Jen-Hung (Tom) Chang

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Technical Skills

Programming Languages : C/C++, Java, Python, JavaScript, TypeScript, R, MySQL, GraphQL, JSON, HTML, CSS, Verilog, ARM Assembly, MIPS Assembly, Arduino
Libraries and Environment : Pytorch, Tensorflow, CUDA, OpenCV, OpenGL, WebGL, NodeJS, React, NextJS, MongoDB
DevOps and Tools : Unix, Git, Docker, Hadoop, AWS (Lightsail, EC2, Cloudfront), GNU debugger, REST API, XCode

Education

Duke University | *Durham, NC* *Expected Dec. 2026*
Candidate for Master of Engineering in Electrical and Computer Engineering
- Track: Software Engineering

Chung-Yuan Christian University | *Taoyuan, Taiwan* *June 2022*
Bachelor of Science in Information and Computer Engineering
- Overall GPA: 3.9/4.0, ranking 10/119
- Awards: Certificate of Holistic Honorary Award (only 50 people in one year)
- Major Coursework: Data Structures and Algorithms, Object Oriented Programming, Software Engineering, System Programming, Analysis of Algorithm, Programming Language, Computer Organization, Operating System, Linux Operating System Practices, Intro. to Data Mining, Network Security, Computer Graphics

Professional Experience

RealPlus Technology *Taoyuan, Taiwan*
Software Engineer *June 2022 – June 2024*
- Developed an IoT home automation system for lighting and plant watering to benefit **200+** users
- Designed a data pipeline among devices **under ROS** (Robot Operating System) on Jetson Nano
- Built APIs for self-driving car project, enabling flexibility for secondary development
- **Increased** lane tracking **accuracy by 20%** through integration of Gaussian blur and lane prediction algorithm

Pattern Recognition Lab *Taoyuan, Taiwan*
Student Researcher *June 2020 – Dec. 2021*
- Produced in Using Action Recognition to Crack reCAPTCHA plan, ranked **third place** out of our department
- Built the training environment in **Docker** , **improving** training efficiency by **40%**
- Qualified with the application for Undergraduate Research Fellowship authorized by Taiwanese government

Taiwan Sustainable Campus Project *Taoyuan, Taiwan*
Full-Stack Software Engineer Intern *June 2019 – June 2020*
- Contributed in Taiwanese government project focused on achieving Sustainable Development Goals
- Revamped **MySQL** database to **enhance hitting accuracy by 20%** and security of website's authority

Selective Projects

IoT Home automation | *JavaScript, Arduino, React, REST API, Docker, AWS EC2, MongoDB* *Feb. 2024 - June 2024*
- Constructed a **React** website under **NextJS** framework with a **MongoDB** database, enabling user interaction
- Built and deployed an **MQTT broker** and web server using **Docker** on **AWS EC2**
- Implemented login system via calling **self-designed REST API** to achieve user independence

Using Action Recognition to Crack reCAPTCHA | *Pytorch, Computer Vision, Deep Learning* *Sept. 2020 – Dec. 2021*
- Designed defense strategy to distinguish between machines and humans when using reCAPTCHA with action
- Generated and classified cropped pictures by designing ML models using **Transform Learning** & **Grad-CAM**
- Achieved **accuracies of 98%, 60%, and 65%** for 3 classifications under our best defense approach

OurScheme Interpreter | *C/C++, Programming Language* *Feb. 2021 – June 2021*
- Implemented parser and scanner by tree-based structure and **20 Scheme instructions** using C++
- Handled syntax error and run-time error (no return value and unbound) from **thousands of inputs**

FRANCIS Compiler | *C/C++,* ***Compiler*** *Sept. 2020 – Jan. 2021*
- Designed a compiler for FRANCIS, a high-level language similar to FORTRAN
- Implemented a **Lexical Analysis** , **Syntax Analysis** , **Semantic Analysis** , and **Code Generation**
- Generated Intermediate Code by generating 7 tables to address and record identifiers and arrays