**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

*M.S. in Electrical Engineering and Computer Science (EECS)* Aug. 2022-Feb. 2025

Advised by Prof. Tommi Jaakkola

**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 focuses on developing controllable and efficient generative models, via reinforcement learning, multi-modal learning, and representation learning. I work across various application domains, including language models, vision, and scientific data (e.g. biochemistry). My recent work explores:

·Reinforcement learning, reasoning and inference-time alignment for deep generative models and language models.

·Multi-modal learning, especially multi-modal representations and their interactions with generative models.

·Enhancing biochemistry discovery through generative models and agents.

**PUBLICATIONS & PREPRINTS**

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

·**Chenyu Wang**, Paria Rashidinejad, DiJia Su, Song Jiang, Sid Wang, Siyan Zhao, Cai Zhou, Shannon Zejiang Shen, Feiyu Chen, Tommi Jaakkola, Yuandong Tian, Bo Liu. SPG: Sandwiched Policy Gradient for Masked Diffusion Language Models. In *arXiv preprint**2025*. [[link](https://arxiv.org/pdf/2510.09541)]

·Sharut Gupta, Shobhita Sundaram, **Chenyu Wang**, Stefanie Jegelka, Phillip Isola. Better Together: Leveraging Unpaired Multimodal Data for Stronger Unimodal Models. In *arXiv preprint**2025*. [[link](https://arxiv.org/pdf/2510.08492)]

·Cai Zhou, Chenxiao Yang, Yi Hu, **Chenyu Wang**, Chubin Zhang, Muhan Zhang, Lester Mackey, Tommi Jaakkola, Stephen Bates, Dinghuai Zhang. Coevolutionary Continuous Discrete Diffusion: Make Your Diffusion Language Model a Latent Reasoner. In *arXiv preprint**2025*. [[link](https://arxiv.org/pdf/2510.03206)]

·Siyan Zhao, Mengchen Liu, Jing Huang, Miao Liu, **Chenyu Wang**, Bo Liu, Yuandong Tian, Guan Pang, Sean Bell, Aditya Grover, Feiyu Chen. Inpainting-Guided Policy Optimization for Diffusion Large Language Models. In *arXiv preprint**2025*. [[link](https://arxiv.org/pdf/2509.10396)]

·Hanqun Cao\*, Xinyi Zhou\*, Zijun Gao\*, **Chenyu Wang**, Xin Gao, Zhi Zhang, Chunbin Gu, Ge Liu, Pheng-Ann Heng. Lightweight MSA Design Advances Protein Folding From Evolutionary Embeddings. In *arXiv preprint**2025*. [[link](https://arxiv.org/pdf/2507.07032)]

·**Chenyu Wang**\*, Cai Zhou\*, Sharut Gupta, Zongyu Lin, Stefanie Jegelka, Stephen Bates, Tommi Jaakkola. Learning Diffusion Models with Flexible Representation Guidance. In *Advances in Neural Information Processing Systems,* ***NeurIPS 2025***. (Also **Oral** at ICML 2025 FM4LS workshop.) [[link](https://arxiv.org/pdf/2507.08980?)]

·Cai Zhou\*, **Chenyu Wang**\*, Dinghuai Zhang\*, Shangyuan Tong, Yifei Wang, Stephen Bates, Tommi Jaakkola. Next Semantic Scale Prediction via Hierarchical Diffusion Language Models. In *Advances in Neural Information Processing Systems,* ***NeurIPS 2025***. [[link](https://arxiv.org/pdf/2510.08632)]

·Hanqun Cao\*, Haosen Shi\*, **Chenyu Wang**, Sinno Jialin Pan, Pheng-Ann Heng. GLID2E: A Gradient-Free Lightweight Fine-tune Approach for Discrete Sequence Design. In *Advances in Neural Information Processing Systems,* ***NeurIPS 2025***. [[link](https://openreview.net/pdf?id=29YgYt69Kl)]

·Xiner Li, Yulai Zhao, **Chenyu Wang**, Gabriele Scalia, Gokcen Eraslan, Surag Nair, Tommaso Biancalani, Aviv Regev, Sergey Levine, Masatoshi Uehara. Derivative-Free Guidance in Continuous and Discrete Diffusion Models with Soft Value-Based Decoding. In *Advances in Neural Information Processing Systems,* ***NeurIPS 2025***. [[link](https://arxiv.org/abs/2408.08252)]

·Hanchen Wang\*, Yichun He\*, Paula P Coelho\*, Matthew Bucci\*, ..., **Chenyu Wang**, ..., Aviv Regev. SpatialAgent: An Autonomous AI Agent for Spatial Biology. In *bioRxiv preprint 2025*. [[link](https://www.biorxiv.org/content/10.1101/2025.04.03.646459v1.full)]

·Yuhui Zhang\*, Yuchang Su\*, **Chenyu Wang**, Tianhong Li, Zoe Wefers, Jeffrey Nirschl, James Burgess, Daisy Ding, Alejandro Lozano, Emma Lundberg, Serena Yeung-Levy. CellFlux: Simulating Cellular Morphology Changes via Flow Matching. In *International Conference on Machine Learning,* ***ICML 2025***. [[link](https://arxiv.org/pdf/2502.09775)]

·Masatoshi Uehara, Yulai Zhao, **Chenyu Wang**, Xiner Li, Aviv Regev, Sergey Levine, Tommaso Biancalani. Inference-Time Alignment in Diffusion Models with Reward-Guided Generation: Tutorial and Review. In *arXiv preprint**2025*. [[link](https://arxiv.org/pdf/2501.09685)]

