



Joseph Zhang

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Education

University of Pennsylvania

B.S.E. Networked and Social Systems Engineering

- Committed Dec 2020

Philadelphia, PA

Aug 2021 – May 2025

Lynbrook High School

Student

- GPA: 4.0/4.0, SAT: 1570/1600

San Jose, CA

Aug 2017 – Jun 2021

Skills

Tools/Frameworks: Volatility, Git, GDB, VS Code, Vim

Subject Areas: Memory Forensics, Applied Cryptography, Networks, Data Science

Languages: C/C++, Python, Java

Human Languages: English, Chinese, French (Read/Write)

Experience

Research Assistant

Georgia Institute of Technology

May 2020 – Present

Atlanta, Georgia

- Youngest member of the Cyber Forensics Innovation (CyFI) Lab, work remotely with Prof. Saltaformaggio and a team of graduate students
- Authoring paper on the forensic detection of AI backdoors in memory images
- Develop Volatility plugins to recover CPython/Tensorflow internals from device memory and recreate ML model architecture
- Implement feature squeezing and gradient descent algorithms to identify adversarial examples
- Attended the IEEE Symposium on Security & Privacy 2020

Computer Security Intern

Naval Research Facility

Jun – Jul 2020

Norfolk, VA

- Remotely collaborated with faculty to design an automated client-side network prevention system for evil twin attacks
- Gained experience with advanced security frameworks and cryptographic schemes
- Wrote a paper and delivered presentations throughout the internship
- Accepted with 3 other interns across the nation, compensated \$1800

Research (papers linked)

Securing Attorney-Client Documents in the Cloud

Jan – Jul 2020

Independent Research

- Published my research on LawCrypt: a cloud security protocol involving secret sharing and AEAD constructions to secure law documents across multiple cloud providers
- Worked with manuscript reviewers for 2 rounds of review and 1 round of copy-editing
- Communicated with local law firms to conduct experiments and measure architecture efficiency

CoronaCrypt: A Privacy-Preserving Contact Tracing Application

Mar – May 2020

New York Academy of Sciences

- Led a team of high school students across the Bay Area to create app
- Designed underlying security protocols which calculate interaction and COVID-19 risk metrics
- Explored database management and various cryptographic constructions

Awards & Recognition

USA Computing Olympiad Platinum Division Contestant 2019

Top 200 in age group nationally

- Train daily on competitive programming sites, solve algorithmic math problems
- Teach free classes to about 20 students per year at local library

American Invitational Mathematics Examination Distinguished Qualifier 2020

Top 2.5% out of 55,000 national participants

- Study textbooks on competitive math theorems and proofs
- Scored 7 on subsequent AIME (top 430 high school seniors in the nation)

Extracurriculars

Founder/COO Jun 2018 – present

The Human Tech Project

- Raised \$11,000 for a computer resource center in the slums of Kampala, Uganda
- Lead fundraising campaign and communicate with US and Kampala nonprofits
- Recruit teachers and prepare curricula of programming courses designed for all ages
- Organized online hackathon with 250+ participants

Boy Scouts of America Aug 2015 – Present

Eagle Scout

- Published eBook with 1000+ views on integrating technology into backpacking, introduced older hikers to applications that further their safety
- Co-authored guidelines for safe hiking during the COVID-19 pandemic, gained endorsements from my Scouting council and gear companies
- Led 30 Scouts to complete Eagle Project at a local county park, constructed conservation signs
- Organized summer high adventure trip as Senior Patrol Leader

Music Dec 2018 – Present

Principal Violist of the Silicon Valley Youth Orchestra

- Organized benefit concerts, raised \$10,000+ for charities for disabled children
- Auditioned and performed at the Chicago International Midwest Clinic with solo
- Lead section rehearsals and help others mark scores and improve
- Church choir and worship accompanist, play duets and quintets at senior centers