

DARREN WONG SHIH JIE

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Education

The Hong Kong University of Science and Technology, Hong Kong September 2023 - June 2028
Bachelor of Engineering in Computer Science and Extended Major in Artificial Intelligence
Exchange to the University of New South Wales, Sydney. HKUST Fund Exchange Scholarship Recipient.

Courses: AI/ML, Big Data Mining, Computer Vision, Software Engineering, Operating Systems, Data Structures and Algorithms.

Work Experience

CarryAI Company Limited | AI Engineer Intern | Hong Kong June 2026 - Present

- CarryAI VLM Prompt Engineer. A full-stack AI-powered web application that guides users through multi-turn conversation to generate optimised system and user prompts for VLMs; designed RESTful API endpoints with factory-pattern LLM client abstraction, retry logic with exponential backoff, and JSON extraction with fallback parsing for production reliability.
- Integrated OpenRouter's Qwen reasoning model with native thinking-token support, enabling the application to surface the model's internal reasoning in real time; engineered a dual-compression image pipeline with multimodal base64 encoding, MIME detection, and presigned URL delivery, reducing image payload sizes while maintaining quality for API cost efficiency.

Total Rehabilitation Management (TRM HK) | Software Engineer Intern | Hong Kong June 2025 - August 2025

- Engineered a dynamic workflow analytics dashboard leveraging data aggregation, multi-criteria filtering, and interactive visualisation, enabling stakeholders to monitor, track, and export K2 process metrics for both active and completed cases.
- Architected a document intelligence pipeline utilising TF-IDF vectorisation, achieving 95% classification accuracy for unstructured document types (e.g., incident reports, medical certificates, receipts).
- Automated the processing of high-resolution images in regulatory reports by integrating lossless compression algorithms, reducing file payloads by up to 89% and ensuring seamless compliance with third-party digital platform constraints.
- Enhanced platform security posture by implementing reCAPTCHA verification, fortified public-facing endpoints against automated abuse, and contributed to the development of RESTful workflow APIs.

HKUST CSE Department | COMP & CPEG Mentor | Hong Kong June 2025 - Present

- Advised 1st and 2nd-year computer science students on study planning, academic strategies, and co-curricular involvement.
- Organised small group activities and gatherings to build peer connections and a supportive department community.

HKUST Counselling and Wellness Centre | Peer Companion | Hong Kong November 2024 - Present

- Facilitated small group activities to promote the development of social skills and positive peer relationships.
- Organised university-wide wellness events, setting up booths and arranging interactive games to support mental health awareness and student engagement.

Projects

StockAgent: Multi-Agent LLM-Based Stock Market Simulation

- Built an Agent with portfolio state management (stocks/cash/debt tracking), loan repayment logic with interest calculations, and bankruptcy detection; implemented order matching engine with buy/sell queues and session-based price updates.
- Integrated 4 LLM providers (OpenAI/Gemini/Claude/Ollama) with prompt engineering, format validation, and retry mechanisms; maintained per-agent chat history to track trading context across simulation days.

Spam Email Classification

- Preprocessed email text through tokenisation and padding to create fixed-length input sequences, generating word embeddings to represent text as dense vectors for a neural network. Implemented data normalisation and sequence standardisation to ensure consistent input dimensions across varying email lengths, enabling efficient batch processing and model convergence.
- Built and optimised a 1D CNN model with Embedding, Conv1D, MaxPooling1D, Dense layer architecture, using Adam optimiser with validation checkpoints and early stopping to achieve robust spam/ham classification.

Stock Market Simulation

- Developed a modular C++ stock market simulation system to implement and evaluate AI-driven trading strategies such as Mean Reversion, Trend Following, and Weighted Trend Following.
- Engineered a dynamic framework capable of analysing 100+ days of synthetic market data generated via Geometric Brownian Motion (GBM), optimising real-time BUY/SELL to maximise returns strategy with moving average and statistical thresholds.

Deep Learning Ensemble for Pest Detection and Classification

- Trained and evaluated 6 deep learning models (YOLO11n, Faster R-CNN, EfficientDet, Vision Transformer, EfficientNet, ConvNeXt) on the Kaggle Crop Pests Dataset with comprehensive preprocessing and augmentation strategies. Implemented comparative analysis across architectures to identify optimal detection-classification combinations.
- Built end-to-end pipeline including automated data preparation (YOLO to COCO conversion), training optimisation with early stopping, and explainability analysis (XAI visualisations). Evaluated performance metrics (mAP50, F1-score, precision-recall).

Skills and Competencies

- Programming: Proficient in Python, C, C++, C#, Java, JavaScript, TypeScript, HTML, CSS, MySQL, Bash.
- Libraries: React, NumPy, Pandas, SciKit-Learn, Pytorch, Keras, TensorFlow, NLTK, EF Core, ImageSharp.
- Tools: Git, DBeeer, Postman, Swagger, Docker, AWS, Jupyter Notebook, SQL Server, MySQL, MariaDB, PostgreSQL.
- Languages: Native in English, Bahasa Indonesia, Chinese (Mandarin HSK 3 & 4).
- Interests: Aviation, Finance, Badminton.