WANG ZIYUAN

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Date of Birth: April 6th, 1996; **Date of Graduation:** June, 2024; **Gender:** Male; **Nationality:** China
Research Area: Natural Language Processing, Deep learning, Quantitative Analysis, Design Science
My Website: HomePage; LinkedIn; GoogleScholar(300+Citation); Github(1.2K+Star); CSDN

Education

- **School of Information Management and Engineering, Shanghai University of Finance and Economics**
  2018.9-2024.6, PhD Candidate, majoring in Management Science and Engineering.
  PhD Thesis: An Improved Approach to Text Representation and its Application in Finance
  GPA: 3.6/4.0 **Rank:** Top10%; **Supervisor:** Professor Hailiang Huang
- **Tippie College of Business, University of Iowa**
  2022.4-2023.4, Visiting Scholar, majoring in Business Analytics; **Supervisor:** Professor Weiguo Patrick Fan
- **College of Finance and Statistics, Hunan University**
  2014.9-2018.6, Bachelor of Science in Statistics, majoring in Statistics.
  GPA: 3.8/4.5 **Rank:** Top5% **Supervisor:** Professor Yong Ma

Main Awards at school: Won National Scholarship, First Prize Graduates Scholarship, Outstanding Class leaders of School, Outstanding Students of School, Outstanding Graduate of Hunan Province, Citibank "Future Elite" Scholarship, School of Merit student, Outstanding Class Leader, First Prize Undergraduates Scholarship many times.
Positions held at school: Grade Leader, Vice President of Graduate Student Union, Monitor, etc.

Working Experience

ZheShang Fund, Quantitative Researcher **2024.3-Now**

- **Stock selection by Graph neural network based on text information.** According to the text content, the correlation between A-share stocks is explored, and the potential market dynamics are revealed through text analysis. This paper studies several SOTA text representation models such as FinBERT, ERNIR3.0 and DMETA, and combines Whitening and other techniques to improve the anisotropic representation of language models. The investment strategy based on GCN, GAT and other graph neural network methods to establish the connection with the stock price, based on the volume and price characteristics, the Out-Of-Sample test IC reaches 14.44%, RankICIR 13.94%, ICIR, RankICIR exceeds 1.2 in the 2021-2023 interval of China Securities Index. The effect is better than the baseline model and the graph information at the same model performance.

Millennium Management, CRTC, Junior Quantitative Researcher **2023.7-2023.12**

- **A quantitative investment application based on NLP in Earnings Conference Call sentiment factors.** Through text analysis of earnings conference calls of listed companies in the US stock market, based on FinBERT, FLANG-BERT, RoBERTa and FinGPT and other large language models, explore a variety of deep learning training methods such as language model inference, fine-tuning and upstream pre-training + downstream fine-tuning. Moreover, the sentiment analysis and inference of different Prompts in LLMs are compared and analyzed. The Ensemble factor is predicted by using the above models; Based on the research results of SOTA in academia and industry, the NLP feature factors based on behavioral finance are established. Combined with the above factor signals, we built Pipeline framework for market investment sentiment mining.
- Achieved an annualized return of 2.98%, a Sharpe ratio of 3.03, MaxDD 1.29% and daily turnover 6.26% in backtesting within the team's framework, outperforming the returns of factors provided by data vendors such as Amenity and Alexandria under the same strategy trading conditions. Possess extensive knowledge and practical application insights into the use of large language models like ChatGPT in quantitative investing.

Publications & Research Project

How Close is ChatGPT to Human Experts? Comparison Corpus, Evaluation, and Detection 2022.12-2023.07
Accepted by Large Language Models @ International Joint Conference on Artificial Intelligence (LLM@ IJCAI 2023, CCF-C, CORE-B)

- **Co-First Author.** As part of one of the first teams globally to initiate a ChatGPT comparison and detection project, we collected human-ChatGPT comparative data in an open-domain Q&A task and published the first ChatGPT Corpus, HC3 (Human ChatGPT Comparison Corpus). We conducted Turing tests, textual statistics, and linguistic analysis on the corpus. We summarized the textual paradigms of ChatGPT and its differences

from human responses, and developed a series of ChatGPT classification detectors based on single texts and Q&A pairs using deep learning and machine learning methods, achieving significant detection results.