·Yuhui Zhang\*, Yuchang Su\*, Yiming Liu, Xiaohan Wang, James Burgess, Elaine Sui, **Chenyu Wang**, Josiah Aklilu, Alejandro Lozano, Anjiang Wei, Ludwig Schmidt, Serena Yeung-Levy. Automated Generation of Challenging Multiple-Choice Questions for Vision Language Model Evaluation. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition,* ***CVPR 2025***. [[link](https://arxiv.org/pdf/2501.03225)]

·**Chenyu Wang**\*, Masatoshi Uehara\*, Yichun He, Amy Wang, Tommaso Biancalani, Avantika Lal, Tommi Jaakkola, Sergey Levine, Hanchen Wang, Aviv Regev. Fine-Tuning Discrete Diffusion Models via Reward Optimization with Applications to DNA and Protein Design. In *International Conference on Learning Representations,* ***ICLR 2025***. [[link](https://arxiv.org/abs/2410.13643)]

·**Chenyu Wang**\*, Sharut Gupta\*, Xinyi Zhang, Sana Tonekaboni, Stefanie Jegelka, Tommi Jaakkola, Caroline Uhler. An Information Criterion for Controlled Disentanglement of Multimodal Data. In *International Conference on Learning Representations,* ***ICLR 2025****.* (Also **Oral** and **Honorable Mention Award** at NeurIPS 2024 UniReps workshop.) [[link](http://arxiv.org/abs/2410.23996)]

·Sharut Gupta\*, **Chenyu Wang**\*, Yifei Wang\*, Tommi Jaakkola, Stefanie Jegelka. In-Context Symmetries: Self-Supervised Learning through Contextual World Models. In *Advances in Neural Information Processing Systems,* ***NeurIPS 2024***. (Also **Oral** at NeurIPS 2024 SSL workshop.) [[link](https://arxiv.org/abs/2405.18193)] [[MIT CSAIL News](https://www.csail.mit.edu/news/machines-self-adapt-new-tasks-without-re-training)]

·Hannes Stark\*, Bowen Jing\*, **Chenyu Wang**, Gabriele Corso, Bonnie Berger, Regina Barzilay, Tommi Jaakkola. Dirichlet Flow Matching with Applications to DNA Sequence Design. In *International Conference on Machine Learning****, ICML 2024****.* (Also **Oral** at ICLR 2024 MLGenX workshop.)[[link](https://arxiv.org/abs/2402.05841)]

·**Chenyu Wang**, Sharut Gupta, Caroline Uhler, Tommi S. Jaakkola. Removing Biases from Molecular Representations via Information Maximization. In *International Conference on Learning Representations,* ***ICLR 2024***. [[link](https://arxiv.org/abs/2312.00718)]

·**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**

**Research Intern at Meta FAIR Menlo Park, CA**

*Advised by Yuandong Tian and Bo Liu*  May 2025-Aug. 2025

**Research Intern at Genentech South San Francisco, CA**

*Advised by Aviv Regev, Hanchen Wang, and Masatoshi Uehara*  May 2024-Aug. 2024

**Research Intern at Princeton University Princeton, NJ**

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

**Research Intern at USC Los Angeles, CA**

*Advised by Prof. Cyrus Shahabi, Department of Computer Science, USC*  Jan. 2021-Jun. 2021

**Research Assistant at Tsinghua University Beijing, China**

*Advised by Prof. Mingsheng Long, School of Software, Tsinghua University* Sept. 2020-Nov. 2020

**HONORS & AWARDS**

·**Citadel GQS PhD Fellowship** (the only recipient in EECS), 2025

·**D. E. Shaw Research Doctoral Fellowship**, 2025

·**Honorable Mention Award in NeurIPS 2024 UniReps Workshop**, 2024

·**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), 2016

**WORK EXPERIENCE**

**Meta Menlo Park**

*Research Intern in Meta FAIR* May 2025-Aug. 2025

**Genentech South San Francisco**

*Research Intern in Dr. Aviv Regev’s Lab*  May 2024-Aug. 2024

**Jane Street Asia Limited Hong Kong**

*Quantitative Trading Intern* (Return offer extended) Jun. 2021-Sept. 2021

**WizardQuant Capital Management Zhuhai, China**

*Quantitative Research Intern, Quantitative Research Department* Jun. 2020-Aug. 2020

**Techsharpe Quant Capital Management Beijing, China**

*Data Analyst Intern, Trading Department* Jan. 2020-Feb. 2020

**SERVICES**

·Reviewer: ICML 2025, ICLR 2025/2026, NeurIPS 2024/2025, PLOS Computational Biology

·Teaching Assistant: MIT [6.8300](https://www.scenerepresentations.org/courses/2025/spring/advances-in-cv/) Advances in Computer Vision

·Volunteer: [WiDS](https://www.widscambridge.org/) Cambridge Datathon student volunteer

**INVITED TALKS**

·MIT CSB Seminar 2025

·MIT Machine Learning in Biology Working Group (MLBWG) 2025

·NeurIPS 2024 UniReps Workshop 2024

·Broad Institute of MIT and Harvard Models, Inference & Algorithms (MIA) Post Doc Lightning Talks 2024

·MIT ML Tea Talk 2024

·MIT LIDS Student Conference 2024

·Valence Labs Molecular Modeling & Drug Discovery (M2D2) Reading Group 2024

·Temporal Graph Reading Group 2023

**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)