Han Lin

CONTACT

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INTERESTS

Multimodal understanding and generation, diffusion models, LLMs
Theory-grounded algorithms for efficient Transformers

EDUCATION

University of North Carolina at Chapel Hill 2023 - Exp. 2028
Ph.D. in Computer Science

- MURGe-Lab. Advised by Prof. Mohit Bansal

Columbia University 2021 - 2023
M.S. in Computer Science (Machine Learning Track)

- DVMM Lab. Advised by Prof. Shih-Fu Chang
- ROAM Lab. Advised by Prof. Matei Ciocarlie and Prof. Shuran Song

Relevant Courses: Learning Theory, Algorithms, Machine Learning, Unsupervised Learning, Bandits & Reinforcement Learning, Causal Inference, Computer Vision, Robotics Learning

Columbia University 2018 - 2020
M.S. in Financial Engineering
Relevant Courses: Optimization, Combinatorial Optimization, Stochastic Models, Stochastic Calculus, Monte Carlo Methods, Statistical Inference, Bayesian Statistics, Graphical Models

Central University of Finance and Economics 2014 - 2018
B.S. in Financial Engineering
Relevant Courses: Linear Algebra, Mathematical Analysis, Probability, Statistics, Real Analysis, Numerical Methods, Stochastic Process, Differential Equations

PREPRINTS

1. **VEDiT: Latent Prediction Architecture For Procedural Video Representation Learning** [arxiv]
Han Lin, Tushar Nagarajan, Nicolas Ballas, Mido Assran, Mojtaba Komeili, Mohit Bansal, Koustuv Sinha, 2024

2. **Ctrl-Adapter: An Efficient and Versatile Framework for Adapting Diverse Controls to Any Diffusion Model** [arxiv | project page]
Han Lin*, Jaemin Cho*, Abhay Zala, Mohit Bansal, 2024

PUBLICATIONS

1. **Fast Tree-Field Integrators: From Low Displacement Rank to Topological Transformers** [arxiv]
Krzysztof Choromanski, Arijit Sehanobish, Somnath Basu Roy Chowdhury, **Han Lin**, Avinava Dubey, Tamas Sarlos, Snigdha Chaturvedi
In Advances in Neural Information Processing Systems **(NeurIPS)**, 2024

2. **VideoDirectorGPT: Consistent Multi-scene Video Generation via LLM-Guided Planning** [arxiv | project page]
Han Lin, Abhay Zala, Jaemin Cho, Mohit Bansal
In Conference on Language Modeling (**COLM**), 2024

3. **EnvGen: Generating and Adapting Environments via LLMs for Training Embodied Agents** [arxiv | project page]
Abhay Zala*, Jaemin Cho*, **Han Lin**, Jaehong Yoon, Mohit Bansal
In Conference on Language Modeling (**COLM**), 2024

4. **DiagrammerGPT: Generating Open-Domain, Open-Platform Diagrams via LLM Planning** [arxiv|project page]
Abhay Zala, **Han Lin**, Jaemin Cho, Mohit Bansal
In Conference on Language Modeling (**COLM**), 2024

5. **Efficient Graph Field Integrators Meet Point Clouds** [arxiv|github]
Krzysztof Choromanski*, Arijit Sehanobish*, **Han Lin***, Yunfan Zhao*, Eli Berger, Alvin Pan, Tetiana Parshakova, Tianyi Zhang, David Watkins, Valerii Likhosherstov, Somnath Basu Roy Chowdhury, Avinava Dubey, Deepali Jain, Tamas Sarlos, Snigdha Chaturvedi, Adrian Weller
In International Conference on Machine Learning **(ICML)**, 2023

6. **Supervised Masked Knowledge Distillation for Few-Shot Transformers** [arxiv|github]
Han Lin*, Guangxing Han*, Jiawei Ma, Shiyuan Huang, Xudong Lin, Shih-Fu Chang
In Conference on Computer Vision and Pattern Recognition (**CVPR**), 2023

7. **Active Tactile Exploration for 3D Object Recognition** [arxiv|project page]
Jingxi Xu*, **Han Lin***, Shuran Song, Matei Ciocarlie
In IEEE International Conference on Robotics and Automation (**ICRA**), 2023

8. **From block-Toeplitz matrices to differential equations on graphs: towards a general theory for scalable masked Transformers** [arxiv|github]
Krzysztof Choromanski*, **Han Lin***, Haoxian Chen*, Tianyi Zhang, Arijit Sehanobish, Valerii Likhosherstov, Jack Parker-Holder, Tamas Sarlos, Adrian Weller, Thomas Weingarten
In International Conference on Machine Learning **(ICML)**, 2022

9. **Hybrid Random Features** [arxiv|github]
Krzysztof Choromanski*, **Han Lin***, Haoxian Chen*, Yuanzhe Ma*, Arijit Sehanobish*, Deepali Jain, Michael Ryoo, Jake Varley, Andy Zeng, Valerii Likhosherstov, Dmitry Kalashnikov, Vikas Sindhwani, Adrian Weller
In International Conference on Learning Representations **(ICLR)**, 2022

10. **Demystifying Orthogonal Monte Carlo and Beyond** [arxiv|github]
Han Lin*, Haoxian Chen*, Tianyi Zhang, Clement Laroche, Krzysztof Choromanski
In Advances in Neural Information Processing Systems **(NeurIPS)**, 2020

* Co-First Authors, Equal Contribution

RESEARCH EXPERIENCE

Meta FAIR Lab 2024.5 - 2024.12
Research Scientist Intern
Advised by: Koustuv Sinha, Tushar Nagarajan, Nicolas Ballas, Mido Assran, Mojtaba Komeili
- VEDiT: Latent prediction architecture For procedural video representation learning (under review)

UNC MURGe-Lab 2023 - now
Research Assistant, Advised by Prof. Mohit Bansal
- Text-to-video generation, multimodal learning, and LLMs

DVMM Lab 2022 - 2023
Research Assistant, Advised by Prof. Shih-Fu Chang and Guangxing Han
- Supervised masked knowledge distillation for few-shot Transformers

ROAM Lab 2022 - 2023
Research Assistant, Advised by Prof. Matei Ciocarlie and Prof. Shuran Song

- Active tactile exploration for 3D object recognition

Columbia University 2019 - 2023
Research Collaboration with Prof. Krzysztof Choromanski
- Efficient Transformers, GNNs, random features for kernel estimation

Cornell, Maryland, Max Planck Pre-doctoral Research School 2022

INDUSTRY EXPERIENCE

China Merchant Securities 2020 - 2021
Option Market Making Quant Trader, Full Time
- Commodity options and futures trading and daily P&L attribution

TEACHING EXPERIENCE

COMS 4231 Analysis of Algorithms	Fall 2022
COMS 4732 Computer Vision II: Learning	Spring 2022
COMS 4721 Machine Learning for Data Science	Spring 2022
QMSS 5073 Machine Learning for Social Science	Fall 2021
IEOR 4007 Optimization Models & Methods for FE	Fall 2019
IEOR 4418 Transportation Analytics & Logistics	Spring 2019

SKILLS

Python, C/C++, MATLAB, R, MySQL, LaTeX
PyTorch, TensorFlow, Keras, Scikit-learn

SERVICES

Reviewer: ICLR 2024/2025, ICML 2022/2023/2024, NeurIPS 2022/2023/2024
Conference Volunteer: Robotics: Science and Systems (RSS) 2022