

MARK BAI

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EDUCATION

McGill University

September 2022-December 2024 (Expected)

M.Sc. in Computer Science (Mila affiliated)

Supervisors: Dr. Xue Liu, Dr. Alan Evans

McGill University

September 2018-May 2022

B.Sc. Honours in Jointed Computer Science & Biology

Cumulative GPA: 3.97/4.00, First Class Honours, Dean's Honour List

SKILLS

Languages

Python, Java, Objective Caml, C, SQL, Bash Script, HTML

Tools & Libraries

PyTorch, NumPy, Pandas, TensorFlow, Docker, GitHub, W&B, SLURM

EXPERIENCE

CPS Lab & MCIN at McGill University/Mila

September 2022 - Present

Researcher

Montreal, Quebec

- Extend masked autoencoders with Transformer backbone for multivariate time-series modelling
- Achieve SOTA results 2 real-world traffic prediction datasets, reducing MAE and RMSE by 10%
- First-authored paper under review at ICLR 2025
- Preprocess and integrate brain imaging data into the novel method for Alzheimer's Disease modelling
- Implement distributed data parallelism and hyperparameter sweeping on HPC clusters

Bashivan Lab at McGill University

September 2021 - August 2024

Researcher (Undergraduate Thesis Project)

Montreal, Quebec

- Created an environment that generates vision-language tasks to assess LLMs' instruction following abilities
- Automated procedural task generation such that the framework is highly scalable and extendable
- Refactored code-base with OOP principles and reduced task generation time by 300%
- Co-authored publication on CoLLAs 2024 and ICML 2024 Workshop on LLM and Cognition

Yue Li Lab at McGill University

February 2021 - August 2021

Undergraduate Researcher

Montreal, Quebec

- Built knowledge graph informed LSTMs that perform longitudinal diagnosis on electronic health records
- Utilized GNNs to distill topics in medical knowledge graphs and learn embeddings that improve performance

Side Projects

- Movie recommender system on Apache Kafka with CI/CD and Prometheus monitoring
- arXiv community forum for paper discussions with built-in PDF readers that support citation cross-referencing
- Editing knowledge in large language models (BERTs and GPTs) by localizing knowledge-storing neurons
- Reward shaping with GCN and intrinsic curiosity module for training A2C on Montezuma's Revenge

HONOURS & AWARDS

- FRQNT Master's Research Scholarship (\$26,667) 2023
- NSERC Undergraduate Student Research Award with FRQNT Supplement (\$9,000) 2021
- Quebec Programme de bourses d'excellence en sciences de l'informatique Scholarship (\$1,000) 2021
- McGill Emily Ross Crawford & Faculty of Science Scholarships 2019, 2021