Pinqiao Wang

CONTACT INFORMATION

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Personal Website

RESEARCH INTERESTS

Develop ML/AI Methods to understand agent behaviors for the design of efficient algorithmic-based systems of LLM and to create reliable agent-based applications in 1)Finance (stock market/Predictive models/Equity research), 2)Statistical Imaging, and other potential fields.

Specific field: Efficient and Trustworthy ML/AI, NLP, Multi-Agent Systems, LLM Reasoning, AI Application.

EDUCATION

Columbia University, New York City, NY
M.A in Statistics, Major GPA: 3.79/4.00 — December 2024

University of North Carolina at Chapel Hill, Chapel Hill, NC
B.S. in Statistics and Analytics, Double Major in Economics, Major GPA: 3.81/4.00 — May 2023

- Coursework:
- **Math**: Linear Algebra, Discrete Math, Multivariate Calculus, Differential Equations, Probability Theory, PhD-level Real Analysis, Mathematical Analysis/Measure Theory, etc.
- **Statistics**: Statistical Inference, Optimization, Machine Learning, Stochastic Process, Statistical Analysis Methods, PhD-level Theoretical Statistics, etc.
- **CS/DS**: Data Structures and Algorithms, Data Science, Deep Learning/Neural Networks, Data Mining, NLP, LLM, etc.

HONORS AND AWARDS

Best Presentation Award, ACM, Internation Conference of AI in Finance	2024
Graduate School of Arts and Sciences Travel Grant, Columbia University	2024
Best Research Intern Award, Agam Capital Management, LLC.	2024
MCM/ICM 2024 Honorable Mention award	2024
Student Representative Award, Columbia University	2023
All-track Champion (1st/117 in last round), CDSS Data Science Hackathon, NY	2023
Dean's List and Honor Graduate with Distinction, UNC-Chapel Hill	2021, 2023
Honor Carolina Scholarship, UNC-Chapel Hill	2019
Best Science Innovation in Computer Science, State Science Bowl, Inner Mongolia	2019

PEER-REVIEWED ACCEPTED WORK

Pinqiao Wang*, Tianyu Zhou*, Yilin Wu*, and Hongyang Yang. 2024. FinRobot: AI Agent for Equity Research and Valuation with Large Language Models. In Proceedings of ACM International Conference on AI in Finance (ICAIF '24). ACM, New York, NY, USA. [Paper],[Google Scholar]

RESEARCH EXPERIENCE

AI4F Lab, AI4Finance Foundation, Columbia University, New York City, NY

AI/ML research assistant — October 2023 - present
Department Research Mentor, Adjunct Professor Bruce Yang with the FinRobot, and FinGPT:

- Published a first-author paper, accepted as the Oral presentation (less than 5%) by ACM ICAIF 2024.
- Developed a multi-layer debate reinforcement learning algorithm in a chain-of-thought prompting setting that can reliably and stably produce full equity research reports after training with industry knowledge.

- Applied RAG to engineer scalable pipelines to reduce hallucinations and conduct inference. Model Training for stock forecasting in the Bitcoin market, applied SWT and LoRA in Python to fine-tune FinGPT with A100 GPU with Llama2 and Baichuan2, reached 70 percent accuracy.

Statistics Department, Columbia University, New York City, NY

research assistant February 2024 - August 2024

Associate Professor Arain Maleki:

- Developed custom neural network models tailored for high-dimensional imaging data, utilizing PyTorch and TensorFlow to enhance computational efficiency and achieve a 7 percent increase in accuracy on benchmark datasets.
- Created and fine-tuned 2 LSTM models for image segmentation and classification, successfully solved the PDE verge cases in image recovering with noise, essential for medical and remote sensing applications.

Center on Global Energy Policy, Columbia University, New York City, NY

student lead research assistant February 2024 - May 2024

Associate Pricipal Investigator John Cornwell:

- Assisted in designing machine learning algorithms to optimize carbon capture processes, utilizing PyTorch and TensorFlow to model complex chemical interactions and predict optimal operating conditions, achieving a 30 percent increase in efficiency.
- Built and fine-tuned LLM to automate literature reviews and generate research hypotheses in the field of carbon tech, significantly reducing the time required for data analysis and hypothesis generation.

Conference Presentations

Pinqiao, W. 2024. FinRobot: AI Agent for Equity Research and Valuation with Large Language Models. Oral presented at the *ACM, 5th International Conference of the AI in Finance*, Brooklyn, NY [Slides]

Projects

Bayesian Probabilistic Modeling with AI [Web], [Github Repo]
Completed at CDSS Data Science Hackathon(Sponsored by HRT, Google Cloud), Champion Project

Reinforcement Learning with Domain knowlegde [Code]
The foundation code of RL system in FinGPT and FinRobot

Efficient Deep Neural Networks for LLM [Code]
A project with ECBM 4040 at Fu Foundation Engineering School

More interesting projects including learning, paper reviewing are available on my website.

Working Experience

Agam Capital Management, LLC, New York, NY

AI Research Intern June 2024 – August 2024

Working with Waston AI Lab from IBM, I focus on customizing and fine-tuning Large Language Models. Design RAG + MoE machine inference pipeline to achieve 85 percent accuracy in automated code translating and Q/A generation. Prototype the latest AI/ML research and localize the method tailored to one's own business needs.

Baidu, Inc, Shenzhen, China

Research Intern May 2023 – August 2023

Collaborated with the NLP lab to enhance Baidu's ERNIE model for legal document summarization. Fine-tuned the model using domain-specific datasets and optimized hyperparameters, achieving a 15% improvement in summarization accuracy and surpassing internal benchmarks.

TEACHING EXPERIENCE

STOR Department, UNC-Chapel Hill, Chapel Hill, NY

Teaching Assistant with Yufeng Liu — January - May 2023

Grader, Office Hour Holder for 40 students enrolled in *STOR565 Machine Learning*

COMPUTER SKILLS

- Python, R, SQL, C, C++, C-sharp, SAS, Power BI, MATLAB, Microsoft Office, Google Cloud, AWS,Linux, GitHub, WordPress