Jacob Shin

https://linkedin.com/in/jacob-shin • jacobshin.com • jacobshin313@gmail.com • +1 267 393 0368

Education

Temple University **Philadelphia, PA, United States** Aug 2020 - May 2024
Bachelor of Science in Physics
Cumulative GPA: 3.94 out of 4.00

Research Experience

Undergraduate Research Assistant **Temple University** August 2022 - Present
Department of Physics
Water Science Research Group
Advisor: Dr. Xifan Wu

- Currently analyzing density functional theory (DFT) simulation data to determine the role Van Der Waals forces play in water's unusal properties (e.g. negative thermal expansivity and density maximum at 4 °C)
- Processed 5 Terabytes of raw simulation data on a high performance computing cluster by vectorizing computations and using parallel processes

Undergraduate Research Assistant **Temple University** December 2021 - May 2022
Department of Physics

- Simulated the interactions of particles (e.g. electrons and protons) with detectors of different geometries and analyzed the resulting interactions using C++

Undergraduate Research Assistant **Temple University** January 2021 - May 2021
Department of Computer Science

- Implemented a web program to interface with the IoT (Internet of Things) devices to detect anomalies that could indicate security concerns in a smart home
- Navigated a codebase with over 40k lines of code and added 10k lines of code

Work Experience

Amazon Seattle, WA May 2022 - Aug 2022
Software Development Engineer Intern

- Created a Machine Learning (ML) Platform to automate the process of securely transferring ML data.
- Created a query API to filter through 10 terabytes of data using Typescript and Java

Security Innovation, Inc. Seattle, WA June 2021 - Aug 2021
Security Engineer Intern

- Wrote and reviewed 20 reports detailing the scope and severity of the vulnerabilities in code and recommended remediation steps
- Conducted independent research exploring the security of platforms using the ez80 CPU and presented it to the company

Princeton Plasma Physics Lab Princeton, NJ Oct 2019 - Dec 2019
Intern

- Created schematics for a Langmuir probe, which is used to measure plasma properties such as temperature and density based on the I-V (Current-Voltage) curve.
- Performed component selection for the Langmuir probe based on the specifications of the plasma parameters and the signal filtering requirements.

Skills

Programming Languages/Frameworks: Python, Jupyter Notebooks, Mathematica, Matlab, C, C++, Javascript
Markup Languages: LaTeX, Markdown, HTML, CSS
Programming Tools Linux, Bash, Git/Github, Vim, SSH/SCP
Other Multisim, Soldering, Basic Machine Shop Training
Human Languages: English

Activities

- **Temple Robotics** - Contributed to the code base for the robot to be used in the NASA Robotics Mining/Lunabotics Competition and operated the mill in the machine shop to create components
- **Temple Data Science Club** - Created challenge problems for students to learn programming and computer security
- **Temple Physics Club** - Member
- **Schuylkill Center Wildlife Clinic** - Volunteer (2021-2022)

Awards and Honors

- **Temple Presidential Scholarship** - Full Tuition Merit Scholarship for 4 years
- **Science Scholars Program** - Selective research program that offers a $4,000 stipend per summer for research
- **Temple Dean's List** - Granted to the top 16% of students: Fall 2020, Spring 2020, Fall 2021
- **Philly Codefest American Water IoT Prize** - Won $1000 in prizes for the best IoT electronics and coding project
- **Temple Honors Program** - Selective program for high-achieving students which offers advising and advanced honors level classes

Courses

- Analytical Mechanics
- Optics
- Principles of Electric Circuits
- Introduction to Modern Physics
- Mathematical Physics
- Thermal Physics
- Electricity and Magnetism
- Scientific Computing III
- Classical Mechanics
- Physics 1 & Physics 2
- Real & Complex Analysis I
- Basic Concepts (Intro to Proofs)
- Differential Equations with Linear Algebra
- Calculus III (Multivariable and Vector Calculus)
- Computer Systems and Low Level Programming
- Data Structures
- Mathematical Concepts in Computing I (Discrete Mathematics)