HUIDONG LIANG

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EDUCATION

PhD Engineering Science — **University of Oxford** — **Oct. 2023 - Sep. 2027**

· Thesis: *Machine learning and signal processing on graphs with their applications in finance.*
· Supervisor: Professor *Xiaowen Dong* — Funding: ESRC Grand Union DTP [AQM Award]
· Affiliation: Oxford-Man Institute of Quantitative Finance; Machine Learning Research Group

MSc Statistical Science — **University of Oxford** — **Oct. 2022 - Sep. 2023**

· Courses: *Statistical Machine Learning*, *Bayesian Methods*, *Network Analysis*, *Statistical Inference.*
· Supervisor: Professor *Xiaowen Dong* — Thesis: *Bayesian optimisation on graphs.*

BoC Business School [Hons] — **University of Sydney** — **Jul. 2018 - Feb. 2022**

· Majors: Finance & Business Analytics — Award: USYD Honours Scholarship
· Supervisor: Professor *Junbin Gao* — Thesis: *Graph representation learning.*

SELECTED PAPERS

Bayesian Optimization of Functions over Node Subsets in Graphs — ***NeurIPS 2024***
· *Huidong Liang, Xingchen Wan, Xiaowen Dong* — *Paper: arXiv:2405.15119*

Graph Contrastive Learning with Implicit Augmentations — ***Neural Networks***
· *Huidong Liang, Xingjian Du, Bilei Zhu, Zejun Ma, Junbin Gao* — *Paper: arXiv:2211.03710*

Wasserstein Adversarially Regularised Graph Auto-Encoder — ***Neurocomputing***
· *Huidong Liang, Junbin Gao* — *Paper: arXiv:2111.04981*

How Neural Processes Improve Graph Link Prediction — ***IEEE ICASSP 2022***
· *Huidong Liang, Junbin Gao* — *Paper: arXiv:2109.14894*

RESEARCH EXPERIENCE

Machine Learning Research Group — **June. 2023 - Sep. 2027**
Research Student — *Dept. EngSci, University of Oxford*

· Currently leading or participating in three sub-directions of graph-related research: Bayesian optimization on graphs; casual graph optimization in language models, and learning on financial networks.
· Attended the weekly group seminars and presented our recent paper accepted by NeurIPS-2024.

ByteDance AI Lab — **Mar. 2022 - Aug. 2022**
Research Intern (Intelligent Speech and Audio Team) — *Shanghai*

· Participated in Music Structural Analysis project, assisted developing machine learning algorithms from TikTok database that can automatically detect verse/chorus segments of a song. Wrote up the academic paper as co-first author, which is now accepted by *ISMIR 2022* and registered for a patent.
· Investigated a contrastive learning method with latent augmentations. Proposed the model design, conducted the experiments and wrote up the paper as first author, which is currently under review.

Business Analytics Research Group — **Dec. 2020 - Feb. 2022**
Undergraduate Research Member — *Business School, University of Sydney*

· Finished two projects as first author in statistical machine learning for honours degree's dissertation.
· Participated in the weekly seminar with professors and DPhil/MPhil students, where frontiers in machine learning research were presented and discussed in the group. Delivered three one-hour academic presentations about the related works in my research.

SKILLS AND INTERESTS

Programming

· Python: PyTorch, HuggingFace Transformers, BoTorch, PyTorch-Geometric, and scikit-learn.
· Others: Linux Shell, MATLAB, Java script, HTML & CSS, R, SQL, and LaTeX.

Research Interests

· I am currently interested in optimizing the reasoning graph of language models at inference time.