

Ye Yuan

Ph.D. Candidate, Computer Science, McGill University, Mila - Quebec AI Institute
Visiting Scholar, Machine Learning, MBZUAI
DAAD AINeT Fellowship, BMO Responsible AI Fellowship

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Research Interests

Areas: Large Language Models, Score-Based Generative Models, Offline Black-Box Optimization, Knowledge-Centric Natural Language Processing, Retrieval-Augmented Generation, Autonomous Agents.

My research centers on developing *large language models* and *score-based generative models* to advance intelligent systems, with applications in (i) addressing challenges in offline black-box optimization, (ii) enabling knowledge-centric NLP tasks such as automatic knowledge base construction, and (iii) improving the efficiency and efficacy of AI systems for real-world applications. My work is supported by multiple fellowships and has been published at top venues including NeurIPS, ICLR, EMNLP, and TMLR. **Representative contributions include authoring a comprehensive survey on offline black-box optimization with Turing Award Winner Prof. Yoshua Bengio and presenting an EMNLP 2024 oral paper (top 3%),** complemented by industrial research experiences or close collaborations at Microsoft Research, RBC Borealis, and Samsung Research America.

Academic Experience

- Oct. 2025 - **MBZUAI - Mohamed bin Zayed University of Artificial Intelligence, Abu Dhabi, United Arab Emirates.**
Present Visiting Scholar, Machine Learning.
Faculty Host: [Associate Vice President for Research, Prof. Steve Liu](#).
- Jan. 2023 - **McGill University & Mila - Quebec AI Institute, Montreal, Canada.**
Present Doctor of Philosophy (Ph.D.), Computer Science.
CGPA: 3.89 / 4.00.
Supervisor: [Prof. Steve Liu](#).
Supervisory Committee: [Prof. Adriana Romero-Soriano](#); [Prof. Gintare Karolina Dziugaite](#).
- Sep. 2019 - **McGill University & Mila - Quebec AI Institute, Montreal, Canada.**
Dec. 2022 Bachelor of Science (B.Sc.), Honours Computer Science.
CGPA: 3.95 / 4.00.
First Class Honours; Dean's Honour List (Top 10%); Recipient of Faculty of Science Scholarship.

Industrial Experience

- May. 2025 - **RBC Borealis, Toronto, Canada.**
Oct. 2025 **Research Intern.**
Manager: [Dr. Eric He](#); Project Mentors: [Dr. Mohammad Amin Shabani](#); [Dr. Siqi Liu](#).
- Led two concurrent research projects that resulted in two conference paper submissions and one accepted NeurIPS workshop paper within a single internship term.
 - Proposed an embedding-based context-aware reranking algorithm leveraging structural information and hybrid attention, improving both accuracy and efficiency.
 - Developed an LLM-based agentic framework for query-focused table summarization, achieving higher summarization quality while ensuring privacy compliance by avoiding raw data exposure.

Jan. 2025 - **Samsung Research America**, Mountain View, United States.

Present **Student Researcher** (Remote).

Manager: [Dr. Charlie Zhang](#).

- Designed entity extraction strategies to automatically construct domain-specific knowledge bases, enabling scalable knowledge graph creation for telecommunications data.

Apr. 2023 - **Noah's Ark Lab**, Montreal, Canada.

Mar. 2025 **Research Intern**.

Manager: [Dr. Alex Chen](#).

- Recognized with multiple awards, including **Outstanding Contribution Award (R&D Peripheral Fields)**, **Overseas Business Contribution Award**, and **President's Spot Award (Canada Research Institute)**.
- Adapted soft prompting techniques to address distribution shift, enabling a single model to generalize across multiple tasks.
- Explored model compression methods (e.g., LoRA-pruning, Mixture-of-Depth) to reduce computation cost for edge deployment.
- Investigated state-space language models and hybrid architectures with transformers for improved efficiency and scalability.

Feb. 2023 - **Microsoft Research**, Cambridge, United Kingdom.

Present **Student Researcher** (Remote).

Manager: [Yordan Zaykov](#); Project Mentors: [Dr. Bhaskar Mitra](#); [Dr. Tom Minka](#).

- Introduced and formalized the structured entity extraction as a new paradigm within information extraction.
- Proposed a new evaluation metric (AESOP) and its variants for structured entity extraction, better aligning evaluation with human judgment.
- Developed a multi-stage decoding strategy that improved extraction effectiveness and efficiency.
- Analyzed the learning dynamics of score-based generative models and LLM-based discriminative models in structured entity linking tasks through a series of controlled experiments.

Publications

Within the first three years of my Ph.D., I produced around 10 peer-reviewed publications, 7 as (co-)first author, across top-tier venues such as NeurIPS, ICLR, EMNLP, and TMLR. By November 2025, my work had attracted 470+ citations (h-index 8) on Google Scholar, and my open-source contributions were recognized with 150+ stars on GitHub.

