Hua TANG

+86 133 5726 3957 | @ htang2023126578@gmail.com | GitHub | Homepage

EDUCATION

Shanghai Jiao Tong University   **Sept. 2020 − June 2024 (Expected)**
Bachelor of Engineering in Industrial Engineering   *GPA: 3.6/4.0*
Minor in Mathematics and Applied Mathematics   *GPA: 3.7/4.0*
- **Core Courses:** Big Data Analysis, Stochastic Process, Engineering Statistics, Quality Management (Statistics), Probability and Statistics, Linear Algebra, Data Structure, Operations Research, Partial Differential Equations, Modeling and Simulation of Production Systems

PUBLICATIONS

Hua Tang, Lu Cheng, Ninghao Liu, Mengnan Du. A Theoretical Approach to Characterize the Accuracy-Fairness Trade-off Pareto Frontier. Submitted to *The Twelfth International Conference on Learning Representations*, 2024.

SELECTED RESEARCH EXPERIENCES

Characterize the Accuracy-Fairness Trade-off Pareto Frontier   July 2023 − Present
Supervisor: Prof. Mengnan Du, Assistant Professor, New Jersey Institute of Technology
- Proposed four categories to characterize the important properties of the accuracy-fairness trade-off Pareto frontier and theoretically proved that under ideal settings where sensitive attributes can be fully explained by non-sensitive attributes, the trade-off curve exhibits continuity in most cases.
- Proved that accuracy may suffer a sharp decline when over-pursuing fairness where the optimal classifier for group fairness resides within the optimal classifiers for each sensitive group. An upper bound is derived for proof.
- Submitted a first-authored manuscript to the 12th International Conference on Learning Representations.

Achieve Excess Returns through Curated LSTM-based Model   July 2022 − May 2023
Supervisor: Tongxin Ren, Assistant Professor, Shanghai Jiao Tong University
- Proposed a curated LSTM-based regression model for price variation prediction, surpassing the conventional technique (ARIMA and linear regression model) with a notable enhancement in accuracy (1.6%), compared to the traditional method (0.5%). Code is available here: link
- Conducted extensive preprocessing on a large dataset of Bitcoin transactions, including missing-data imputation, differential computation, and cluster analysis, thereby elucidating the inherent data structure within this domain.
- Extracted multiple synthesized factors to capture the momentum and volatility of the data and reflect the dynamics of supply and demand as well as market sentiment, which are valuable for subsequent modeling processes.

Accelerate ST-GCN-based Human Motion Quality Assessment   Mar. 2023 − Sept. 2023
Supervisor: Prof. Yongxiang Li, Associate Professor, Shanghai Jiao Tong University
- Revamped the existing code for human motion quality assessment by leveraging matrix operations acceleration techniques and fine-tuned model hyperparameters using grid search, achieving a substantial reduction in training time from 60s per batch to 45s per batch. Code is available here: link
- Implemented the Butterworth denoising filter to reduce noise in our 3D temporal dataset, followed by segmenting the time series through detecting the peaks of motion periods, which often display variations in the original video.
- Introduced an innovative framework based on the hierarchical vanilla Spatial-Temporal Graph Convolutional Networks and integrated the Attention module and bilateral LSTM for extracting temporally symmetric features.

SELECTED AWARDS & HONORS

2nd Price in 18th National Competition of Transport Science and Technology for Undergraduate Students (NACTranS) (Top 5%)   2023

Meritorious Winner in the Mathematical Contest in Modeling (Top 20%)   2022

1st Price in 17th "Dongfeng Nissan Cup" Tsinghua IE Sword National Industrial Engineering Case Study Competition (Top 8%)   2022

SKILLS

Programming: Python, C/C++, SQL, MATLAB, LaTeX
Deep Learning Frameworks: TensorFlow, PyTorch, Scikit-Learn, Keras