# 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, Honors OS (x2), Honors Computer Architecture
- **Graduate coursework**: Advanced Cryptography, Cryptography, Reinforcement Learning, Advanced OS, Systems Verification, Automated Logical Reasoning, Computer Security
- **Undergraduate coursework**: Ethical Hacking, Virtualization, Honors AI, Computer Networks, Topology, Abstract Algebra, Number Theory

## PROFESSIONAL EXPERIENCE

Oct 2022 – Dec 2022 Liège, BE

**Hex-Rays, IDA Pro,** *Software Engineer Intern*

- Using **C++**, built **IDA Pro plugin** to simplify Mixed Boolean-Arithmetic (MBA) obfuscated malware using state-of-the-art research algorithms and **SMT solvers**
- Implemented performance optimizations and heuristics, improving success rates and reducing runtimes by **68-93%** compared to previous cutting-edge solutions

May 2022 – Aug 2022 SF, USA

**Plaid, Data Security,** *Software Engineer Intern*

- Using **Go**, automated AuthN/AuthZ certificate rotation in **AWS IAM** using a **Kubernetes** CronJob, allowing for a reduction in certificate validity period by **50%**
- Using **Go**, **Node.js**, and **Python**, designed and implemented performant, secure cryptographic signing support within a key-management service (KMS) API

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*

- Trained 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, saving an estimated **200 hours** of engineer time per year while improving security

## PROJECTS

Jun 2021 – present

**Ghidra-Wasm,** *Open-Source Reverse-Engineering for WebAssembly*

- Developed a fully-featured WebAssembly analysis plugin for **Ghidra**, a reverse-engineering framework maintained 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
- Devised and successfully presented new extension proposal to Wasm Spec Group for voting

## LEADERSHIP

Dec 2018 – present

**UT Information and Systems Security Society,** *Co-President*

- Created dozens of cybersecurity challenges for events with **>100** contestants on average
- Prepared and presented write-ups and talks over security techniques and best practices
- Authored novel challenges for a CTF attracting **>5,000** competitors from **>60** countries

## SKILLS AND AWARDS

**Languages**

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

**Tools**

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

**Competitions**

1st Place CCDC SW Regional 2021
USACO Platinum Qualifier
2nd Place BSidesSF CTF 2022
1st Place TAMUHack CTF 2022
1st Place SunshineCTF 2019