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, Docker, Apache Kafka, GitHub, W&B, SLURM

EXPERIENCE

CPS Lab & MCIN at McGill University & Mila   September 2022 - Present
Research Intern   *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%
· 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
· First-authored paper under review at ICLR 2025

Bashivan Lab at McGill University   September 2021 - August 2024
Researcher & Environment Developer   *Montreal, Quebec*
· Created an environment that generates vision-language tasks to assess LMMs' 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
· arχix 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