

Yiming (Zach) Wang

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EDUCATION

University College London (UCL) <i>PhD in Electronic and Electrical Engineering</i> • Research focused on stochastic systems, statistical modelling, machine learning, and data-driven modelling of complex physical systems • 6 peer-reviewed publications with 200+ citations , including 1 <i>Nature Electronics</i> and 5 <i>IEEE Transactions</i> papers; full list at ORCID	London, UK Sep 2021 – Present
Beijing Institute of Technology (BIT) <i>BSc and MSc in Electrical and Electronic Engineering, Distinction, Top Graduates</i>	Beijing, China Sep 2014 – Jul 2021

AWARDS & SCHOLARSHIPS

Dean's Prize: Top 0.1%, 25 recipients university-wide, awarded for research achievements	2021 – 2024
National Scholarship: Top 0.2%, nationwide, awarded for academic excellence by Ministry of Education	2019

SELECTED AI & QUANT ENGINEERING PROJECTS

Human-Governed AI Quant Research Agent <i>Independent AI Agent Engineering for Quant Research</i> • Architected a Python/FastAPI quantitative research backend for data ingestion, feature engineering, experiment orchestration, validation, diagnostics, reporting, and controlled execution • Built a governed AI agent layer over the backend, turning quantitative analytics, experiment state, diagnostics, reports, and configs into an evidence-grounded research workflow • Deployed a local LM Studio/Qwen runtime and local inference API for private LLM reasoning, prompt/context engineering, structured review generation, response parsing, and reproducible testing • Implemented MCP-based tool access, allowing the agent to retrieve artefacts, draft configs, validate outputs, generate reviews, and trigger approved actions only through explicit governance gates • Developed controlled RAG / semantic research memory with local embeddings, JSONL/cosine retrieval, metadata filters, and provenance-aware indexing over research artefacts	2025 – Present London, UK
Systematic ETF Strategy Research & Portfolio Construction <i>Independent Quantitative Research</i> • Conducted systematic cross-sectional research across a diversified ETF universe, investigating whether engineered momentum, volatility, mean-reversion, and market-structure signals exhibited persistent predictive power across market regimes • Built regularised cross-sectional forecasting models using Ridge regression and 19 engineered alpha factors across 24,000+ observations, evaluating the relationship between signal characteristics and future returns • Performed extensive signal diagnostics including rolling information coefficients, ranking monotonicity analysis, prediction-strength studies, and realised spread attribution to assess forecast quality and economic significance • Implemented leakage-safe walk-forward validation and robustness testing frameworks to examine out-of-sample stability, regime-dependent behaviour, transaction-cost sensitivity, and performance deterioration over time	2025 – Present London, UK
RRAM Behaviour Modelling and Prediction <i>Department of Electronic & Electrical Engineering, UCL</i> • Performed statistical analysis and predictive modelling on high-dimensional experimental datasets to investigate stochastic switching behaviour and regime-dependent dynamics in resistive memory systems • Developed feature-engineering and regression-based modelling pipelines for noisy time-series data, applying PCA, correlation analysis, and variability diagnostics to uncover latent behavioural structure	2021 – 2025 London, UK
AI Inference Acceleration and Data-Driven Compute Modelling <i>UCL & BIT</i> • Developed an AI inference acceleration framework for CNN workloads, translating model-level requirements into scalable compute architecture, precision strategy, and validation workflows • Modelled accuracy, throughput, energy, and precision trade-offs across 1–9 bit computation, supporting quantitative comparison of deployment configurations under resource constraints • Built and validated an end-to-end inference workflow on MNIST and CIFAR-10, achieving 90.54% accuracy on VGG-8 • Applied statistical analysis to evaluate robustness under hardware variability and non-ideal compute behaviour, linking low-level uncertainty to model-level inference stability	London, UK / Beijing, China 2020 – 2022

WORK EXPERIENCE

Independent AI / Quant Research Engineer

2025 – Present

LLM-Orchestrated Quantitative Research Platform

London, UK

- Solely engineered and delivered an end-to-end LLM-orchestrated quantitative research platform spanning systematic ETF research, agent-assisted experimentation, validation workflows, diagnostics, reporting, and controlled execution
- Built an AI research agent workflow that converts experiment states, model outputs, diagnostics, reports, and configuration files into evidence-grounded reviews, failure-mode analysis, proposed next steps, and governed research actions
- Established a human-controlled execution model for agentic research automation, separating LLM reasoning from approved system actions to preserve auditability, reproducibility, and research control
- Integrated quantitative modelling, LLM context engineering, research memory, experiment governance, and institutional-style reporting into a single research environment for transparent systematic research
- Maintained reproducible research artefacts, experiment outputs, documentation, and version-controlled code, with platform architecture and research workflow presented at zachwang.io for external review

