LAI Chenyang

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EDUCATION

Guangdong University of Technology — **Guangzhou, China**

BEng of Computer Science and Technology — *September 2021 – July 2025*

- **GPA: 3.22**

University of Exeter — **Exeter, UK**

BSc in Computer Science — September *2023 – July 2025*

- **GPA: 67.2 (Strong Upper Second Class)**
- **Core Courses**: JAVA Programming Design, Python Numerical Analysis, Digital Logic and System Design, Data Structures, Principles of Computer Organization, Operating Systems, Programming Design, Probability Theory and Mathematical Statistics, Computer Networks, Computer System Architecture.
- **Research Interest**: Deep Learning, Environmental Science, Artificial Intelligence and Machine Learning

RESEARCH & PROJECT

Oil Spill Detection in Remote Sensing Imagery via Change Detection

Project Developer (Project Leader: Dr. Zeyu Fu) — *July 2024 -July 2025*

- Develop a high-precision system for detecting oil spills in Bi-temporal remote sensing data, reducing manual annotation and accelerating emergency response.
- Employ PatchMatch for robust image registration and Brightness Uniform techniques to correct illumination inconsistencies, ensuring reliable change detection.
- Integrate Deep Learning models to refine and restore the sea surface, enhancing the overall image quality and oil spill delineation.
- Leverage extensive experience in handling large-scale multimodal datasets to create a robust, scalable monitoring solution.
- Achieved significant improvements in detection accuracy and scalability, laying the groundwork for broader environmental monitoring and rapid response applications.

Sustainable Development Website for University of Exeter

Team Leader — *March 2024 - June 2024*

- Led a team to design and develop a web application focused on enhancing environmental awareness and encouraging sustainable practices among the school community through the use of gamification.
- Implemented interactive features such as a treasure hunt check-in system, fun quizzes, a point system, a text adventure, and activity quizzes to increase user engagement and knowledge about environmental protection.
- Presented the project to university stakeholders, receiving commendation for its impact in promoting sustainability initiatives at the university.

Automated Fish Behavior Monitoring using Computer Vision and Active Learning

Team Leader — *January 2024 - March 2024*

- Collected comprehensive datasets for modeling fish behavior is challenging due to water turbidity, light attenuation, and measurement issues.
- Used the YOLO algorithm for object detection and active learning to efficiently build the training dataset.
- Increased the detection accuracy to 99.6% with only 340 labeled samples out of 3000 total using activate learning.

Credit Card Default Prediction with Neural Networks

Project Developer — *November 2023 - January 2024*

- Developed a machine learning model to predict credit card defaults.
- Utilized various activation functions, including PReLU, ReLU, LeakyReLU, Mish, and Swish, to enhance the model's performance.
- Addressed the challenge of data imbalance by employing techniques such as SMOTE (Synthetic Minority Over-sampling Technique) and RandomUnderSampler (RUS), which significantly improved the model's predictive capability.
- Optimized the model's hyperparameters, including the number of neurons, dropout rate, learning rate, and batch size, using Bayesian optimization to enhance the model's generalization ability.

RESEARCH OUTCOME & ACADEMIC HONORS

- Presented "Computer Vision for the Recognition of Fish Activity States" at the conference Outside The Box: Computer Science Research And Applications, University of Exeter, March 2024.
- Awarded a £5000 scholarship by the University of Exeter for academic excellence.
- Awarded a First-class scholarship by the Guangdong University of Technology for academic excellence.
- A Benchmark Dataset for Remote Sensing Change Detection: Deep Learning–Based Restoration for Enhanced Oil Spill Monitoring (Manuscript in Preparation for Submission to ISPRS/TGRS)

TECHNICAL SKILLS

Data Analysis and Visualization: SQL, Pandas, NumPy, SciPy, Matplotlib, Seaborn

Deep Learning: PyTorch, Transformer, Keras, TensorFlow, Diffusion Model

Development Tools: Anaconda, PyCharm, Git, IDEA

Databases: MySQL (transactions, indexes, lock mechanisms, SQL queries, and optimization)

Web Development: Linux command-line, deploying accessible websites on Linux servers

Java Development: SSM framework, SpringBoot