Pinhao Lyu

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Education

Tongji University, Shanghai, China Sep 2020 — Jul 2024

Bachelor of Engineering in Computer Science and Technology

CGPA: 4.73/5.0 (92%), **Major GPA**: 4.90/5.0 (94%)

Relevant Courses: Computer Architecture, Computer Network, Artificial Intelligence, Software, Engineering, Operating Systems, Principles of Compilers, Methodology of Software Development, etc.

Honors: 2020 and 2021 scholarships for excellent undergraduate students of *Tongji* University

Internships

Cisco Systems Apr 2023— Sep 2023

Software Developer Intern

- Created efficient data crawling scripts using *asyncio* and *aiohttp* to facilitate concurrent operations at the *coroutine* level, improving data acquisition and processing efficiency. Deployed a robust website using *Django* and an intuitive dashboard to streamline content management and improve user experience
- Collaborated with cross-functional teams for seamless integration across business groups

SAP Oct 2023 — Present

DevOps Support Engineer Intern

- Assisted in enhancing software development and deployment processes using version control (*Git*), continuous integration and continuous deployment (CI/CD, *Jenkins*), and containerisation technologies (*Docker, Kubernetes*). Work with cross-functional teams to automate key aspects of the software development lifecycle
- Analysed, troubleshot and supported various production components in an automated environment based on *Linux* and *Kubernetes*

Researches & Projects

Design and Development of PIS Intelligent Operation and Maintenance System Based on Microservices (Graduation Project & Thesis) Oct 2023 — Present

Python, JavaScript, Django, Flask, React, MySQL, Kubernetes, Docker, Jenkins, Kafka, Nginx

- Implemented microservices based on *Kubernetes* and *Docker* for flexible deployment and rapid scaling. Used *Jenkins* for continuous integration and continuous delivery (CI/CD) to simplify the deployment process
- Microservices backends were written using *Django* and *Flask* in *Python*, while retaining the compatibility of other languages. The front-end was written using *React*. Communication between front-end and back-end services uses *RESTful APIs* to simplify URLs and enhance readability. Each microservice has its own *MySQL* database
- Implemented efficient load balancing using *Nginx*. Used *Kafka* for publishing and subscribing messages between microservices to maintain data consistency. Used *LogStash* to collect logs from each container

3D Tunnel Leakage Assessment through Enhanced GAN and Swin Transformer Model

Python, Pytorch Sep 2022 — Feb 2023

- Sourced tunnel face images from various projects and improved dataset management by optimizing a Generative Adversarial Network (GAN) model
- Created a robust tunnel leakage detection and segmentation system using self-attention Deep Learning (DL) models built on the innovative *Swin-Transformer* architecture
- Contributed to introducing an automated procedure for pinpointing 3D leakage locations on rock tunnel faces, enabling suitable visualization

House Price Visualization Information Platform Oct 2022 — Jan 2023

Python, Django, MySQL, HTML+CSS+JavaScript, Bootstrap, Docker

- Developed an online information visualization platform offering a dynamic heat-map view of house prices and surrounding amenities, improving user accessibility
- Collected and cleaned public house pricing data using web crawlers and *MySQL* database for efficient retrieval and used HTML, CSS, *JavaScript*, and *Bootstrap* framework for creating a front-end interface
- Implemented an interaction between user inputs and the database through *Django's ModelForm*, creating customized CSS styling, data validation, and comprehensive error display
- Improved UI/UX via asynchronous data submission using *Ajax* technology, supporting seamless data interaction, integrating *Baidu Maps* interface for visualizing house prices data geographically
- Deployed the app using *Docker* containers, ensuring effective distribution

Gobang Minigame Apr 2022— Jun 2022

Python, PyQt

- Developed a *Gobang* mini-game using *Python* in *PyQt* framework, featuring an AI opponent empowered by the *Alpha-Beta Pruning* algorithm. The game's primary attributes include human-computer gameplay mode, incorporating automatic win/loss determination and the *undo-moves* feature.
- Leveraged multithreading to ensure smooth gameplay by preventing interface freezes during AI-based computations and optimized through improved cache hit rates, leading to 3x improvement in efficiency.

FPGA-based 79-key Electronic Piano with Autoplay and GUI Nov 2021 — Jan 2022

Verilog HDL, Vivado

- Implemented a 79-key piano using *Verilog HDL* on the *Nexys4* FPGA board and tested it via *Logisim*, *Modelsim*, and *Vivado*
- Developed features like manual and automatic play, pitch and tempo adjustments, and a user-friendly GUI, which incorporated a display, keyboard, and *buzzer* for a complete UI/UX
- Created four integral piano components: an input and decoding system, a dynamic display system, an immersive buzzer system, and an inbuilt track playback mechanism

Skills

- **Programming Languages**: Python, JavaScript, C++, MySQL
- **Frameworks**: Django, Flask, React, PyQt, PyTorch
- **Others**: Git, Docker, Kubernetes, Linux, Jenkins, Kafka, Nginx, Microsoft Office
- **Languages**: Chinese (Native), English (Fluent, **IELTS**: 7.0)