Submissions / Preprints

- S8 **Ye Yuan**, Mohammad Amin Shabani, Siqi Liu. “*FACTS: Table Summarization via Offline Template Generation with Agentic Workflows*”. arXiv preprint arXiv:2510.13920.
- S7 **Ye Yuan**, Mohammad Amin Shabani, Siqi Liu. “*Embedding-Based Context-Aware Reranker*”. arXiv preprint arXiv:2510.13329.
- S6 **Ye Yuan***, Can Chen*, Zipeng Sun, Dinghuai Zhang, Christopher Pal, Xue Liu. “*Diffusion Large Language Models for Black-Box Optimization*”. Under Review.
- S5 Linfeng Du, **Ye Yuan**, Fuyuan Lyu, Emiliano Penaloza, Xiuying Chen, Zipeng Sun, Laurent Charlin, Xue Liu, Haolun Wu. “*Optimizing User Profiles via Contextual Bandits for Retrieval-Augmented LLM Personalization*”. Under Review.
- S4 Minsu Kim*, Jiayao Gu*, **Ye Yuan**, Taeyoung Yun, Zixuan Liu, Yoshua Bengio, and Can Chen. “*Offline Model-Based Optimization: Comprehensive Review*”. arXiv preprint arXiv:2503.17286.

- S3 Hao Zhou, Chengming Hu, Dun Yuan, **Ye Yuan**, Di Wu, Xue Liu, and Charlie Zhang. “*Large Language Model (LLM)-Enabled In-Context Learning for Wireless Network Optimization: A Case Study of Power Control*”. arXiv preprint arXiv:2408.00214.
- S2 Shangyu Wu, Ying Xiong, Yufei Cui, Haolun Wu, Can Chen, **Ye Yuan**, Lianming Huang, Xue Liu, Tei-Wei Kuo, Nan Guan, Chun Jason Xue. “*Retrieval-Augmented Generation for Natural Language Processing: A Survey*”. arXiv preprint arXiv:2407.13193.
- S1 Shuhao Zheng, Yanxi Lin, Yang Yu, **Ye Yuan**, Yongzheng Jia, Xue Liu. “*FIAT: Fine-grained Information Audit for Trustless Transborder Data Flow*”. arXiv preprint arXiv:2209.11451.

Journal Articles

- J4 **Ye Yuan**^{*}, Youyuan Zhang^{*}, Can Chen, Haolun Wu, Zixuan Li, Jianmo Li, James J. Clark, and Xue Liu. TMLR “*Design Editing for Offline Model-based Optimization*”. Transactions on Machine Learning Research, 2025.
- J3 Hao Zhou, Chengming Hu, Dun Yuan, **Ye Yuan**, Di Wu, Xi Chen, Hina Tabassum, and Xue Liu. “*Large Language Models for Wireless Networks: An Overview from the Prompt Engineering Perspective*”. IEEE WCM IF: 11.5 Wireless Communications, 2024.
- J2 Hao Zhou, Chengming Hu, Dun Yuan, **Ye Yuan**, Di Wu, Xue Liu, Zhu Han, and Jianzhong Zhang. “*Generative AI as a Service in 6G Edge-Cloud: Generation Task Offloading by In-Context Learning*”. IEEE WCL IF: 5.5 Wireless Communications Letters, 2024.
- J1 Hao Zhou, Chengming Hu, **Ye Yuan**, Yufei Cui, Yili Jin, Can Chen, Haolun Wu, Dun Yuan, Li Jiang, Di Wu, Xue Liu, Charlie Zhang, Xianbin Wang, and Jiangchuan Liu. “*Large Language Model (LLM) for Telecommunications: A Comprehensive Survey on Principles, Key Techniques, and Opportunities*”. IEEE COMST IF: 46.7 Communications Surveys and Tutorials, 2024.

Conference Proceedings

- C4 **Ye Yuan**, Haolun Wu, Hao Zhou, Xue Liu, Hao Chen, Yan Xin, Jianzhong (Charlie) Zhang. “*Understanding 6G through Language Models: A Case Study on LLM-aided Structured Entity Extraction in Telecom Domain*”. GlobeCom Oral, 39.6% In the 2025 IEEE Global Communications Conference. Taipei, Taiwan. Dec. 2025.
- C3 **Ye Yuan**^{*}, Can Chen^{*}, Christopher Pal, Xue Liu. “*ParetoFlow: Guided Flows in Multi-Objective Optimization*”. In the 13th International Conference on Learning Representations. Singapore EXPO, Singapore. Apr. 2025. Poster, 32.1%
- C2 **Ye Yuan**^{*}, Haolun Wu^{*}, Liana Mikaelyan, Alexander Meulemans, Xue Liu, James Hensman, and Bhaskar Mitra. “*Learning to Extract Structured Entities Using Language Models*”. In the 19th Conference on Empirical Methods in Natural Language Processing. Miami, Florida, USA. Nov. 2024. EMNLP Oral, Top 3%
- C1 **Ye Yuan**^{*}, Can Chen^{*}, Zixuan Liu, Willie Neiswanger, Xue Liu. “*Importance-aware Co-teaching for Offline Model-based Optimization*”. In the Advances in Neural Information Processing Systems 36. New Orleans, Louisiana, USA. Dec. 2023. NeurIPS Poster, 26.1%

