Joyce Lai

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EDUCATION

The University of Texas at Austin, Austin, TX   May 2025

Bachelor of Science, Computer Science - Turing Scholar Honors Program

GPA: 3.64

Relevant Coursework: Honors Principles of Computer Systems, Honors Network Security, Honors Computer
        Architecture and Organization, Honors Discrete Mathematics, Honors Data Structures and Algorithms

EXPERIENCE

Nightwing, Austin, TX

CS439 (Operating Systems) Undergraduate Course Assistant
- Designed in-depth and conceptual quizzes to assess students' understanding of material
- Led discussions of more than 70 students that tackled the complex topics necessary to complete projects
- Selected and designed innovative test cases for over 7 projects ranging from preemption to virtual memory

College of Natural Sciences at UT Austin, Austin, TX   January 2024 - May 2024

CS439 (Operating Systems) Undergraduate Course Assistant
- Designed in-depth and conceptual quizzes to assess students' understanding of material
- Led discussions of more than 70 students that tackled the complex topics necessary to complete projects
- Selected and designed innovative test cases for over 7 projects ranging from preemption to virtual memory

Raytheon CodeX, San Antonio, TX   May 2023 - August 2023

Vulnerability Research Engineering Intern
- Discovered *zero-day Windows* usermode to kernelmode privilege escalation on a valid, signed driver
- Developed a bring-your-own-driver attack proof of concept for *zero-day*
- Designed schematic and layout for Espressif-based *PCB* for recruiting and presentation at CodexCon

Metropia, Houston, TX (Hybrid/Remote)   June 2022 - August 2022

Software Engineering Intern
- Streamlined traffic data handling for *MySQL* databases to reduce processing overhead by 50%
- Developed *automation* for feature extraction for Metropia's multimodal machine learning model
- Improved algorithm to preprocess GTFS data to transition to real-time app deployment

PROJECTS

GheithOS
- Participated in a class project to fully implement a functional operating system from kernel up
- Implemented PAE to allow for data-execution prevention and standardized permissions in syscalls

Out of Order Processor (LC3)
- Developed an out of order *LC3* processor in *Verilog* as part of a three person team
- Designed and implemented the two arithmetic units as well as the reorder buffer
- Saw an improvement of around 50% in runtime efficiency from linear pipeline

LEADERSHIP & COMMUNITY INVOLVEMENT

Information and Systems Security Society (ISSS), Austin, TX   August 2022 - Present

Corporate and Communications Officer
- Negotiate sponsorships for the organization in order to gain funding to support our members
- Communicate and host the annual UT Capture the Flag event with worldwide attendance
- Design

SKILLS

Computer Languages: x86/64, ARM, MIPS, RISCV, C, C++, Python, Java, GoLang, Rust

Technical Skills: Linux/*nix*, Shell Scripting, Reverse Engineering, Binary Exploitation, Unit Testing, Wireshark,
        Machine Learning/AI, Android Development, HTML, CSS, Software Engineering, Applicational Statistics,
        Competitive Programming

Languages: Native Mandarin Chinese, Native English

Certifications: *Cisco Certified Networking Associate, IT Fundamentals+ CompTIA*