

Richie Tran

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EDUCATION

Carnegie Mellon University

B.S. Computer Science and Machine Learning

Pittsburgh, PA

May 2028

Relevant Coursework

Data Structures and Algorithms, Computer Systems, AI Representation and Problem Solving, Machine Learning I, Discrete Mathematics, Functional Programming, Ideas in Theoretical Computer Science

PROJECTS

MyEyes | Python, Swift, Flask

- An audio-based iOS app to assist visually impaired users with real-time hazard detection.
- Integrated LiDAR and camera-based obstacle identification with Siri commands for accessibility.

Dynamic Storage Allocator | C

- 64-bit dynamic memory allocator with correct alignment and metadata management.
- Optimized us segregated free list implementation to improve space utilization and throughput.

Virtual Machine for C | C, Bytecode

- Custom virtual machine and translator pipeline for converting a simplified C-like language into C.
- Implemented a bytecode interpreter with parsing, memory management, and instruction dispatch.
- Applied compiler design principles including translation and operational semantics to drive program execution.

EXPERIENCE

Software Engineer Intern | Opportunity Knocks

October 2025 - Present

- Leading mobile app development using React Native and Supabase, translating web application to cross-platform iOS and Android, expanding user base by 20%.
- Maintain web app by implementing new features and resolving bugs to ensure system reliability.
- Collaborate with cross-functional engineering team on full-stack development and project delivery.

Software Developer | Scotty Labs, Carnegie Mellon University

August 2024 – Present

- Developed AI-powered presentation tool providing real-time feedback using React and Node.js.
- Built augmented reality mobile tag game with React Native, implementing camera-based mechanics.
- Contributed to campus applications (CMUMaps, CMUResearch, CMUEats) to improve student accessibility and engagement.

Driverless Control Engineer | Carnegie Mellon Racing

August 2024 – Present

- Developed and optimized path-planning algorithms in C for autonomous navigation across multiple track configurations and racing conditions.
- Implemented real-time control systems for driverless vehicle operation, integrating sensor fusion and trajectory optimization for competitive performance.

Lead Programmer | FRC, Clarkstown Cyborgs

September 2020 – August 2024

- Engineered autonomous path-planning algorithms and swerve drive control systems, implementing teleoperated functionality with custom controller mappings for competition performance
- Mentored 40+ members on software architecture, mechanical assembly, and electrical integration.
- Developed team website showcasing projects and achievements, increasing community engagement and funding by 30%.

SKILLS

Programming Languages: C, C++, Python, Swift, Java, JavaScript, HTML, CSS, TypeScript, Bash

Tools: Node.js, React, Django, Firebase, Supabase, React Native, SwiftUI, Git, Linux, NumPy, Figma