Daniel Zhan

Undergraduate Researcher, Software Engineer

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Education

Cornell University *Ithaca, NY*

B.S. in Engineering Physics and Computer Science: GPA: 3.5/4.0 *Expected May 2023*

Coursework:

Physics: Mechanics *(Honors) (TA)*, Electromagnetism I *(TA)*, Waves *(TA)*, Quantum Mechanics I, Electromagnetism II, Astronomy & Cosmology

Computer Science: Machine Learning, Algorithms, Functional Programming, Operating Systems, Computer System Organization, Object Oriented Programming and Data Structures, Market Networks

Math: Mathematical Physics I, Differential Equations, Multivariable Calculus, Linear Algebra, Discrete Structures *(Honors)*

Experience

Honeywell *Broomfield, CO*

Physics Lab Technician Intern *Jun. 2021 - Aug 2021*

- Developed a custom designed Surface Ion Trap Chip tester to automate scalable testing of Honeywell Quantum's surface electrode traps.
- Implemented an automated live hardware calibration, capacitance and resistance tests, and an intuitive GUI to measure the electrical characteristics of ion traps at the device level by interfacing Python with NI measurement hardware.
- This program is expected to reduce the time required to test ion traps by over 90% as well as eliminate sources of human error, rendering it feasible to test ion traps more frequently and in larger quantities.

Cornell Mars Rover *Ithaca, NY*

Software Engineer *Sept. 2020 - Present*

- Optimized the Rover's Hardware Abstraction Layer to enable lag-less responsiveness to 150 remotely transmitted instructions per minute by implementing bundled message formatting and processing.
- Upgraded the Rover's messaging format to ASCII for improved legibility.
- Currently planning out an implementation of Inverse Kinematics for the Rover's arm to enable intelligent endpoint movement without requiring specification for individual motor writes.

Merck *Kenilworth, NJ*

Automation Developer Intern *Jun. 2020 - Apr. 2021*

- Implemented efficient automation processes to time-consuming business tasks within the Merck Research Lab Workspace to enable up to 2000% speed-ups.
- Developed web-scraping automation tools using Python, Selenium, and Pandas to automate the collection and processing of competitor drug information.

Cornell Physics *Ithaca, NY*

Undergraduate Teaching Assistant *Jan. 2019 - Dec. 2020*

- Improved students' understanding of physical concepts and reasoning in discussion sections as a teaching assistant for Mechanics, Electromagnetism, and Waves.
- Guided students towards creative, multi-pronged approaches of replicating lecture results in a Mechanics laboratory section.

Projects

Exoplanet Data Visualizer

Python, Flask, AstroPy

- Assisted in the development of a Flask web application that displays transmission spectra of a theoretical exoplanet with adjustable characterization parameters.
- Developed functionality to interpret parameters using AstroPy and big datasets from ten known exoplanets to display transit depth versus wavelength graphs.

Foodie - Submission for Everest Hacks 2020

Python, TkInter

- Developed a desktop application that suggests recipes to create and ingredients to purchase for said recipes with the TkInter GUI library.
- Placed top 10 overall at Everest Hacks 2020.

Skills/Activities

Languages/Frameworks Python, Flask, Git, Java, C++, C, OCaml, HTML/CSS, LaTeX

Interests/Activities Badminton, Electric Bass, Civ V, Chess (I'm really bad), VP @ Cornell AEP Society, Mentor @ ACSU, Cornell ΛΦE