

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, Operating Systems, Computer Security
 - **Undergraduate coursework:** Ethical Hacking, Virtualization, Honors Artificial Intelligence, Computer Networks, Honors Computer Architecture, Honors Data Structures

PROFESSIONAL EXPERIENCE

- 05/2020 – 08/2020
- Cybersecurity Engineer Intern, Microsoft**
- Implemented **machine learning** to develop an end-to-end **recommendations system** for M365 Core datacenter **access control** permissions
 - Performed feature selection and evaluation on large datasets using **scikit-learn** and **MS SQL**
 - Achieved **93% accuracy** benefitting **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**
- Crafted a large-scale school alerts system using **React Native** and **Go** on a team of five, proposing thoughtful API and relational database specifications
 - Created a medical information app using **React Native** on the same team, contributing a bespoke, performant JSON-based document storage format
 - Provided detailed and helpful **code reviews**, greatly improving codebase quality

PROJECTS

- 09/2020 – present
- ct-Wasmtime, Constant-Time WebAssembly**
- Generated and verified first end-to-end verified constant-time library using currently unreleased **ARMv8.4** feature in order to avoid timing side-channel attacks
 - Modified existing **WebAssembly JIT** compiler and runtime to accept code in ct-wasm, a constant-time superset of WebAssembly
 - Implemented static dataflow analysis to verify constant-timeness of ARM machine code in **Ghidra**, an open-source reverse-engineering framework released by the NSA
- 04/2019 – 06/2019
- OOPBoy, Game Boy Emulator**
- Built a state-of-the-art Nintendo Game Boy™ emulator on a team of two using **Java**
 - Achieved full-system emulation of **dozens of games**, including Zelda, Mario, Tetris, Pokemon, Pac-Man and Kirby at full speed with full support for sound, color, save states, and rewind
 - Emulator surpasses official Nintendo emulator in several CPU accuracy benchmarks

ORGANIZATIONS

- 12/2018 – present
- UT Information and Systems Security Society, Engineering Officer**
- Created Capture-the-Flag **cybersecurity** challenges using C, C++, JavaScript, and assembly for biweekly competitions with >**100** contestants on average
 - Prepared and presented writeups and talks over security techniques and best practices, including **web exploitation**, **code injection**, **buffer overflows**, and **reverse engineering**
 - Authored several innovative challenges for an international CTF, attracting >**5,000** unique competitors from >**60** countries

SKILLS

Languages

JavaScript, TypeScript, C, SQL, C#, Java, bash, Python, Rust

Competitive Programming

USA Computing Olympiad (USACO) Platinum Qualifier

Tools

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

Tetris

Top 0.1% player on Tetris Effect Zone Battle