Serve as a mentor to freshman students to aid in their navigation of career paths, academics, and the university.
- Discuss plans with Physics and Astronomy professors and mentors to achieve the best outcome for students in the freshman seminar.

University of Utah College of Engineering — Undergraduate Research Assistant

SEPTEMBER 2021 - APRIL 2022, SALT LAKE CITY, UT

- Assist in the research of high-temperature reference electrodes to improve the accuracy of molten salt nuclear reactor monitoring.
- Run short-term and long-term OCP, CV, and EIS analysis of three-electrode cell with high-temperature salt electrolyte to determine feasibility of reference electrodes.

PROJECTS

Wheeled Object Classification Robot | MATLAB, Arduino

- Lead a team of four students in building and programming a two-wheeled robot to navigate a game course and successfully classify objects using KNN.
- Use MATLAB to communicate via UDP to an Arduino MKR Wifi 1010.
- Implement course navigation algorithm and PD controller for line following.

Pupil | React, Redux, Django, Raspberry Pi, Celery, Amazon S3

- Lead a team of three students working on a hardware/software solution to streamline the use of hybrid classroom technology for professors and students on college campuses.
- Prototype automated video recording system using a Raspberry Pi, Django, and Celery.

TECHNICAL SKILLS

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

Frameworks/RTEs/Libraries
NumPy, Astroplan, Pyomo, SciPy, Redux, React, Qt, Express, Node.js

Tools
SolidWorks, AWS, Git, Github, Docker, CodeCommit, Firebase, Stripe, Amplify, Netlify, Heroku

SOFT SKILLS

Creativity, communication, teamwork, problem-solving, leadership, adaptability, responsibility

RELEVANT COURSEWORK

- **Computer Systems**
  - C, x86 assembly, code optimization
- **Computer Organization**
  - Computer architecture
- **Foundations of Data Analysis**
  - Statistical modeling, optimization algorithms
- **Algorithms**
  - Linear programming, optimization algorithms
- **Software Practice I & II**
  - Computer networks, debugging, unit testing, parallel programming, project planning and documentation, class diagrams, mockups
- **Computer Security**
  - Computer networks, encryption

CERTIFICATIONS

- Machine Learning, Data Science and Deep Learning with Python, Udemy
- Mechanical Design Associate (SolidWorks), Dassault Systèmes
- 2021 Complete Python Bootcamp from Zero to Hero in Python, Udemy
- Complete Web Development Bootcamp, Udemy