

# 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 (x2), Honors OS (x2), Honors Computer Architecture
  - **Graduate coursework:** Computer Graphics, Program Synthesis, 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

- May 2023 – Aug 2023  
SF, USA   **Apple, Information Security Intern**
- Using Python, SpaCy, and scikit-learn, reduced human time on an internal process by **87.5%** by evaluating and implementing NLP algorithms to analyze security literature
  - Implemented tf-idf, n-gram analysis, and state-of-the-art BERT fine-tuning to improve model
  - Devised and implemented a prototype webapp for internal Apple developers using Flask, JavaScript, and prompt engineering
- Oct 2022 – Dec 2022  
Liège, BE   **Hex-Rays, IDA Pro, Software Engineer Intern**
- Using **C++**, built **IDA Pro** feature to simplify Mixed Boolean-Arithmetic (MBA) obfuscated malware using state-of-the-art research algorithms and **SMT solvers (shipped in v8.3)**
  - 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 cryptographic signing within a key-management service (KMS), enhancing product security for years to come
- 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
- May 2019 – Aug 2019   **The BHW Group, Software Engineer Intern**
- Developed **Go/React Native** applications for medical information and school alerts

## PROJECTS

- 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, LaTeX, Verilog, Go, OCaml, x64/AArch64/RISCV64 Assembly

### Tools

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

### Competitions

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