Garrett Gu

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EDUCATION

The University of Texas at Austin *2021*
B.S. in Computer Science (Honors)
GPA: **4.0**

– Member of **Turing Scholars** Computer Science Honors Program
– Coursework: Architecture, Data Structures, Competitive Programming, Probability, Discrete Math
– Transferred Coursework: Systems Programming, Linear Algebra, Differential Equations I, II

SKILLS

Languages
– Fluent in JavaScript, C, Go, and Java
– Familiar with bash, Python, C++, PHP, Octave, and SQL

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

Competitive Programming
– Won multiple UT-wide and regional programming and Capture-the-Flag competitions
– USA Computing Olympiad (**USACO**) Platinum Qualifier
– HackerRank Gold Problem Solving badge

EXPERIENCE

The BHW Group 2019 - Present
Web and Mobile Intern ***JavaScript + Go***
– In a team of four, developed a cross-platform **React Native** app for a client in the medical industry
– In the same team, currently developing a large-scale school alerts system using **React Native**, **Go**, and **PostgreSQL**
– Both apps planned for release later this year

UT Information and Systems Security Society 2018 - Present
Engineering Officer
– Created Capture-the-Flag cybersecurity challenges for biweekly competitions for over **100** contestants on average
– Prepared and presented talks over security techniques and best practices, including CSRF, XSS, injection, and digital forensics
– Co-organized and authored several innovative challenges for **UTCTF**, an online cybersecurity competition with >**5,000** unique competitors from >**20** countries and a **24.83/25.0** public rating on ctftime.org

PROJECTS

OOPBoy 2019
Game Boy Color™ Emulator ***Java** + **Z80 assembly***
– In a team of two, built a cycle-accurate Nintendo **Game Boy™** emulator
– Developed, tested, and debugged stereo sound chip, cartridge, timing module, MMU, CPU sections from scratch
– Created a Game Boy™ debugger with breakpoints, core dumps, instruction history, and memory access
– Fully-playable ***Zelda***, ***Mario***, ***Wario***, *Tetris*, ***Pokemon***, *Pac-Man* and ***Kirby*** emulation with color, save state, and turbo mode support
– Surpassed Nintendo 3DS Virtual Console in accuracy benchmarks
– Full source code available on GitHub

TetrisBrain 2018
Tetris implementation and AI **Java**
– Built a custom **genetic algorithm** to generate a greedy algorithm which played Tetris with the goal of long term survival
– Able to clear hundreds of thousands of lines in one game

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