**CHENYU (MONICA) WANG**

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**EDUCATION BACKGROUND**

**Massachusetts Institute of Technology Cambridge, MA**

*Ph.D. Student in Electrical Engineering and Computer Science (EECS)* | GPA 5.0/5.0 Aug. 2022-present

Advised by Prof. Tommi Jaakkola and Prof. Caroline Uhler

**Tsinghua University Beijing, China**

*Bachelor of Economics, Minor in Data Science and Technology* | GPA 3.99/4.0 (Ranking 1/192) Sep. 2018-Jun. 2022

Advised by Prof. Mingsheng Long, Prof. Mengdi Wang and Prof. Cyrus Shahabi

**University of California, Berkeley Berkeley, CA**

*Exchange Student, Department of Statistics (Instructed by Prof. Noureddine El Karoui)* | GPA 4.0/4.0 Jan. 2021-Jun. 2021

**RESEARCH INTERESTS**

My research interests lie broadly in machine learning, representation learning, and AI for science. Recently my research focuses on multi-modal representation learning and perturbation modelling for drug discovery. I am also interested in foundation models for science and spatial-temporal modelling in system biology.

**PUBLICATIONS & PREPRINTS**

*(\*: Equal Contribution)* [Google Scholar](https://scholar.google.com/citations?user=Kq0dhLAAAAAJ&hl)

·**Chenyu Wang**, Sharut Gupta, Caroline Uhler, Tommi S. Jaakkola. Removing Biases from Molecular Representations via Information Maximization. In *NeurIPS New Frontiers of AI for Drug Discovery and Development Workshop, NeurIPS AI4D3 2023. Under review of ICLR 2024.* [[link](https://openreview.net/forum?id=zzJNdbfeeW)]

·**Chenyu Wang**\*, Joseph Kim\*, Le Cong, Mengdi Wang. Neural Bandits for Protein Sequence Optimization. In *56th Annual Conference on Information Sciences and Systems, CISS 2022*. [[link](https://chenyuwang-monica.github.io/protein_design.pdf)]

·**Chenyu Wang**\*, Zongyu Lin\*, Xiaochen Yang, Jiao Sun, Mingxuan Yue, Cyrus Shahabi. HAGEN: Homophily-Aware Graph Convolutional Recurrent Network for Crime Forecasting. In *AAAI Conference on Artificial Intelligence, AAAI 2022*. **(Oral Presentation.)** [[link](https://ojs.aaai.org/index.php/AAAI/article/view/20338)]

·Yang Shu\*, Zhangjie Cao\*, **Chenyu Wang**, Jianmin Wang, Mingsheng Long. Open Domain Generalization with Domain-augmented Meta-learning. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition, CVPR 2021*. [[link](https://openaccess.thecvf.com/content/CVPR2021/papers/Shu_Open_Domain_Generalization_with_Domain-Augmented_Meta-Learning_CVPR_2021_paper.pdf)]

**RESEARCH EXPERIENCE**

**Removing Biases from Molecular Representations via Information Maximization Cambridge, MA**

*Advised by Prof. Tommi Jaakkola and Prof. Caroline Uhler, MIT EECS*  Aug. 2022-present

·Proposed InfoCORE to mitigate the confounding factors in multimodal molecular representation learning from multiple information sources, in particular the confounding batch effects in high-content drug screening data.

·Theoretically, InfoCORE maximizes the variational lower bound on the conditional mutual information of the representation given the batch identifier. It empirically outperforms various baselines on multiple downstream tasks.

**Tree-Based Neural Bandits for High-Value Protein Design Princeton, NJ**

*Advised by Prof. Mengdi Wang, Department of Electrical Engineering, Princeton University*  Jun. 2021-Dec. 2021

·Proposed an MCTS-guided neural contextual bandits algorithm that utilizes a modified upper-confidence bound algorithm as guided by neural bandit and the Monte Carlo tree search process for accelerating the search for optimal protein designs.

·This approach finds a diverse and rich class of high fitness proteins using substantially fewer design queries.

**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

·Presented a graph convolutional recurrent network with a novel homophily-aware graph learning module for crime forecasting.

·Utilized adaptive learning graph structure to capture the underlying high-order relationship between regions; 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

·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 *Analyzing the Chinese Yield Curve, Hao Wang et al. (2021), Tsinghua University Press*.

**HONORS & AWARDS**

·**MIT EECS Great Educators Fellowship**, 2022

**·Outstanding Undergraduate in Tsinghua** (2% in Tsinghua), 2022

·Outstanding Undergraduate in Beijing, 2022

·**Chen Daisun Schorlarship** (3 in Tsinghua SEM), 2022

·Undergraduate Commencement Student Speaker of Tsinghua SEM, 2022

·Meritorious Winner in MCM/ICM Mathematical Contest in Modelling, 2021

·Chen Xiaoyue Scholarship, 2021

·Tang Lixin Scholarship (50 in Tsinghua), 2020

·**National Scholarship** (0.2% in China), 2019

·Athletics Excellence Scholarship of Tsinghua, 2019

·First Class Scholarship for Freshmen of Tsinghua, 2018

·**Gold medalist of 50th International Chemistry Olympiad** (4 in China, 6th place in the world), 2018

·Silver medalist of 15th China Girl’s Mathematical Olympiad (50 in China), 2022

**WORK EXPERIENCE**

**Jane Street Asia Limited Hong Kong**

*Quantitative Trading Intern* (Return offer extended) 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.

**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.

**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.

**LEADERSHIP & ACTIVITIES**

·Team Leader, Meritorious Winner in 2021 MCM/ICM Mathematical Contest in Modelling. Feb. 2021

·Co-president, Banking & Investment Mentor Program (A 10-year global non-profit organization). Feb. 2021-Feb. 2022

·Director of Department of Sports, Student Union of Tsinghua SEM. Mar. 2019-Sept. 2020

**SKILLS & INTERESTS**

**·Languages:** English (Proficient; TOEFL: 110/120); Mandarin (Native)

**·Technical Skills:** Python/C++/Matlab; Deep learning framework: PyTorch, Tensorflow; Basic knowledge of SQL and Linux.

**·Interests:** Sports (1st place in 4\*400m; member of SEM basketball and soccer team), Chinese Zither (Amateur Certificate 9)