Garrett Gu

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EDUCATION

University of Texas at Austin *2022*
B.S. in Computer Science (Honors)
B.S. in Mathematics
GPA: **4.0**

– Member of **Turing Scholars** CS Honors Program
– **TA**: Operating Systems
– **Current coursework**: Ethical hacking, Graduate OS, Virtualization
– **Completed coursework**: Graduate Security, Operating Systems, Artificial Intelligence, Computer Networks, Computer Architecture, Data Structures

SKILLS

Languages
– JavaScript, TypeScript, C, SQL, C#, Java, bash, Python, C++, Go

Frameworks
– React, React Native, Express, Meteor, Flask

Competitive Programming
– USA Computing Olympiad (USACO) Platinum Qualifier

Tetris
– Ranked top 10% of Tetris players globally
– Founder of UT Tetris Society, one of the largest organizations of its kind

EXPERIENCE

Microsoft 2020
Software Engineer Intern ***C#, SQL, Python, TypeScript, React***
– Used **machine learning** to develop an end-to-end recommendations system for **M365 Core** datacenter access control permissions
– Performed feature selection and model evaluation on a large-scale dataset using **scikit-learn** and **MS SQL**
– Achieved **93% accuracy** with **98% user satisfaction** out of >1000 test users, saving at least **200 hours** of engineer time per year

The BHW Group 2019
Software Engineer Intern ***JavaScript, Go, Postgres***
– Developed a large-scale school alerts system using **React Native** and **Go** on a team of five, proposing thoughtful API and relational database specifications
– Provided detailed and helpful **code reviews**, greatly improving codebase quality

UT Information and Systems Security Society 2018 - Present
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 talks over security techniques and best practices, including **CSRF**, **XSS**, **injection**, and **digital forensics**
– Authored several innovative challenges for UTCTF, an online cybersecurity competition with **>5,000 unique competitors** from **>60 countries**

PROJECTS

RISC-V Return-Oriented Programming 2020
Research Project ***C, RV64GC Assembly***
– Modified existing open-source tools to discover ROP gadgets under **RISC-V**
– **First demonstration** of arbitrary memory reads/writes, arithmetic, function calls with arguments, and conditional branching using gadgets found in RISC-V glibc and a novel self-modifying ROP technique
– Developed a **PoC compiler** from a simple Turing-complete language to RISC-V ROP in order to prove Turing completeness

OOPBoy 2019
Game Boy Color™ Emulator ***Java, LR35902 Assembly***
– Built a cycle-accurate Nintendo Game Boy™ emulator on a team of two
– Emulator plays **dozens of games**, including *Zelda*, *Mario*, *Tetris*, *Pokemon*, *Pac-Man* and *Kirby* with **sound**, **color**, **save states**, and **rewind**
– Emulator surpasses official Nintendo emulator in **accuracy** benchmarks

Forward Tutoring 2017 - 2018
501(c)3 non-profit for online tutoring **JavaScript**
– Built from scratch an online tutoring system using **Meteor** and **React**, leading to a **>140% increase** in user registrations
– Coordinated the algorithmic selection and scheduling of tutors, allowing a **>50% increase** in availability and a **>290% increase** in tutor engagement