

# CHENYU (MONICA) WANG

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## EDUCATION BACKGROUND

### Tsinghua University

Beijing, China

Bachelor of Economics and Finance

Sep. 2018-Jun. 2022

- **High School Awards:** Gold medalist of 50<sup>th</sup> International Chemistry Olympiad (4 in China); First prize of National High School Mathematics League; Silver medalist of 15<sup>th</sup> China Girl's Mathematical Olympiad
- **GPA: 3.99/4.0 (Ranking: 1/192); GPA for major courses: 4.0/4.0**
- **Honors:** National Scholarship (1%); Tang Lixin Scholarship (50 in Tsinghua); Tsinghua Athletics Excellence Scholarship
- **Courses:** Time Series Analysis(A+), Multivariate Statistical Analysis(A+), Financial Economics(A), Calculus(A), Statistical Learning(A), Convex Optimization(A+), Stochastic Calculus(A), Ordinary Differential Equation(A+)

Minor in Data Science and Technology

Jun. 2019-Jun. 2022

- **GPA: 3.96/4.0 | Courses:** Data Structure(A+), Deep Learning(A+), Database(A+), Artificial Intelligence(A)
- **Technical Skills:** Proficient in Python/C++/R/Matlab; Machine learning models: SVM, RF, k-Means etc.; Deep learning algorithms: CNN, RNN etc.; Deep learning framework: PyTorch, Tensorflow; Basic knowledge of SQL and Linux.

### University of California, Berkeley

Berkeley, CA

Exchange Student, Department of Statistics (Instructed by Prof. Noureddine El Karoui, remote)

Jan. 2021-Jun. 2021

- **Courses:** Modern Statistical Prediction and Machine Learning (A+, top 1%)

## PUBLICATIONS & PREPRINTS

### Tree-Based Neural Bandits for High-Value Protein Design [\[link\]](#)

Chenyu Wang, Joseph Kim, Le Cong, Mengdi Wang, under review of AISTATS 2022

### HAGEN: Homophily-Aware Graph Convolutional Recurrent Network for Crime Forecasting [\[link\]](#)

Chenyu Wang, Zongyu Lin, Xiaochen Yang, Mingxuan Yue, Jiao Sun, Cyrus Shahabi, accepted, AAAI 2022

### Open Domain Generalization with Domain-Augmented Meta-Learning [\[link\]](#)

Yang Shu, Zhangjie Cao, Chenyu Wang, Jianmin Wang, Mingsheng Long, CVPR 2021

## RESEARCH EXPERIENCE

### Tree-Based Neural Bandits for High-Value Protein Design

Princeton, NJ

Advised by Prof. Mengdi Wang, Department of Electrical Engineering, Princeton University

Jun. 2021-present

- Completed a paper under review of AISTATS 2022 as the first author. Proposed the tree-based neural bandits algorithm to find a rich class of high fitness proteins using substantially fewer design queries on two public protein fitness datasets.
- Modelled protein design as a contextual bandit problem and utilized a modified upper-confidence bound algorithm as guided by neural bandit and the Monte Carlo tree search process to accelerate the search for optimal designs.
- Analyzed model convergence rate based on global search space ranking, fitness distribution shift, and search trajectory.

### Homophily-Aware Graph Convolutional Recurrent Network for Crime Forecasting

Los Angeles, CA

Advised by Prof. Cyrus Shahabi, Department of Computer Science, USC

Jan. 2021-Jun. 2021

- Completed a paper accepted by AAAI 2022 as the first author. Adapted the homophily-aware graph convolutional recurrent network HAGEN for crime forecasting; consistently outperformed SOTA on two datasets by up to 8%.
- Utilized adaptive learning graph structure to capture the underlying high-order relationship between regions; incorporated direction-aware diffusion convolution layer with GRU framework to learn spatiotemporal dynamics.
- Constrained graph structure by designing homophily-aware loss to enhance the performance of graph neural network.

