# Richie Tran

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## Education

**Carnegie Mellon University** Pittsburgh, PA
*B.S. Computer Science and Machine Learning* May 2027

**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*

- A "Digital Walking Stick" iOS app to assist visually impaired users with real-time hazard detection.
- Utilized LiDAR and iPhone camera to identify obstacles and alert users through audio feedback.
- Integrated Siri voice activation for hands-free access.

**Lyfe** | *Swift, Google Maps API*

- Platform aggregating local businesses and community websites for user accessibility.
- Implemented an intelligent suggestion system recommending places based on user preferences.

**Dynamic Storage Allocator** | *C*

- 64-bit dynamic memory allocator with correct alignment and metadata management.
- Optimized free-block organization with 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, parsing, and operational semantics to drive program execution.

## Experience

**Programmer** | *Scotty Labs, Carnegie Mellon University* August 2024 – Present

- Collaborated on an AI presentation tool that delivers real-time feedback built with React and Node.js.
- Built an augmented reality mobile tag game using React Native.
- Contributed to the development of other student-focused apps including CMUMaps, CMUResearch, and CMUEats to enhance campus accessibility and engagement.

**Driverless Control Engineer** | *Carnegie Mellon Racing* August 2024 – Present

- Developed and optimized path-planning algorithms for various race tracks.
- Implemented navigation software in C enabling autonomous racing performance.

**Lead Programer** | *FRC, Clarkstown Cyborgs* September 2020 – August 2024

- Programmed, tested, and operated a competition robot, ensuring precise performance during matches.
- Developed a team website to showcase projects, achievements, and community outreach.
- Guided members through mechanical assembly and electrical wiring.

## Skills

**Programming Languages:** C, C++, Swift, Java, Python, JavaScript, HTML, CSS, TypeScript, Julia, Standard ML, Assembly, bash

**Tools & Frameworks:** Node.js, Django, React, React Native, CloudFlare, Bootstrap, Firebase, Xcode, SwiftUI, Tailwind CSS, NumPy, Linux, Figma, Jupyter Notebook, Git