

Garrett Gu

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EDUCATION

- Aug 2018 – Dec 2023 **B.S./M.S. Computer Science (Honors), B.S. Mathematics, University of Texas at Austin**
- **GPA:** 3.99, member of Turing Scholars Honors Program
 - **TA:** Computer Security (x3), Honors OS (x2), Honors Computer Architecture
 - **Graduate coursework:** Computer Graphics, Advanced Cryptography, Reinforcement Learning, Topics in NLP, Advanced OS, Systems Verification, Computer Security
 - **Undergraduate coursework:** Ethical Hacking, Virtualization, Honors AI, Computer Networks, Topology, Abstract Algebra, Number Theory

PROFESSIONAL EXPERIENCE

- May 2023 – Aug 2023
SF, USA **Apple, Information Security Intern**
- Reduced human time on an internal process by **87.5%** by evaluating and implementing NLP algorithms to analyze security literature using **Python, SpaCy, and scikit-learn**
 - Implemented data scraping, tf-idf, n-gram analysis, and state-of-the-art BERT fine-tuning to improve model accuracy
 - Proposed and implemented a prototype webapp for internal Apple developers using **Flask, JavaScript, and prompt engineering**
- Oct 2022 – Dec 2022
Liège, BE **Hex-Rays, Software Engineer Intern**
- Built **IDA Pro** feature to simplify Mixed Boolean-Arithmetic (MBA) obfuscated malware using **C++**, state-of-the-art research algorithms and **SMT solvers (shipped in IDA v8.3)**
 - Achieved superior success rates and **68-93%** reduced runtime compared to previous cutting-edge solutions through performance optimizations and heuristics
- May 2022 – Aug 2022
SF, USA **Plaid, Data Security, Software Engineer Intern**
- Reduced microservice certificate validity period by **50%** by automating AuthN/AuthZ certificate rotation in **AWS IAM** using a **Kubernetes CronJob in Go**
 - Enhanced company-wide product security for years to come by designing and implementing cryptographic signing within a key-management service (KMS) using **Go, Python, and Node.js**
- May 2021 – Aug 2021
Remote **Praetorian Security, Security Engineer Intern**
- Proposed and prototyped **GoKart**, a new open-source **Go** security code scanner (**SAST**) designed for vastly reduced false-positive occurrence (**2,000+** stars on GitHub)
 - Conducted in-depth security audits and assessments on several Fortune-500 companies
- May 2020 – Aug 2020
Remote **Microsoft, M365 Core Security, Software Engineer Intern**
- Saved an estimated **200 hours** of engineer time per year and improved access security by training an **ML recommendations system** for data-center access control with **scikit-learn**
 - Final **C#** API implementation achieved **93% accuracy** benefiting **98%** of >1000 test users

PROJECTS

- Jun 2021 – May 2022 **Ghidra-Wasm, Open-Source Reverse-Engineering for WebAssembly**
- Developed a fully-featured WebAssembly analysis plugin for **Ghidra**, a reverse-engineering framework developed by the NSA, enabling full decompilation for the first time
 - Collaborated with other contributors remotely for inclusion into Ghidra's main feature set
- Sep 2020 – Sep 2021 **Constant-Time WebAssembly, End-to-End Verified Side-Channel Resistant Cryptography**
- Modified existing **Rust WebAssembly JIT** compiler to accept code in a secure Wasm superset
 - Implemented **Ghidra** verifier to formally verify security of resulting **AArch64** machine code
 - Presented and successfully defended new extension proposal to Wasm Spec Group for voting

SKILLS AND AWARDS

Languages

JavaScript, TypeScript, C, C++, SQL, Java, C#, Rust, bash, Python, WebAssembly, Go, OCaml, Verilog, x64/AArch64/RISCV64 Assembly

Tools

React, gdb, git, docker, Ghidra, PyTorch, scikit-learn

Competitions

1st - CCDC (Cyber-Defense) SW Regional 2021
USACO Platinum Qualifier
2nd - BSidesSF CTF 2022
1st - TAMUHack CTF 2022
1st - SunshineCTF 2019