Mingjie Zhu

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EDUCATION BACKGROUND

University of Liverpool — **Liverpool, UK**
BEng Computer Science and Electronic Engineering — *09/2024-05/2026 (Expected)*
Xi'an Jiaotong-Liverpool University — **Suzhou, China**
BEng Computer Science and Technology — *09/2022-08/2024*

- **IELTS:** 7
- **GPA:** 3.98/4.0
- **British Marking Criteria:** 79% (Year 0), 87% (Year 1), 89% (Year 2)
- **Scholarships:** 2023/24 University Academic Excellence Award (Top5%), XJTLU Excellence Scholarship (The scholarship is allocated to the students that scored highly in stage 2 at XJTLU across different subject areas), Hele-Shaw Prize released by Department of Electrical and Electronic Engineering, Dean's Award for Overall Academic Performance
- **Core Courses:** Linear Algebra (83/100), Calculus (88/100), Multivariable Calculus (87/100), Computer Systems (91/100), Data Structures and Algorithms (90/100), Java Programming (83/100), Electrical Circuits (91/100), Digital Electronics (92/100), Integrated Electronics and Design (89/100), Introduction to Database (97/100), Database Development (92/100), Signals & Systems (88/100)

PUBLICATION

AI Model Review (Co-First Author) — *05/2023-09/2023*

- This review article explores the application of using advanced machine learning models (LSTM, XGBoost and Random Forest) to predict stock fluctuations, with a focus on the performance of predicting Tesla stock, highlighting the advantages of these models in handling complex datasets and nonlinear relationships.
- Predicting stock fluctuations: Comparative analysis of advanced machine learning models using Tesla stock.
- DOI:10.23977/ICEMESS2023.113. Retrieved from https://doi.org/10.23977/ICEMESS2023.113

PROFESSIONAL EXPERIENCES

China Unicom — **Zhengzhou, China**
Software Development Intern (Java) — *06/2025-09/2025*

- Worked in team that developed management platform for provincial key telecom laboratory, which integrates multiple subsystems under a unified base. The platform handled server logs, network device topology and data link management.
- Responsible for unified user management and cross-domain SSO authentication.
- Implemented a token forwarding mechanism allowing secure asynchronized token issuing. Separated internal authentication credential from user-end token, decoupling the authentication module.
- Customized open-source authentication framework (SA token), allowing dev team to streamline the login process with minimized code.
- Reduced redundant authentication logic across modules by 50%, ensuring secure cross-domain token exchange and faster integration of new subsystems.
- Technologies: Spring Boot, MySQL, Redis, Sa-Token, Apache Kafka, Docker, K8s

China Unicom — **Zhengzhou, China**
Software Engineer Intern — *01/2024-03/2024*

- Designed a server room management system under supervisor's guidance, which assists IT administrators in monitoring, managing and protecting the physical servers and network devices in the enterprise server room.
- Integrated a biometric recognition module into the access control system, enabling seamless and secure entry to server rooms.
- Implemented asynchronous communication with the biometric service, significantly improving system throughput under high-concurrency access.
- Optimized database transactions and device log synchronization, reducing response latency and enhancing system reliability.
- Technologies: Spring Boot, MyBatis, MySQL, WebSocket

ACADEMIC EXPERIENCES

Building AI Agents: A Virtual Personal Assistant (Summer Undergraduate Research Fellowship)
Researcher, Supervisor: Dr. Ho-Pun Lam — *06/2025-09/2025*

- Developed a Virtual Personal Assistant (VPA) agent that helps users in managing tasks and schedules of working or daily activities. Participated in the full lifecycle of the product from requirement analysis, feature definition, development and testing.
- Developed core functionalities including intelligent route planning, dynamic schedule adjustments, and personalized recommendations by combining A2A/MCP protocols with LLM reasoning capabilities
- Used LangGraph-based ReAct framework to create an iterative decision-making loop where agents dynamically reason and act using MCP tools, and update state until task resolution. Integrated JWT-based user authentication and verification to ensure secure access while maintaining seamless user interaction with the system.
- Demonstrated scalable multi-agent collaboration through a front-backend separated prototype, addressing real-world pain points in effective schedule planning and daily task management.
- Technologies: Lang Graph, MCP, A2A, MySQL, Redis, SpringBoot, JS

String Art Generation using Radon Transform (Summer Undergraduate Research Fellowship)
Researcher, Supervisor: Dr. Ho-Pun Lam *05/2024-09/2024*
- Built a string art generator that converts images (i.e. portrait) into string-art plans on a circular canvas using Radon Transform and a greedy optimizer.
- Implemented greedy algorithm computational models to iteratively select optimal strings for reconstructing portraits by maximizing contrast alignment with the original image's sinogram projections.
- Engineered a modular, front/back-end separated system allowing parameter customization (e.g., nail count, step, constraints), using JSON scheme to save and load for manual reproducing or automated rendering.
- Delivered an end-to-end pipeline including core algorithms, configurable UI, and reproducible scheme storage. Evaluated the performance on portraits and anime or low-frequency images; documented limitations and proposed edge-aware improvements.
- Technologies: Python, tkinter

PROJECT EXPERIENCES

AI-Powered Real-time Plasma Diagnosis
Final Year Project *10/2025-*
- This project aims to develop a machine-learning framework that predicts CO2 conversion yield and H2O2 production from nanosecond CO2 bubble-discharge experiments, using discharge parameters and OES features to enable rapid, data-driven optimization.
- Pre-trained ML model based on physically simulation dataset which indicates implicitly the mechanism of plasma features, followed by transfer learning and domain adaptation to adapt for CO2 conversion data.
- Technologies: TensorFlow, PyTorch, and scikit-learn

EtchBot (Coursework Design)
Team Leader (https://github.com/SoySauceZhu/etchbot) *01/2025-02/2025*
- Worked with team members and designed a robot based on CNC to create works of art on the retro etch a sketch drawing board, using the previous SURF style conversion software project
- Independently developed a customized driver software running on Arduino that receives and resolves commands from host machine, further drives the stepper motor to draw desired trajectory.
- Developed trajectory generator that convert any input image to single-stroke outline scheme in universal numerical format (Geometric code).
- Conducted the whole process of feature definition, project management, hardware selection and software development.
- Technologies: Python, C++, Arduino Uno, tkinter

VOLUNTEER

Student Lecturer *05/2023*
Math Club (XJTLU)
- Delivered tutorial lectures in Calculus and Linear Algebra to ~30 students per session, twice weekly for one month, and was awarded the Student Lecturer Award for teaching.

SKILLS & HOBBIES

Languages: Chinese Mandarin (Native), English (Proficient)
Skills:
- Python, Java, MySQL, Redis, Spring Boot, Docker, NumPy, matplotlib, PyTorch, FastAPI, tkinter
- Web Dev: Git, Docker, Git, K8s, nacos, cloudflare