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
– Current coursework: **Ethical hacking**, Virtualization, Advanced OS
– 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, PHP

Frameworks
– React, React Native, Express, Meteor, React 360, Qt, Java Swing

Competitive Programming
– USA Computing Olympiad (**USACO**) Platinum Qualifier

Tetris
– Top 90 Puyo Puyo Tetris players in Texas
– 46s 40-line sprint
– 45 average APM
– Founded UT Tetris Society

EXPERIENCE

Microsoft 365 Core Security 2020
Software Engineer Intern ***C#, SQL, Python, TypeScript, React***
– Used **machine learning** to develop an end-to-end recommendations system for 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

University of Texas at Austin 2020
Teaching Assistant, Operating Systems ***C, C++, x86 Assembly***
– Hosted weekly office hours to guide students in debugging **operating systems** implementations and discovering **race conditions** using **gdb**
– Taught and reviewed course material in weekly lectures

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 with a teammate
– Emulator plays **dozens** of games, including ***Zelda***, ***Mario***, ***Tetris***, ***Pokemon***, ***Pac-Man*** and ***Kirby*** with sound, color, save states, and rewind
– Emulator surpasses Nintendo 3DS Virtual Console 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