Chentao Fan

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Education

Case Western Reserve University, Cleveland, U.S.A. 2024 – Present

Master of Science in Computer Science (CS), expected May 2027

China University of Mining & Technology(Beijing), Beijing, China 2018 – 2022

Bachelor of Engineering in Electronics Engineering and Automation (EE)

Internships

Shanxi Sensor & Control Electronics Technology Co., Ltd, Shanxi, China Jun. 2024 – Aug. 2024

C, keil, ARM, Linux Software Engineer

Brief introduction: Using STC8H8K64U MCU and OneNet Open IoT to control the valve.

- Implemented angle control and NFC-controlled function of valves.
- Optimized the command protocol on both client and platform sides.
- Developed the PWM-controlled buzzer module with adjustable frequency and duty cycle.
- Implemented an ADC module-controlled motor with temperature and angle sensors.
- Composed complete reference documents for this project.

Beijing Glory PKPM Technology Co., Ltd, Beijing, China Jun. 2022 – Jul. 2022

Python Software Engineer

Brief introduction: Using STC8H8K64U MCU and OneNet Open IoT to control the valve.

- Learned to set up BIM Base and Python for a Visual Studio Code development environment.
- Adopted the "pyp3d" library for parametric modeling.
- Completed multiple model experiments, including parametric modeling of a cube, an arc, a line, a sphere, a section, a loft, a cylinder, and an abutment.
- Imported the '.py' file into the BIM Base Kit.
- Packed the model into a BFA file to encrypt model data and prevent script leakage.

Projects

AQIoT @ CASLab CWRU Oct. 2024 – Present

Python, Shell Script, Kotlin, RESTful API Research Assistant

Brief introduction: A Raspberry Pi-based air quality monitoring system

- Develop a shell script to customize RasPi image with the necessary software and libraries and certain configurations.
- Utilize Python and Adafruit AQ sensor libraries to read air quality data on Raspberry Pi.
- Implement a Linux systemd service to run the Python script in the background.
- Add documentation and instructions and GitHub rules for the project.
- Develop an Android app to visualize the data through RESTful API

Dual Channel Watermarking Using Machine Learning Jan. 2025 – May. 2025

Python, TensorFlow, PyTorch, Kotlin Individual Project

Brief introduction: A dual-channel watermarking system using machine learning techniques.

- Implemented a deep learning model using TensorFlow and PyTorch for watermark detection and extraction.
- Developed a Kotlin-based Android app for real-time watermarking and dewatermarking of images.
- Conducted experiments to evaluate the robustness of the watermarking technique against various attacks.
- Documented the project and created a user manual for the Android app.

Merriam-Webster Dictionary Wrapper Mar. 2023 – Sep. 2023

Python Individual Project

Brief introduction: An offline dictionary

- Used the Python library "requests" to generate HTML requests and display web pages.
- Utilized "lxml.etree" for parsing HTML content to wrap entries.
- Converted the thesaurus of Merriam-Webster Dictionary into a local HTML file.
- Saved the raw HTML file and converted it to a '.xls' file with text descriptions.
- Employed MDX Builder to package the '.xls' file into an '.mdx' dictionary file for use in MDict.

Personal Blog Feb. 2022 – Present

Markdown, LaTeX, HTML, Linux Individual Project

Brief introduction: Now using Hugo (Hexo before) as the framework, hosted a website on GitHub Pagesand Vercel.

- Enhanced module appearance via CSS files.
- Employed GitHub Actions to monitor remote branch changes and update the website.
- Utilized DNSpod to perform domestic and international line traffic controling (Vercel for CN GEOIP and GitHub Pages for others) and domain binding.
- Used Twikoo as the comment module and deployed the database file containing reviewer information and comment-related content into MongoDB.
- Connected Twikoo to the database via its API through Vercel.
- Utilized the sm.ms image hosting service API to automatically upload reviewer images to the image bed.
- Employed Algolia as the index module to fulfill title matching and full-text search functions.
- Used JsDelivr to compress website static resources to increase access speed.

Cloud Server Maintenance and Applications Nov. 2022 – Nov. 2023

Linux Individual Project

Brief introduction: Configured Docker environment in Ubuntu to set up Minecraft servers suitable across versions by separating specific JRE environment versions; set up many game servers and deployed a music bot for KOOK (IM software like Discord) via open source docker image

Group Experience

Computing and Society Lab@CWRU Oct. 2024 – Present

Research Assistant

Brief introduction: Researching on project focusing on providing air quality sensing in urban environments.

Student Union of CUMTB Sep. 2018 – Aug. 2020

Administrative Officer Department Leader

Brief introduction: Served as an officer (for the first year) and administrator of the Science and Technology Department.

Skills

- Programming Languages: C == C++ > Python > Kotlin = Java
- Platforms: Windows, Linux, Android
- Other Skills: Photoshop, Premiere, After Effects, Piano, Soccer, Painting

Miscellaneous

- Blog: `https://aphcity.top`
- GitHub: `https://github.com/Aphcity`
- Languages: English - Fluent, Mandarin - Native speaker