Xu Hu

Senior Undergraduate @ AHU / Visiting Student @ NCSU

Incoming Ph.D Student @UT Dallas

✏ Research Gate   ⓖ Github

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Education Background

The University of Texas at Dallas, Texas, U.S.A   2025-2030(expected)
- Incoming Ph.D Student, Department of Computer Science
- **Advisors**: Associate Professor Feng Chen and Assistant Professor Bingze Li
- **Research Interests**: large language model hallucination, trustworthiness and agent.

Anhui University (Project "211"), Hefei, China   2021-2025
- B.E.c Economic Statistics, Department of Big Data and Statistics
- Overall GPA: 4.16/5.00   Major GPA:4.33/5.0   WES: 3.92/4.00   Major Rank: 1/103 (Top 0.95%)
- **Main Courses:** Mathematics Analysis 1&2 (90&94), Advanced Algebra(87), Probability&Mathematical Statistics(89), Operation Research(97), Statistics(94), Bayesian Statistics(100), R Programming(95), Python Programming(95), Data Mining(93), Applied Statistical Analysis(95), Statistical Forecasting&Decision(96), Econometrics(Intermediate) (96), Time Series(91)

Publications

[1] **Hu Xu,** Yu Jianwen, Xu Qin, Tao Zhifu, "Volatility information in high-frequency financial interval-valued time series: A direct modeling pattern", the Fluctuation and Noise Letters 2024, SCI.
[2] IEEE ISBI 2025, "Application of a Latent Diffusion Model for MRI Generation: Integrating 3D Autoencoder with KL Divergence Loss and a ViT-based Denoising Framework", **as the first author**.

Research Experience

ISE, Edward P. FITTS Department, North Carolina State University   Raleigh, USA
Student Intern, under the supervision of Prof. Xiaolei Fang and Prof. Shu-Cherng Fang   08/2024–11/2024

Adaptive Diffusion Models for Industrial Irregular Time Series Analysis
- Applied conditional diffusion models to sparse/irregular/missing time series data in industrial settings.
- Implemented domain adaptation, replacing Gaussian noise with Brownian motion-based noise to match real-world sensor data characteristics.

Path-Aware Wiener Process Framework for RUL Prediction
- Developed a novel deep learning framework combining attention mechanism with Wiener process for multi-condition Remaining Useful Life prediction.
- Designed a path-aware embedding module to capture operating condition transitions and duration effects through attention mechanism
- Implemented variational inference to model unit-to-unit degradation patterns and mutual information-based sensor attention

Data Science and Analytic Thrust, HK University of Science and Technology   Guangzhou, China
Research Intern, under the supervision of Prof. Yuxuan Liang and Prof.Zhengyang Zhou   06/2024–08/2024

Spatio-Temporal Selective State Space(ST-Mamba) Model for Traffic Flow Prediction
- Be the first model without using graph modeling in the spatio-temporal model.
- Effectively capture the long-range dependency for traffic flow data.
- Employ the Mamba block to improve computational efficiency and accuracy.

- By ablation experiments, find some new conclusions of the SSM.

TReNDS lab, ECE, GSU&Georgia Tech&Emory   Atlanta, USA
Collaborate with the Ph.D *Yuda Bi*; Under the supervision of *Vince D. Calhoun*   06/2024–08/2024

Functional-to-structural MRI Image Translation based on Conditional Latent Diffusion: Biomarker Identification for Schizophrenia
- Utilizing an improved Diffusion Transformer (DiT) to achieve reverse generation from Functional Network Connectivity (FNC) to Gray Matter (GM).
- Introducing FNC matrix as a condition in the DiT model to guide the GM generation process.
- Revealing Subject-specific Biomarkers for Schizophrenia by Functional and Structural MRI Data.

Department of Big Data and Statistics, Anhui University   Hefei, China
Undergraduate's Research Project,under the supervision of Prof. Zhifu Tao   03/2023-09/2023

Volatility Information in High-Frequency Financial Interval-Valued Time Series: A Direct Modeling Pattern
- Developed a novel VAR-NN forecasting model combining Vector Auto-regressive process, volatility information, and neural networks.
- Introduced four types of interval-valued data volatility information for more accurate predictions.
- Outperformed traditional methods in forecasting high-frequency financial data.

College of Computing and Data Science, NTU   Singapore
AI Summer School & Award Best Project&Award Excellence Leadership   07/2023-08/2023

Location-based Demand Prediction & Resource Optimization System for California Bike-Sharing
- Real-time prediction and optimization of dynamic demand for bike-sharing systems
- Maximizing resource allocation efficiency and enhancing user experience
- Data-driven decision support for smart urban transport management using multidimensional data

Competition Awards

2023 ICM - American Undergraduate Mathematical Modeling Competition - Finalist   02/2023
*Propose a solution about the network science and **operation research***
    Award Global Grand Prize Nomination (top 0.17%)
- Applied Canonical Correlation Analysis to the United Nations' 17 Sustainable Development Goals.
- Use some advanced econometrics methods to analyse the factors influencing the progress.
- Utilized an LSTM to predict achievable goals over the next decade.
- Concluded with a sensitivity analysis, affirming the robustness of the model.

Honorary & Leadership

- **The Student Assistant of the President in Anhui University**
The first junior undergraduate selected   06/2022-06/2023
- **Outstanding Student Award, Academic Excellence Award** etc.
- SWE - Society of Women in Engineers

Skills

Professional Qualification: ACCA (2022): Pass the exam of BA,MA,FA; BEC Medium pass
Computer Skills: Python, R, PyTorch, LaTeX