TIANLEI SHI

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EDUCATION

MSc Scientific and Data Intensive Computing, University College London 2022 – 2023

Notable Modules: Techniques of High-Performance Computing, Numerical Methods, Information Retrieval and Data Mining, Research Computing with C++, Data-driven Modelling of Financial Markets, Machine Learning with Big Data.

BSc Information and Computing Science, University of Liverpool 2018 – 2022

Grade: First Class (4.0/4.0)

Notable Modules: Advanced OO Programming, Software Engineering, Technologies for E-Commerce, Databases, Data Structures, Complexity of Algorithms, Computer Systems Security, Computer Graphics, Computer Networking

Notable Achievements: Top 5% in my major, won 3 scholarships (including the Academic Achievement Award)

WORK EXPERIENCE

Computer Vision Algorithm Intern, Chinese Academy of Sciences, Suzhou June 2021 – Nov 2021

- Provided algorithm support for an automatic restaurant settlement system. Processed daily images of the restaurant's dishes and trained and optimized the model to make the average detection accuracy **99.7%**.
- Built a **knowledge graph** that contains more than 2000 dishes and their corresponding ingredients and nutrition composition and implemented **RESTful APIs** to connect it with project APP to provide data support.
- Carried out research into food recommendations and designed a **food nutrition recommendation system** based on the knowledge graph.

Research Assistant, Xi'an Jiaotong-Liverpool University June 2021 – Nov 2021

- Conducted blue-green algae research based on **area estimations** and **semantic segmentation** algorithms, including a deep learning method, **binocular camera** method and monocular camera method, and performed the detection of blue-green algae and hazard assessments.
- Applied **object detection** algorithms in a water environment and the algorithm was **pruned and deployed** in edge equipment, which was loaded on an unmanned surface vehicle to assist with obstacle avoidance. The related project **won 6 awards** (including 3rd prize in the 12th China University Student Innovation & Entrepreneurship Competition).

EXTRA-CURRICULAR ACTIVITIES & PROJECTS

Project - Python package of aigeanpy (CI/CD, Pytest, Packaging, Docstrings, Command line interface) Jan 2023

- Responsible for **Python package development**. Implemented 3 **command line applications** and corresponding **library-style interfaces**; wrote 100+ automatic unit tests via **Pytest** covering positive and negative tests under 10 more scenarios, and the test coverage rate reached **76%**.
- Used **Git** and GitHub repository for version control and management, and created **CI/CD** pipeline by GitHub Actions; built and generated docstrings document using **Sphinx framework**.

Overseas Education Service Webpage (Web Development, XAMPP, MVC Pattern) Apr 2022

- Commercialized the studying abroad service after market and business analysis. Performed **UI/UX design** by using HTML, CSS, and Adobe XD; also **designed a database** schema in the third normal form.
- Responsible for webpage development. Implemented functions of the search bar, re-arrange items, order inquiries and user profiles via **PHP**, **MySQL** and **JavaSript**.

Project - 3D Rubik's Cube Play Station (CMake, Docker, C++ STL, OpenGL, Command line app) Apr 2021

- Modeled and implemented a 3D Rubik's Cube game by using **C++** and **OpenGL**, and made it a command line app.
- Used **Docker containers** to create and manage a **Ubuntu** development environment and required packages; applied **CMake** to manage directory hierarchies and applications and build projects.

Project - VR Karaoke (Game Development, Software Development Life Cycle) Feb 2021

- Designed and developed a game of VR Karaoke by using **Unity3D** and **C#**. Responsible for implementing user singing functions, including singing functions (e.g., recording, playing and saving audio); realized voice noise reduction and sound reverberation using the **Fourier transform algorithm**.
- Worked in an **agile development** manner (**Scrum process**), applied **Microsoft Azure Boards** to maintain **PBIs** and sprints inspection. Participated in writing user and system requirements of the **software requirement specification**.

SKILLS & INTERESTS

Programming Languages: Python, Java, PHP, MySQL, HTML, CSS, JavaScript, C/C++, C#, Shell

Frameworks & Tools: Latex, SpringBoot, Docker, PyTorch, Django, Linux, git, neo4j, Unity3D, automatic testing

Interests: studying violin for 16 years, swimming, and volunteer service for more than 50 hours (obtained a volunteer certificate)