Yuhong Zhang

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EDUCATION

Donghua University, Shanghai, China

Master of Science in System Science, School of Science Sept. 2022-Expected Jul. 2025

Average: 92.4/100

Relevant Coursework: Dynamical System Theory and Application; Nonlinear Time Series; Stochastic Process Theory; Numerical Analysis; Introduction to Systems Science

Research Focus: Dynamics in Ordinary Differential Equations (ODEs)

North University of China

Bachelor of Science in Statistics, School of Mathematics Sept. 2018-Jun. 2022

Average: 88/100

Relevant Coursework: Mathematical Analysis; Probability Theory; Mathematical Statistics; Ordinary Differential Equations; Real Variable Functions; Applied Multivariate Statistical Analysis; Data Mining; R Language Data Analysis and Machine learning

PUBLICATIONS

Zhang, Y., Song, Y., & Niu, L. (2023). "Globally attracting positive periodic solution of the n-dimensional periodic Ricker system." *Applied Mathematics Letters*, 150, 108948. DOI:org/10.1016/j.aml.2021.107047. **(JCR:Q1)**

Xue, Z., **Zhang, Y.**, Zhang, L & He, C. "Forecasting stock return based on multi-factor dynamic attention network." *Submitted for Publication.*

HONORS & AWARDS

International & National Contest:

- **Meritorious Winner** - The Interdisciplinary Contest in Modeling (ICM) 2021
- **First Prize (Top 1%) -** National Market Research and Data Analysis Contest 2021
- Third Prize - National College Student Data Mining Contest 2021
- Honorable mention - National College Student Statistical Modeling Contest 2021
- **First Prize** - National College Student Data Analysis Challenge 2020
- Second prize - National College Student Data Analysis Challenge 2020

Scholarships & Honors:

- Second Class Scholarship for Elite Graduate Student - Donghua University 2023
- **Honor of Outstanding Graduate** - North University of China 2022
- **First Class Scholarship for Elite Student** - North University of China 2018-2022

RESEARCH EXPERIENCE

Department of Science, Donghua University

Master's Student

Primary Research Project Jun. 2023-Present

- Led research on the long-term dynamics of non-autonomous periodic Ricker systems.
- Developed methods to prove equilibrium points and global attractors, showing that species in competitive Ricker systems converge to a periodic attractor.
- Published results in a peer-reviewed international journal.

Interdisciplinary project on material performance prediction Dec. 2022-Dec. 2023

- Established and optimized an ODE model to predict material performance.
- Improved traditional methods like least squares by incorporating machine learning and sequential threshold least squares to solve a simplified equation solution.
- Outperformed traditional neural network models, improving the model's explanatory power.

Department of Mathematics, North university of China

Undergraduate Student

Graduate Creativity Program Jan. 2022-Jun. 2023

- Developed a novel model—Multi-Factor Dynamic Attention Network—to forecast stock exchanges using machine learning.
- The model used attention weights between time and factor dimensions, leading to a 20% accuracy improvement over standard LSTM and Random Walk models.
- Manuscript submitted to a peer-reviewed international journal.

Undergraduate Thesis Oct. 2021-Jun. 2022

- Researched and developed a deep learning model to optimize the control system of breathing machines, overcoming limitations in real-time monitoring.
- Structured a GRU-LSTM combined model and used five-fold cross-validation to minimize overfitting, achieving a predictive accuracy of 96.1% with an MSE of 0.93.

Provincial scientific research project Mar. 2021-Mar. 2022

- Built a dietary and wellness knowledge graph by aggregating information from various sources.
- Contributed to the acceleration of intelligent question-answering system development by two months.

SKILLS

- **Programming languages:** Python(proficient in TensorFlow, PyTorch), MATLAB, R
- **Languages:** Chinese (Native), English (Fluent)

EXTRACURRICULAR ACTIVITIES

Teaching Assistant for Linear Algebra 2022 – 2023

- Assisted in the instruction of Linear Algebra, including grading assignments, conducting review sessions, and providing support for student inquiries.

Excellent Volunteer, Youth4Climate at United Nations Framework Convention on Climate Change 2020

- Participated in organizing climate change awareness events and contributed to discussions on sustainable development strategies.