Qi Zhang

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https://github.com/archiezq

Education

09.2023 – Present **University Van Amsterdam**
Master, Computational Science
Courses: *Machine Learning, Evolutionary Computing, Numerical Algorithms, Complex System Simulation, Agent Based Modelling, Stochastic Simulation, Computational Finance, Quantitative Risk Management*

09.2019 – 06.2023 **North China Electric Power University**
Bachelor, Energy and Power Engineering (Renewable Energy)
Courses: *Fluid Mechanics, Heat Transfer, Renewable Energy Techniques and Energy System.*
Thesis: *Thermal Management in Lithium-Ion Batteries Using Immersed Phase Change Materials*

Internship

07.2024 – 08.2024 **Research Intern**, Chinese Academy of Sciences

- Built a Flask-based alert management system with user login and role-based access.
- Enabled multi-channel notifications via Email, SMS, and WeChat.
- Developed deduplication and compression logic to ensure system reliability during high-volume alert events.
- Modified and deployed large language models (LLMs) to analyse alerts and support decision making.

Research Experience

11.2024 – 08.2025 **Thesis: Systems Dynamics Models of Blood Pressure Regulation**, University Van Amsterdam

- Developed a computational model combining baroreflex, cerebral autoregulation and oxygen transport mechanisms.
- Applied evolutionary algorithms to optimise 44 model parameters; ran optimisation on a high-performance computer.
- Designed a method to compare simulation results with real clinical data measured by fNIRS, which achieved precision at 90%.

01.2024 – 05.2024 **Computational Finance and Quantitative Risk Management**, University Van Amsterdam

- Applied the Black-Scholes model, finite difference methods (PDE), and the COS method to price European and American options.
- Analysed dynamic hedging strategies using Euler discretisation schemes, quantifying the impact of stock price and delta volatility on portfolio performance and cash flow management
- Constructed and backtested risk management frameworks, using Value at Risk (VaR) and Expected Shortfall (ES) methods to test portfolio risk under extreme market conditions.
- Performed multivariate dependency analysis using PCA, and FA.

01.2024 – 03.2024 **Hotel Recommendation System for Expedia**, Vrije University Amsterdam

- Designed a hotel recommendation system to predict customer bookings based on their search and booking history.
- Implemented machine learning models(Random Forest, LSTM, KNN, LightGBM, XGBoost), achieving an NDCG@5 score of 0.41.
- Ranked top 10 out of 218 teams in the 2024 Kaggle VU Data Mining Techniques Cup competition.

Skills

Languages English(C1), Chinese(Native).
Coding **Python**(Strong), **R**(Intermediate), **Matlab**(Intermediate), **C**(Basic)
Software SolidWorks(Strong), COMSOL(Strong), AutoCAD, Tableau, LaTeX
Others. Linux, Flask, HTML, SQL

Scholarships and Awards

2022 **National First Prize**, China Engineering Robotics Competition
University Scholarship 2020-2022, NCEPU.