Andrew Park

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EDUCATION

Rutgers School of Engineering, *New Brunswick, NJ* **Expected May 2023**

- Master of Science in Computer Engineering

Rutgers School of Engineering, *New Brunswick, NJ* **May 2022**

- Bachelor of Science in Electrical & Computer Engineering and Computer Science
- Minor in Mathematics

Related Coursework

Cryptography; Numerical Analysis; Mathematical Theory of Probability; Principles of Communication Systems; Linear Signals and Systems; Digital Signals Processing; Electronic Devices; Digital Electronics; Introduction to Information and Network Security; Introduction to Parallel and Distributed Programming; Malware Analysis and Reverse Engineering; Hardware and Systems Security; Robotics and Computer Vision; Systems Programming; Operating Systems Design; Distributed Systems; Computer Security; Introduction to Artificial Intelligence

RELEVANT EXPERIENCES

Research Assistant, *Rutgers University School of Engineering* **May 2020 - January 2022**

- Conducted research under the supervision of Professor Saman Aliari Zonouz
- Researched control system security and adversarial machine learning for theoretic attack on self driving algorithms in cars
- Worked with YOLO, a state-of-the-art, real-time object detection neural network, training the model for traffic sign detection

Online Instructor, *iD Tech Camps* **July 2020 - January 2022**

- Worked as an instructor for online lessons, creating a positive learning environment for students from K-12
- Developed lesson plans and tracked student progress to make sure students were learning and retaining lessons
- Taught different programming languages, such as C/C++, Java, Python, and computer science concepts

Research Assistant, *Rutgers University School of Arts and Sciences* **January 2021 - May 2021**

- Conducted research under the supervision of Professor Richard Martin
- Researched machine learning acceleration through the use of FPGAs, specializing in approximation algorithms
- Developed neural network in Go without using floating-point arithmetic, designed the fixed-point approximate arithmetic algorithms

OIT Consultant, *Rutgers Office of Information Technology* **March 2019 - March 2020**

- Worked as a student worker in campus computing centers assisting other students with questions regarding Rutgers services
- Troubleshoot computers and malfunctioning printers and report issues to supervisors when necessary
- Responsibilities included maintaining the state of the computer lab, performing routine cleanings and maintenance of printers

TECHNICAL SKILLS

- Programming experience in C/C++, Java, Matlab, Go, Rust, Python, Assembly(x86, RISC-V)
- Experience with computing technologies including CUDA, OpenCL, ISPC, Intel SGX, Spark, Hadoop, OpenMPI
- Experience working in Windows, Linux, and other Unix-like environments with build automation tools such as Ant, Gradle, CMake
- Static and dynamic analysis skills as well as reverse engineering experience for debugging and malware analysis
- Experience with cryptography libraries such as PALISADE and HEAAN for fully-homomorphic encryption

PROJECTS

Encrypted Neural Networks https://github.com/Iznoanygod/FHE-ml

- Worked in a group to develop a neural network library which uses encryption to perform secure computations on data
- Developed a neural network for detecting handwritten digits, using the MNIST dataset for training and testing
- Learned about fully-homomorphic encryption and applied this knowledge to the neural network library

SOUL: Secure O-Call Using Library Verification https://github.com/Iznoanygod/secure-ocalls

- Designed and implemented algorithms for enclave software to execute outside calls with a greater assurance of security
- Developed a library which implements enclaves using Intel SGX and performed security checks to ensure library integrity
- Researched different malicious techniques and developed safeguards to prevent common attacks such as DLL injection

Self Modifying Code Packer https://github.com/Foltik/MARE/tree/master/packer

- Worked in a group to develop an executable packer written in Rust and targeting PE binaries for Windows XP 32-bit
- Uses self modifying code and overlapping instructions to make static and dynamic analysis difficult to evade detection
- Was able to pack and encrypt malware to evade detection from state-of-the-art anti-malware software