

Jiaqing Xie

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Education

Swiss Federal Institute of Technology (ETH) Zürich M.Sc. in Computer Science, Theoretical Computer Science Track	Zürich, Switzerland Sept. 2022 - Jul. 2025 (Expected)
The University of Edinburgh B.Eng. (Honors) in Electronics and Computer Science	Edinburgh, UK Sept. 2019 - Jul. 2022
Huazhong University of Science and Technology B.Eng. Electronic Science and Technology, Transferred	Wuhan, China Sept. 2017 - Jun. 2019

Research Interests

- Expressive, Explainable and Efficient Learning on Graphs

Research Experience

Positional Encoding Evaluation in Graph Transformers <i>Supervised by Florian Grötschla PhD, ETH Zürich</i> ○ Evaluating the effect of positional encoding in graph transformers	Zürich Feb. 2024 - Current
Equivalence between Online Learning and Private Learning <i>Supervised by Daniil Dmitriev PhD, ETH Zürich</i> ○ Proved an equivalence of private and online learner and its extension open questions	Zürich Sept. 2023 - Jan. 2024
Graph Contrastive Learning with NetVlad for Place Recognition <i>Supervised by Yuheng Qiu PhD, Carnegie Mellon University</i> ○ Graph contrastive learning on images	Zürich, remote Jun. 2023 - Current
Graph Structure Learning with Lottery Hypothesis <i>Supervised by Yuxin Wang PhD, Fudan University</i> ○ Leveraged lottery ticket hypothesis on graph structure learning to enable scalability of training	Edinburgh Apr 2022 - Sept 2022
Improved Autoguides on Probabilistic Programs <i>Supervised by Prof. Siddharth Narayanaswamy, University of Edinburgh</i> ○ Developed different covariance matrices based autoguides and autoguides based on the inverse model dependencies to guide the posterior more accurately	Edinburgh Sept. 2021 - May 2022
Structural Feature Augmentation on Graphs <i>Supervised by Rex Ying PhD, Stanford University (Now Yale)</i> ○ Explored correlation of structural features with Graph Neural Networks and performed augmentations	Edinburgh, remote Mar. 2020 - Jul. 2021

Publications

- Graph Structural Learning with Lottery Hypothesis at scale. Yuxin Wang, Zhangyue Yin, Jiaqing Xie. ACML-23 PMLR
- Fea2Fea: Exploring Structural Feature Correlations via Graph Neural Networks. Jiaqing Xie, Rex Ying. ECMLPKDD-21 Workshop Proceedings
- Variational Autoencoder for Anti-Cancer Drug Response Prediction. Hongyuan Dong*, Jiaqing Xie*, ICLR AI4PH Workshop 2021

Awards

- National Olympics in Chemistry, Second Prize, Shanghai 2016

Graduate Projects (Reports are available)

LM-MPNN: Strategies for Fusing Language Models and Message Passing **Zürich**
ETH Zürich Natural Language Processing Project Oct. 2023 - Jan. 2024
○ Whether LLM and MPNN could benefit each other; Paper will be submitted to ACL.

Heterogeneous Graph and Point Cloud with Graph Neural Networks **Zürich**
ETH Zürich Applications of Deep Learning on Graphs Project Oct. 2023 - Dec. 2023
○ Used relational GCN, TransE and graph contrastive learning on heterogeneous graphs
○ Used Rotation-invariant LGR-Net and compared it with the baseline PointNet and EdgeConv GNN on mesh and point clouds

SFM-Opt: Social Force Model with Code-level Optimization **Zürich**
ETH Zürich Advanced System Lab Project Feb. 2023 - Jun. 2023
○ Bottom-level optimization on social force model with inlining, pre-computation, strength reduction, changing to structure of arrays, blocking of matrices, unrolling and using single instruction multiple data, AVX intrinsics.
○ Reached approximately 72 % of the maximum theoretical performance and 4 times faster than baseline implementation.

CADA-GAN: Context-Aware GAN with Data Augmentation **Zürich**
ETH Zürich Deep Learning Project Sept. 2022 - Jan. 2023
○ Allowed optimal feature extraction, with added robustness from additional Data Augmentation
○ Adapted from StyleGAN2-Ada model with attention on augmentation and segmentation of the parent images.

Undergraduate Projects (Reports are available)

Variational Autoencoder for Anti-cancer Drug Response Prediction **Edinburgh, remote**
MIT 6.047/6.878, Supervised by prof. Manolis Kellis, MIT May 2021 - Jun. 2021
○ Combined gene VAE and junction tree VAE to predict drug response and generate potential valid drugs.

Autonomous Drone Route Design with A* Search **Edinburgh**
Edinburgh Informatics Large Practical Sept. 2020 - Jan. 2021
○ Use rectified A* graph algorithm to design route for autonomous drones.

Supervised Machine Learning on Human Comfort Prediction **Berkeley**
Supervised by Dr. Maohui Luo, UC Berkeley (Now Tongji) Jul. 2019 - Sep. 2019
○ Predicted human thermal comfort by supervised learning methods including random forests, artificial neural networks and gradient boosting methods etc.

Presentations and Talks

- Presentation of paper Design Space for GNN @ Applications of Deep Learning on Graphs ETH
- Presentation of paper Equivalence between Private and Online Learning @ Guarantee ML ETH

Academic Services

- NeurIPS 2023 Temporal Graph Learning Workshop Reviewer

Others

- Cambridge Ellis Summer School 2022