# Garrett Gu

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## EDUCATION

08/2018 –
05/2023
**B.S./M.S., Computer Science (Honors), B.S. Mathematics,** *University of Texas at Austin*
- **GPA**: 4.0, member of Turing Scholars Honors Program
- **TA**: Honors Operating Systems, Honors Computer Architecture
- **Graduate coursework**: Cryptography, 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 and prototyped **GoKart**, a new open-source static application security testing (**SAST**) tool with vastly reduced false-positive occurrence (**1500+** GitHub stars)
- Conducted in-depth security assessments on several Fortune-500 companies, performing exploit development and client communication

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 and 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 code reviews, database schemas, and a new 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 secure 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
- Nominated for UTCS Best Honors Thesis Award

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*