

Security Engineer

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Summary

Security engineer and researcher with passions in secure and distributed systems, cryptography, and programming languages. Proficient in low-level systems programming languages such as C/C++ and Rust, full-stack web development, penetration testing, and Linux systems administration. Looking to harness leadership capabilities and problem-solving skills to write impactful and research-oriented open-sourced code for a more technically-capable future.

Education

Francis Lewis High School

GPA: 4.0 / 4.0 (93.5)

QUEENS, NY

September 2015 – June 2019

Coursework: AP Global History, AP English Language and Composition, AP Biology, AP U.S. History, Honors Physics, Honors Chemistry, Precalculus, Science Research, Virtual Enterprise, Junior Reserves Officer Training Corp

Farmingdale State College

Finance and Economics

FARMINGDALE, NY

September 2017 – June 2018

Under guidance of Christopher Power, received college credit for economics and finance-related courses at a high school level. **Coursework:** Advertising Practice and Application, Graphic Design for Non-Majors, Principles of Economics (Macro)

The Cooper Union

Electrical Engineering

NEW YORK, NY

July 2017 – August 2017

Under guidance of Professor Yashodhan C. Risbud, took one semester equivalent of Digital Logic and Design course. Implemented 4-bit computer as final research project.

Work Experience

Trail of Bits

Security Engineering Intern

NEW YORK, NY

October '18 – present

Under guidance of CEO Dan Guido, Trail of Bits is a security RD company focused on developing open-sourced software and performing security audits. Collaborated with program analysis and cryptography team to produce a concolic execution tool for cryptographic verification. Contributed to symbolic execution tool Manticore and engaged in security audits.

NYU Secure Systems Lab

Research Intern

NEW YORK, NY

May '18 – present

Under guidance of Professor Justin Cappos, The NYU Secure Systems Lab conducts research in discovering security solutions for threats in modern-day software systems. Collaborated with PhD candidate on building crash replay system using Python and C. Independently worked on distributed password management protocol research project.

Virtual Enterprise International

VR Developer (contract)

REMOTE

April '18 – May '18

Virtual Enterprise International is a nonprofit organization dedicated to supporting student-led Virtual Enterprise firms. Collaborated on Virtual Reality Experience for tradeshow marketing using the Metaverse platform and JavaScript.

Nuapps

Chief Technical Officer

FRANCIS LEWIS HIGH SCHOOL, NY

September '17 – present

Nuapps is a student-led Virtual Enterprise app development firm. Led development on several cutting-edge apps Introduced team to working with industry-level technologies, including version control and unit testing. Collaborated on building hardware arcade machine for tradeshow marketing.

Francis Lewis High School

I.T Intern

FRESH MEADOWS, NY

July '16 – June '18

Provided software and hardware technical support for 5,000+ population school. Troubleshooted and diagnosed Windows 7 / macOS issues. Gained knowledge of server administration and the TCP/IP network stack. Assisted Patriot Battalion with website administration.

Extracurriculars / Volunteering

lewHacks()

FRESH MEADOWS, NY

Co-Founder and Director of Technology

July '17 – present

lewHacks() is a student-led high school hackathon for Francis Lewis High School. Led development of hackathon tech stack, including front-end and project management platform (JavaScript). Provided guidance to participants. Managed non-tech logistics for events, including sponsorship interaction and reward distribution.

JROTC Academic Leadership Team

FRESH MEADOWS, NY

Team Captain

October '17 – present

The Francis Lewis High School JROTC Academic Leadership Team is a nationally-acclaimed academic team with a focus on studying academic and leadership materials and competing in local, state and national-wide competitions. Won local, state, and national-wide competitions as a freshman, sophomore and junior. Led team as captain for competition for 2018 national-level competition.

Accolades

- JROTC Leadership and Academic Bowl - Second Place 2018 - *won Second Place national award out of thousands of JROTC Academic teams*
- National Piano Guild High School Diploma - *received diploma for completion of audition for high-school level piano repertoire*
- JROTC Leadership and Academic Bowl - First Place 2017 - *won First Place national award out of thousands of JROTC Academic teams*
- defHacks() Best Cybersecurity Hack 2016 - *won award for building dedsploit penetration testing framework*
- National Piano Guild Sonatina Award 2014 - *won award for auditioning classical Sonatina repertoire*

Notable Projects

- *sandshrew* - *Concolic execution tool for cryptographic verification and analysis.*
- *CrashSimulator* - *Crash-based record-replay system that enables debugging through anomaly injection.*
- *Ghostpass* - *Dead simple two-round password management cryptographic protocol that focuses on security and portability.*
- *lagrange* - *Portable library for Lagrange polynomial interpolation within finite fields.*

Publications

Lagrange: [design of a low-level mathematical library for polynomial interpolation over Galois finite fields](#)

Skills

Technical expertise: Software design and implementation, with(in) a team. Version control, unit testing, technical writing and presentation. Programming languages include: C/C++, Rust and x86 Assembly for low-level systems and binary exploitation. Python, Ruby and Go for full-stack web and general development. HTML/CSS and JavaScript/Node for full-stack web development. Linux skills include: Bash, (Ubuntu) server administration and deployment, penetration testing with Kali Linux, troubleshooting, virtualization/containerization (Docker, Vagrant).

Others: Languages: English (*full professional proficiency*), Chinese Mandarin (*intermediate speaking proficiency*).
Miscellaneous: Piano (Classical, Romantic and Contemporary Advanced Level)

Interest Buzzwords: Operating systems, decentralized systems, cryptography, programming languages, compilers, formal methods, functional programming, machine/deep learning.