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)*

Anticipated Coursework in Fall 2021: Quantum Info Processing, Classical Mechanics, Mathematical Physics II, The Earth System, Earthquakes

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 a fast and live hardware calibration, capacitance and resistance tests, histogram plotter, flexible test settings, and an intuitive GUI to measure the electrical characteristics of ion traps at the device level by interfacing Python with NI computer and DMM hardware.
- This program reduces the time required to test ion traps by over 90% and eliminates sources of human error, and scales linearly with trap size.
- Shadowed lab scientists as they prepared various hardware tests and prepared vacuum chambers to conduct supercooling on ion trap chips.

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. Additionally, upgraded the Rover's messaging format to ASCII for better 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, thereby improving Rover competition prospects by simplifying user controls.

Merck   *Kenilworth, NJ*
Automation Developer Intern   *Jun. 2020 - Apr. 2021*
- Implemented various automation processes to time-consuming business tasks in the Merck Research Lab Space to enable 2000% speed-ups.
- Developed web-scraping 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*
- Collaborated with a Graduate TA to head discussion sections of 25 students in order to improve students' ability to reason about physics and facilitate group work on problem sets as an Undergraduate TA for the Introductory Physics Sequence: Mechanics, Electromagnetism, and Waves.
- Guided students towards creative means of replicating known physics and interpreting findings in a statistical manner in a Mechanics lab section.

Projects

Exoplanet Data Visualizer
Python, Flask, AstroPy   *Jun. 2020 - Aug. 2020*
- Built upon a Flask web application that displays transmission spectra of a theoretical exoplanet with adjustable characterization parameters.
- Developed backend functionality to interpret planet characterization parameters using Python, AstroPy and big datasets from ten known exoplanets to display a scalable forward model grid of exoplanet transmission spectra.

Foodie - Submission for Everest Hacks 2020
Python, TkInter   *Sept. 2020*
- 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 out of a total of 50 competitor teams.

Skills/Activities

Languages/Frameworks   Python, Flask, Git, Java, C++, C, OCaml, HTML/CSS, LaTeX
Interests/Activities   Team Captain @ CU Badminton, Badminton PE Instructor, Electric Bass, VP @ AEP Society, Mentor @ ACSU, ΛΦΕ