# Jacob Shin

linkedin.com/in/jacob-shin • github.com/jshin313 • jacobshin.com • jacobshin313@gmail.com • 267 393 0368

## Education

**Temple University** **BS in Physics (3.94 GPA)** Aug 2020 - May 2024

- Courses: Analytical Mechanics, Thermal Physics, Quantum Mechanics I & II, Electricity & Magnetism, Data Structures, Low Level Programming, Scientific Computing

## Skills

**Programming Languages/Frameworks:** C, C++, Java, Python, Javascript, x86 ASM, ez80 ASM
**Markup Languages:** LaTeX, Markdown, HTML, CSS
**Other:** Linux, Bash, Git/Github, Tmux, Vim, Arduino, REST APIs, GDB (GNU Debugger), Binary Exploitation

## Experience

Research Intern **Max Planck Institute for Plasma Physics** May 2023 - Aug 2023

- Utilized ML computer vision methods to track plasma blobs inside a nuclear fusion experiment

Software Development Engineer Intern **Amazon** May 2022 - Aug 2022

- Automated the retrieval and encryption of customer data, saving approximately 8 hours of engineering time per request
- Created a query API to filter through 10 terabytes of data using Typescript and Java
- Increased the concurrent user limit 20 fold for a secure Machine Learning Platform utilizing Access Control Lists (ACL), Virtual Private Cloud (VPC), Identity Access Management (IAM) policies, and encryption

Security Engineering Intern **Security Innovation** June 2021 - Aug 2021

- Identified 10 undiscovered vulnerabilities in 3 client projects by forcing software into states not intended by the developers (e.g. XSS, CSRF, Access Control Bypass, Session Fixation)
- Wrote and reviewed 20 reports detailing the scope and severity of the vulnerabilities and recommended remediation steps

Undergraduate Research Assistant **Temple University** January 2021 - May 2021

- Implemented a proxy to interface with the IFTTT (If This Then That) platform and IoT (Internet of Things) devices to detect anomalies that could indicate security concerns in a smart home using Node.js

## Projects

**Calculator Controlled RC Boat** (C++, TI-BASIC, Arduino)

- Utilized an Arduino and RF wireless modules to create the first ever calculator controlled, remotely controlled boat by interfacing a TI-84+ graphing calculator with a C++ library called ArTICL
- Enabled the library to support the TI-84+ calculator model by tracking down and fixing a bug in the implementation of the TI-Link protocol

**TI-Authenticator: 2-Factor Authentication With a Calculator** (C, HMAC, SHA1, OTP)

- Produced the first calculator app to provide rolling passcodes similar to Google Authenticator and Duo on a TI-84+ CE graphing calculator to enhance login security via 2-Factor Authentication
- Implemented the two types of One-Time Password (OTP) algorithms from scratch based on the RFC 4226 and RFC 6238 specifications based on a custom implementation of the HMAC algorithm