Ziyi LIU (Joshua)

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Education

East China University of Science and Technology (ECUST) Sept, 2020 ~ Jul, 2024
BEng, Intelligence and Robotics, GPA: 78.06/100 (B) Shanghai, China

Core Courses:

Kinematics and Dynamics (90/100); Introduction to Artificial Intelligence and Robotics (91/100);
Computer Graphics (87/100); Probability and Mathematical Statistics (87/100);
Computer Vision (80/100); Mathematical Basis of Artificial Intelligence (85/100);
Computer Programming (84/100); Pattern Recognition and Machine Learning (84/100).

East China University of Science and Technology (ECUST) Oct, 2021 ~ Present
Mini-major Diploma, Computer Science Shanghai, China

Relevant Courses: Data Structures and Algorithms, Principles of Database Systems, Operating Systems, Software Engineering, Computer Networking.

Research Interests

- **Computer Vision:** Semantic Segmentation, SLAM, 3D Reconstruction;
- **Robotics:** Robot Motion and Dynamics, Robot Control.

PATENTS AND PUBLICATIONS

- Zheng, L., et al. (2023, July 13). A method and system for predicting the spread of hill fires (CN Patent No. 202310862464.2, pending). China National Intellectual Property.

Research Experiences

Assisting Mobile Robot SLAM Via Semantic Segmentation June, 2023 ~ Present
Research Assistant Shanghai, China

- Researching on the **vision-based SLAM with semantic recognition** for the indoor autonomous navigation of the mobile robot;
- Supervised by **Dr. Shuang Liu** in ECUST.

A Novel Steel Defect Detection Algorithm Based on the YOLO Structure May, 2023 ~ Present
Programmer and Leader Shanghai, China

- Basing on the classical YOLOv5 structure and the Steel Surface Defect Database by Northeastern University, the novel algorithm with the lightweight attention mechanisms gains more than 6% improvement in mAP, while maintaining the similar training speed;
- **Leading a team of 3** to design the improved module and integrated with classical model;
- **I am implementing the algorithm using PyTorch**. The results of the project and the paper are expected to be submitted in September 2023.

Time Series Based Climate Prediction and Attribution Analysis Dec, 2022
Programmer Shanghai, China

- **Built ARIMA and XGboost model to predict** global temperature rise, found temperature will reach 20°C in 2048.
- **Conducted hypothesis testing** and got a 97.69% probability to reject the assumption of no abnormal rise in March 2022 due to the potential effect of the global epidemic;
- Used PC algorithm and DTW to attribute temperature change to human activities dominating natural factors.

Signal base station siting problem Apr, 2022
Programmer Shanghai, China

- **Designed a novel intelligent planning algorithm** for two-level signal stations, which is based on the PSO algorithm;
- In the front of fine planning, the K-Means and Greedy algorithms are used to position coarsely for trunk stations and branch stations, respectively;
- **The algorithm can converge faster with improved accuracy.** The parameter extraction error is less than 2%, which is better than the traditional PSO algorithm (about 2.89%).

Speech-Recognition-Based Mechanical System for Lift Control Apr, 2021 ~ May, 2021
Software Developer and Tester Shanghai, China

- **Developed a Raspberry Pi-based lift control system**, utilizing stepper motors, magnetic switches, and Huawei's voice recognition API for contactless operations during pandemics;
- The innovation **won the Second Prize** at the 10th Shanghai City University Students Mechanical Engineering Innovation Contest.

INTERNSHIP

Bank of Communication Financial Technology Co,Ltd. Dec, 2022 ~ Feb, 2023
Back-end Developer Shanghai, China

- **Built a new HRM platform** supported by a low-code platform and its APIs, designing the platform database and the automated full-process management of employees;
- **Implemented the AI functions' back-end** based on openAPI standards. Including OCR, face recognition, etc.
- **Participated in the DevOps process** for the Supply Chain and Debt Management platform. Contributing tens of test cases.

ISCAS (Institute of Software Chinese Academy of Sciences) Apr, 2022 ~ Sept, 2022
Development and Testing Remote

- **Tested and packaged software** such as Autoconf-2.13 and Pijul in the openEuler environment to ensure compatibility and functionality in the openEuler operating system;
- **Developed "rsensleak"**, a Rust-based tool for identifying sensitive information in files, which is used to extract the contents of files and identify sensitive information such as passwords, key tokens and private messages.

REWARD AND CERTIFICATIONS

- Huawei "Intelligence Base" Outstanding Student **Scholarship** (Nov, 2021, Level B, selection rate 1%).
- The Shanghai College Information Technology Level Examination in Big Data and Cloud Computing, Level 4 (May, 2023, Highest Level);
- The Shanghai College Information Technology Level Examination in C Programming and Application, Level 3 (Jan, 2022, Highest Level);
- Successful Participant in COMAP Interdisciplinary Contest in Modelling (ICM) (Feb, 2023);
- Successful Participant in Asia and Pacific Mathematical Contest in Modeling (Dec, 2022);
- Third Prize of the 12th National E-Commerce "Innovation, Creativity and Entrepreneurship" Challenge Contest (May, 2022);
- The Second Prize in 10th University Students Mechanical Engineering Innovation Contest, Shanghai (May, 2021).

EXTRACURRICULAR ACTIVITIES

Publicity and Media Sector of Youth League Committee, ECUST Sept, 2020 ~ Aug, 2022
Head of Department Shanghai, China

- Coordinated the day-to-day work of a 20-member working group. Ran the operation of the college's WeChat official account, "Huali Xinyuan", which has more than 7000 active users and has been awarded "4-star member media" by the Shanghai University Media Union for two consecutive years (2020 and 2021);
- Organised college-wide freshers' icebreakers with over 300 participants. Held two "Geek Festivals" in which we joined forces with other colleges and companies, such as Dell and Huawei, and promoted information technology interestingly and diversely, engaging people in creativity and hands-on work.

OTHER SKILLS

- **Languages:** Mandarin (native), Cantonese (fluent), English (IELTS 6.5, CET-6 583), French (beginning);
- **Programming:** C++, Python, Rust, LaTeX, MATLAB, HTML/CSS/JS;
- AHA Heartsaver Basic Life Support and CPR Certificate, American Heart Association, 2022;