Qi Zhang

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https://archiezq.github.io/qizhang.github.io/
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Education

09.2023 – Present **University Van Amsterdam**
Master, Computational Science University Van Amsterdam.
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.*

Work Experience

07.2024 – 08.2024 **Research Intern**, Chinese Academy of Sciences
Developed a Flask-based **alert management system** that offers multi-channel notification support (email, SMS, WeChat), integrates advanced alert deduplication and compression to mitigate storm impacts, and employs LLM for proactive monitoring and enhanced decision-making.

Research Experience

05.2024 – 07.2024 **Opinion Polarization: Conformity and Cross-group Contact**, University Van Amsterdam
Developed an agent-based model (**ABM**) using Python to analyze the effects of cross-group contact on social polarization. The model features agents interacting within a network and navigating a grid based on individual opinions, conformity levels, and opinion diversity. Polarization is measured by changes in Alteiri entropy. Additionally, conducted global and local sensitivity analyses using the One-Factor-At-a-Time (OFAT) method to determine the impact of various parameters on the model's outcomes.

01.2024 – 05.2024 **Computational Finance and Quantitative Risk Management**, University Van Amsterdam
Employed advanced computational techniques such as the Black-Scholes equation, PDE finite differences, and the COS method for precise option pricing. Enhanced predictive capabilities with machine learning for dynamic option pricing and risk assessment. Developed and validated risk models using Value at Risk (VaR) and Expected Return (ER). Utilized copula simulations, PCA, and FA for in-depth analysis of asset dependencies and financial data insights. Applied **machine learning** to forecast stock value changes and conduct model validations, thereby enriching strategic financial decision-making.

12.2022 – 06.2023 **Thermal Management in Lithium-Ion Batteries Using Immersed Phase Change Materials**, North China Electric Power University
Developed a thermal control model(**COMSOL**) for lithium-ion batteries utilizing phase change materials, effectively reducing battery temperatures from 46.4°C to 34.6°C under operational conditions. This model employs both sensible and latent heat absorption, with a volume-expansion-driven thermal switch to optimize thermal conductivity and improve battery performance.

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, sqlite

Scholarships and Awards

2022 **National First Prize**, China Engineering Robotics Competition
University Scholarship, NCEPU
2021 **University Scholarship**, NCEPU
Outstanding Student Performance, NCEPU.