- Pioneered in the academic and industrial communities by open-sourcing the comparative dataset and detector models; our detector demo has received over 200,000 global visits, with the open-source model averaging 300,000+ monthly downloads, the dataset averaging 30,000+ monthly downloads, and acquiring over 1200+ Github stars and 300+ paper citations. The work has been accepted by the international top-tier computer conference LLM@IJCAI(CCF-A, CORE-A*). Please feel free to visit our Demo and Paper.

Investigating Effectiveness of Whitening Post-processing on Modifying LLMs 2022.09-2023.06
Published in 35th IEEE International Conference on Tools with Artificial Intelligence (ICTAI 2023, CCF-C, CORE-B), acceptance rate = 21%

- **First Author.** Investigated the decorrelation effects of vector matrix whitening methods such as PCA and ZCA on the textual representations of large language models. This research aimed to standardize the text representation learning ability of language models, addressing the traditional models' oversight of the assumption of orthogonal bases in cosine similarity. The study significantly improved performance across nearly 20 datasets in different NLP tasks, applying to models including Bert, DistilBert, and GPT-2.
- Our work has been accepted as a Full Paper at the 35th IEEE ICTAI 2023. This research was part of the National Natural Science Foundation of China project (Grant No.: 72271151) and SUFE Graduate Innovation Fund project (Project No.: CXJJ-2021-052). Welcome to visit Paper.

New Hybrid Model of Crowdfunding Project: A Perspective of Prospect Backers 2022.08-2023.02

- **Corresponding Author.** This work introduces Prospect Theory (PT) to capture the heterogeneity in investor support behavior in crowdfunding. It evaluates the prospect utility of projects and bases support decisions on the assessed prospect utility using deep learning and machine learning methods.
- **Accepted** by ESWA (Expert Systems With Applications), JCR Q1 and SCI I zone top journal.

IDEA: Interactive Double Attentions from Label Embedding for Text Classification 2022.06-2022.09
Published in IEEE ICTAI 2022, CCF-C, CORE-B, acceptance rate = 15.7%

- **First Author.** Proposed a succinct method to enhance BERT's performance in text classification by utilizing label embedding techniques in supervised learning. Developed a novel model structure that integrates text and label information on top of the existing BERT model, achieving significant improvements on public datasets.
- Published at the 34th IEEE International Conference on Tools with Artificial Intelligence (ICTAI 2022, CCF-C, CORE-B, acceptance rate = 15.7%). This research was part of the National Natural Science Foundation of China project (Grant No.: 72271151). Welcome to visit Paper.

Web Tool: SUFE-CS-CONF-DDL 2022.01-2022.03

- **Project initiator/project leader.** We built a countdown system tool for the computer conference of Shanghai University of Finance and Economics based on Vue-Cli, providing dual retrieval of tenure track tier/CCF level.
- Please feel free to visit our visualization website SUFE-CS-CONF-DDL, and the open-source code of the project is available on Github.

Analysis of Shanghai's Biopharmaceutical Industry Chain Based on Big Data and Comparative Study of the Yangtze River Delta (with Suzhou Bank) 2021.02-2022.01

- **Algorithm Engineer.** Combining big data intelligent industrial research technology with traditional industrial economics, we constructed a knowledge graph of the biopharmaceutical industry chain and conducted an analysis of the biopharmaceutical industry chain in the Yangtze River Delta.
- In May 2021, the leaders of the Shanghai Municipal Party Committee visited an economic regulatory platform in a certain district and fully recognized the achievements of the platform construction, pointing out that further efforts should be made to build a "city brain" upgraded version in Shanghai.

Skills

- **Academic Reviewer:** Applied Intelligence, International Journal of Computational Science and Engineering,
- **IT:** Python (Pytorch, Tensorflow, Keras), R, SPSS, MATLAB, MySQL, Vue-Cli; LaTeX; Microsoft Office
- **ACCA**: Association of Chartered Certified Accountants, F1-3
- **Language:** IELTS: 7.0(R/L/S/W:7.5/7.5/6.5/6.0); Mandarin Certificate (Level 1 B)
- **Others:** National Invention Patent, C-1 Driver License, Saxophone Level 7