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.

Shanxi Tongwen Vocational and Technical College, Shanxi, China Nov. 2022 – Oct. 2023

C, C# Tutor Assistant

Brief introduction: Assisted instructors in completing courses in C and C# introductory programming courses

- Responsible for laboratory maintenance, including system and local network management.
- Assisted with experimental course guidance.
- Conducted experimental report inspections.
- Provided work guidance and Q&A sessions for experimental courses.

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 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 syetem service to run the Python script in the background.

UAV Cluster Flight Control & Design Jun. 2023 – Aug. 2023

Autodesk Maya 3D Research Attendant

- Learned to connect multiple drones to a terminal control client (DGCS).
- Ensured the drone cluster's flight would not strike obstacles or buildings.
- Wrote a script for UAV Cluster Flight in Autodesk Maya 3D software using the DAMODA Cluster Flight Editor plugin.
- Modified several take-off and landing positions; Altered the flying route destination; Added LED controls to indicate shape, model, or image.

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

STC Series Microcomputer Application Nov. 2020 – Dec. 2020

C, Keil Individual Project

- Learned assembly language programming for STC8 series microcontrollers.
- Connected an LED module to a microcontroller via wiring after writing assembly code in µVision and flashing it to the microcontroller.
- Implemented basic IO operation experiments to control the on/off states of specific LEDs and an external switch interrupt.
- Conducted a digital tube experiment that provided imaging of 0 to F sixteen-digit numbers.
- Performed a parallel AD conversion experiment by binding the pins of the AD acquisition module and the IO port of the microcontroller in a KEIL environment.
- Converted the voltage analog quantity into a digital one through an assembly program.
- Displayed the corresponding numbers through 8 LEDs connected to the IO port of the microcontroller.

Field-Programmable Gate Array (FPGA) Application Oct. 2020 – Noc. 2020

C, Keil Individual Project

- Used the EP4CE6-FPGA core board to complete digital programmable logic design experiments in Quartus II 13.0 based on the EP4CE6E22C8 experimental system hardware platform using Verilog language.
- Controlled four LED lights (D1-D4) by employing an FPGA solution to represent four-digit binary numbers.
- Switched between addition and subtraction counters using two switches and displayed the results through a digital tube.
- Used 74HC595 and 74LS138 for serial-to-parallel conversions to print my name on a 1616 monochrome dot matrix.

C Programming Practice Nov. 2018 – Dec. 2018

C Individual Project

Brief introduction: Programmed a parking lot management system to offer vehicle parking space information that could be added, deleted, or modified on demand; created software to enable a parking lot search for cars by parking space and license plate numbers

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.

- Taught members how to use Adobe Photoshop, Premiere Pro, and After Effects for poster design and video editing.
- Employed Resolume's Arena for stage control during a welcoming and graduation party organized by the college.
- Designed dormitory door and bed stickers for first-year students.
- Utilized Adobe InDesign to create student handbooks.

Skills

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

Honors and Awards

3rd Prize, Award for Campus Undergraduate Electronics Design Contest Jun. 2020
2nd Prize, Award for Campus Arduino Car Patrol Contest Nov. 2019
3rd Prize, Award for Campus ACM/ICPC Nov. 2018
1st Prize, Award for Agricultural Bank of China Card Design Competition Oct. 2018

Miscellaneous

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