### Open Domain Generalization with Domain-Augmented Meta-Learning

Beijing, China

Advised by Prof. Mingsheng Long, School of Software, Tsinghua University

Sept. 2020-Nov. 2020

- Completed a paper published by CVPR 2021 as the third author. Conducted research on open domain generalization.
- Utilized different ensemble model-based criteria including entropy, consistency, and cosine distance from class center to

conduct outlier label recognition; introduced clustering loss into loss function to facilitate open-set recognition.

- Evaluated model performance with metrics including H-score and class average accuracy to guide parameter grid search.

## **Understanding Chinese Bond Yield Curve: Excess Return Prediction**

**Beijing, China**

*Advised by Prof. Hao Wang, SEM, Tsinghua*

Jun. 2020-Aug. 2020

- Modeled bond excess return in Chinese market and contributed one chapter in the book to be published.
- Constructed predictors for long term bond's excess return; conducted model comparison with sub-sample test and out of sample estimation to gain supportive evidence that Chinese bond market has shorter market cycle and higher fluctuation.
- Constructed dynamic investment strategies to achieve 4 times Sharpe ratio improvement and stable sub-period performance.

## **WORK EXPERIENCE**

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### **Jane Street Asia Limited**

**Hong Kong**

*Quantitative Trading Intern*

Jun. 2021-Sept. 2021

- Conducted data processing and analysis, model construction, and trading simulation in two research projects on Chinese and Australian stock market; produced predictive models for future market returns in both projects.
- Developed and executed strategies for a variety of simulated trading exercises by observing market events under time pressure.

### **WizardQuant Capital Management**

**Zhuhai, China**

*Quantitative Research Intern, Quantitative Research Department*

Jun. 2020-Aug. 2020

- Built an alternative risk model based on equity research reports data; supplemented to Barra model factors.
- Conducted comprehensive EDA; built the model with similarity matrix constructing, affinity propagation clustering, and daily updating on rolling window data. Such grouping model captured industrial chain characteristics.
- Completed data filtering and graph merging; achieved intragroup Barra residual correlation up to 0.3.

### **TechSharpe Quant Capital Management**

**Beijing, China**

*Data Analyst Intern, Trading Department*

Jan. 2020-Feb. 2020

- Conducted research on futures rolling strategies of CSI500 index future and analyzed the advantage of rolling by open interest.
- Optimized trading system with Python to summarize daily transaction information and calculate profits.

## **LEADERSHIP & ACTIVITIES**

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### **Meritorious Winner in 2021 MCM/ICM Mathematical Contest in Modelling**

**US/China**

*Team Leader*

Feb. 2021

- Performed analysis on influence of previous music and the pattern of music evolution using network science approaches.
- Constructed both genre-level and artist-level network based on the given data, evaluated artists' influence with Katz centrality and figured out potential breakthrough artists with critical path algorithm.
- Modeled the dynamic pattern of genres and artists, and conducted intervention analysis on Pop/Rock with ARIMA model.

### **Banking & Investment Mentor Program** *(A global student-run non-profit organization with 10-year history)*

**US/China**

*Co-president*

Feb. 2021-Feb. 2022

- Organized the global recruitment for Class 2023 (100+ candidates), meet-ups and alumni network update and maintenance.
- Selected as the only Tsinghua member in Class 2022 (14 in total globally, membership covering Wharton, Harvard etc.).

### **Student Union of Tsinghua University School of Economics and Management**

**Beijing, China**

*Director of Department of Sports*

Mar. 2019-Sept. 2020

- Organized SEM spring training, resulting in 20% higher score in track & field race and three consecutive championships.
- Participated in SEM track team as team leader and 4 other teams as core member, spending 10+ hours/week in training; got top 3 in 16 events of John Ma Cup including 1<sup>st</sup> place in 4\*400m relay, 3<sup>rd</sup> place in 1500m and women's soccer champion.

## **SKILLS & INTERESTS**

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- **Languages:** Mandarin (Native); English (Proficient; TOEFL 110/120: Reading 29, Listening 28, Speaking 26, Writing 27)
- **Interests:** Sports (1<sup>st</sup> place in 4\*400m; member of SEM basketball and soccer team), Chinese Zither (Amateur Certificate 9), Debate (2<sup>nd</sup> place in Tsinghua Freshmen Debate Competition), Literature (Editor for senior high school magazine)