Associate Editor

Jul 2025 – Present

American Journal of Artificial Intelligence

Virtual

- Led editorial decisions on AI and computational research manuscripts, ensuring quality and timely outcomes

Machine Learning Intern

Jun 2020 – Jul 2021

Institute of Microelectronics, Chinese Academy of Sciences

Beijing, China

- Developed and evaluated machine learning models for image-based classification and feature extraction, covering preprocessing, feature engineering, hyperparameter optimisation, robustness analysis, and model generalisation

PUBLICATIONS

- X. Li, Y. Wang, Y. Yang, S. Lv, Q. Luo, X. Wang, X. Xu, D. Lei, F. Zhang, “A 144-fJ/Bit Reliable and Compact TRNG Based on the Diffusive Resistance of 3-D Resistive Random Access Memory,” in *IEEE Transactions on Very Large Scale Integration (VLSI) Systems*, vol. 70, no. 8, pp. 4139–4144, Aug. 2023.
- Q. Ren, Q. Huo, Z. Chen, Q. Gao, Y. Wang, Y. Yang, H. Wu, X. Fu, X. Xu, Q. Luo et al., “A Security-Enhanced, Charge-Pump-Free, ISO14443-A-/ISO10373-6-Compliant RFID Tag With 16.2- μ W Embedded RRAM and Reconfigurable Strong PUF,” in *IEEE Transactions on Very Large Scale Integration (VLSI) Systems*, vol. 31, no. 2, pp. 243–252, Feb. 2023.
- Q. Huo, Y. Yang, Y. Wang, D. Lei, X. Fu, Q. Ren, X. Xu, Q. Luo, G. Xing, C. Chen et al., “A computing-in-memory macro based on three-dimensional resistive random-access memory,” in *Nature Electronics*, pp. 469–477, Jul. 2022.
- Y. Wang, Q. Huo, X. Xu, F. Tan, R. Gao, Q. Luo, Y. Yang, Q. Ren, X. Zhao, X. Wang, D. Lei and F. Zhang, “A Homogeneous, Reconfigurable, and Efficient Implementation of PUF in 3-D Selector-Free RRAM,” in *IEEE Transactions on Electron Devices*, vol. 68, no. 5, pp. 2577–2581, May 2021.
- F. Tan, Y. Wang, Y. Yang, L. Li, T. Wang, F. Zhang, X. Wang, J. Gao, and Y. Liu, “A ReRAM-Based Computing-in-Memory Convolutional-Macro With Customized 2T2R Bit-Cell for AIoT Chip IP Applications,” in *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 67, no. 9, pp. 1534–1538, Sept. 2020.
- Y. Wang, Y. Li, H. Shen, D. Fan, W. Wang, L. Li, Q. Liu, F. Zhang, X. Wang, M. Chang, and M. Liu, “A Few-Step and Low-Cost Memristor Logic Based on MIG Logic for Frequent-Off Instant-On Circuits in IoT Applications,” in *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 66, no. 4, pp. 662–666, Apr. 2019.

SKILLS

AI & LLM Systems: LLM Orchestration, Agent-Based Workflows, MCP, Controlled RAG, Semantic Research Memory, Local Embeddings, Transformer Architectures, Prompt & Context Engineering, Local LLM Deployment

Programming & Engineering: Python, NumPy, pandas, SciPy, FastAPI, REST APIs, Git, Testing, Modular Backend Design, Data Structures & Algorithms, Next.js, TypeScript, MATLAB

Quantitative Research: Statistical Modelling, Time-Series Analysis, Cross-Sectional Modelling, Feature Engineering, Predictive Modelling, Walk-Forward Validation, Model Validation, Robustness Analysis, Portfolio Backtesting

Machine Learning: scikit-learn, PyTorch, Ridge Regression, Regression Models, Gradient Boosting, Dimensionality Reduction, Hyperparameter Optimisation

Mathematics: Probability Theory, Statistics, Numerical Optimisation, Linear Algebra, Multivariate Calculus, Differential Equations

INTERESTS

Literary fiction, especially Haruki Murakami; rowing, tennis, strength training, snowboarding, history, museums, emerging technology, and language learning