Garrett Gu

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EDUCATION

08/2018 – 05/2022 Austin, TX	**B.S, Computer Science (Honors), B.S. Mathematics,** *University of Texas at Austin* - **GPA**: 4.0, member of Turing Scholars Honors Program - **TA**: Operating Systems, Honors Computer Architecture - **Graduate coursework**: Automated Logical Reasoning, Systems Verification and Synthesis, Advanced Operating Systems, Computer Security - **Undergraduate coursework**: Ethical Hacking, Virtualization, Honors Artificial Intelligence, Computer Networks, Algorithms, Honors Computer Architecture, Honors Data Structures

PROFESSIONAL EXPERIENCE

05/2021 – 08/2021	**Security Engineer Intern,** *Praetorian Security* - Proposed a new mechanism for **Go** SAST tool design, resulting in a new open-source security scanner with vastly reduced false-positive occurrence - Performed in-depth security assessments on several Fortune-500 companies
05/2020 – 08/2020	**Security Engineer Intern,** *Microsoft, M365 Core Security* - Implemented an end-to-end **recommendations system** for data-center access control - Performed feature selection model evaluation using **scikit-learn** and **MS SQL** - Final **C#** implementation achieved **93% accuracy** benefiting **98%** of >1000 test users, saving an estimated **200 hours** of engineer time per year while improving security
05/2019 – 08/2019	**Software Engineer Intern,** *The BHW Group* - Developed **Go/React Native** applications for medical information and school alerts, contributing thoughtful database schemas and a bespoke, performant document storage format

PROJECTS

06/2021 – present	**Ghidra-Wasm,** *Open-Source Reverse-Engineering for WebAssembly* - Developed first fully-featured WebAssembly plugin for **Ghidra**, a reverse-engineering framework provided by the NSA, enabling full disassembly and decompilation
09/2020 – present	**Constant-Time WebAssembly,** *Advised by Dr. Hovav Shacham* - Modified existing **Rust WebAssembly JIT** compiler and runtime to accept code in a constant-time superset of Wasm and implemented static data-flow analysis in **Ghidra** to formally verify security of resulting ARM machine code - Devised and successfully presented new constant-time extension proposal to WebAssembly **Specification Group** for voting
04/2019 – 06/2019	**OOPBoy,** *Game Boy Emulator* - Built a state-of-the-art, fully-featured Nintendo Game Boy emulator in Java - Surpassed official Nintendo emulator in several CPU accuracy benchmarks

ORGANIZATIONS

12/2018 – present	**UT Information and Systems Security Society,** *Director of Engineering* - Created hundreds of cybersecurity challenges for events with >**100** contestants on average - Prepared and presented writeups and talks over security techniques and best practices - Authored several novel challenges for an international CTF attracting >**5,000** unique competitors from >**60** countries

SKILLS AND AWARDS

Languages
JavaScript, TypeScript, C, SQL, Java, C#, Rust, bash, Python, WebAssembly, LaTeX, Verilog, Go, OCaml

Tetris
Top 0.07% player on Tetris Effect Zone Battle

Tools
React, React Native, Express, gdb, git, docker, Ghidra

Competitions
USA Computing Olympiad (USACO) Platinum Qualifier
First Place CCDC Southwest Regional 2021