Workshops

- W3 **Ye Yuan**, Mohammad Amin Shabani, Siqi Liu. “*FACTS: Fast, Accurate, and Privacy-Compliant Table Summarization via Offline Template Generation*”. In NeurIPS 2025 Workshop on Generative AI in Finance. NeurIPS
- W2 Hao Zhou, Chengming Hu, Dun Yuan, **Ye Yuan**, Di Wu, Xue Liu, Jianzhong Charlie Zhang. “*Prompting Wireless Networks: Reinforced In-Context Learning for Power Control*”. In ICML 2025 Workshop on Machine Learning for Wireless Communication and Networks. ICML
- W1 **Ye Yuan**^{*}, Youyuan Zhang^{*}, Can Chen, Haolun Wu, Melody Zixuan Li, Jianmo Li, James J. Clark, Xue Liu. “*Design Editing for Offline Model-based Optimization*”. In ICLR 2025 Workshop on Deep Generative Model in Machine Learning: Theory, Principle and Efficacy. ICLR

Grants & Fellowships

Total funding: CAD \$331,000. Total share of funding: CAD \$140,500.

I led or contributed to the work of the following grant and fellowship proposals.

- 2025 DAAD AINeT Fellowship (CAD \$5,000, share 100%) (1 of 18 AINet Fellows in NLP)
Funding Body: DAAD
- 2024 Samsung Global Research Outreach Program (CAD \$210,000, share 25%) (1 of 11 Recipients Globally)
Lead PI: Prof. Steve Liu
Title: LLM-Driven Efficient and Flexible Network Management for NextG Cellular Communications
Funding Body: Samsung Research
- 2023 MSR-Mila Collaboration Grant (CAD \$66,000, share 50%)
Lead PI: Prof. Steve Liu; Industrial Mentor: Dr. Bhaskar Mitra
Title: SNAKE: Structured Neural Attention over Knowledge base Entities
Funding Body: Microsoft Research
- 2023 BMO Responsible AI Fellowship (CAD \$50,000, share 100%)
Funding Body: Bank of Montreal (BMO)

Honors & Awards

Total award amount: CAD \$27,000.

- 2025 Graduate Research Enhancement and Travel Awards (GREAT Travel Award), *McGill University*
- 2025 Travel Grant, *NeurIPS 2025 Workshop GenAI in Finance*
- 2025 AINet Fellows in Natural Language Processing, *DAAD*
- 2025 Graduate Excellence Award, *McGill University*
- 2025 Student Travel Award, *International Conference on Learning Representations (ICLR)*
- 2023-2025 Responsible AI Senior Scholar, *Bank of Montreal*
- 2023-2025 Faculty of Science Graduate Scholarship, *McGill University*
- 2024 Outstanding Contribution Award in R&D Peripheral Fields, *Noah's Ark Lab Canada*
- 2024 Overseas Business Contribution Award, *Noah's Ark Lab Canada*
- 2024 Canada Research Institute President's Spot Award, *Noah's Ark Lab Canada*
- 2023 Scholar Award, *Neural Information Processing Systems (NeurIPS)*
- 2022 Graduate Excellence Award, *McGill University*
- 2022 Graduated as First Class Honours, *McGill University*
- 2019-2022 Dean's Honour List, *McGill University*
- 2020-2021 Tomlinson Undergraduate Award, *McGill University*

Media

I actively share and communicate research on social media, with 1,700+ followers across LinkedIn and X.

- 2024 [Oral Presentation of Learning to Extract Structured Entities Using Language Models](#). EMNLP Recording.
- 2024 [Large Language Model \(LLM\) for Telecommunications: A Comprehensive Survey on Principles, Key Techniques, and Opportunities](#). IEEE COMST Post.
- 2023 [Importance-Aware Co-Teaching for Offline Model-Based Optimization](#). Mila Blog.

Invited Talk, Teaching & Mentorship

Invited Talk

- “Generative VS. Discriminative Approaches for Entity Linking.”, Microsoft Research.
Host: [Yordan Zaykov](#). May. 2025.
- “Offline Model-Based Optimization”, Beijing Academy of Artificial Intelligence.
Host: [Dr. HongJiang Zhang](#). Jul. 2024.
- “Offline Model-Based Optimization”, ByteDance AI Lab.
Host: [Dr. Hang Li](#). Jun. 2024.

Teaching

- “COMP 202: Foundations of Programming”, Teaching Assistant, McGill University.
Worked as a Teaching Assistant for two semesters at McGill for COMP 202: Foundations of Programming. This course is an introduction to computer programming in a high level language. I worked with [Prof. Faten M'hiri](#) for this course.
- “COMP 250: Introduction to Computer Science.”, Teaching Assistant, McGill University.
Worked as a Teaching Assistant for two semesters at McGill for COMP 250: Introduction to Computer Science. This course is about Mathematical tools, Datastructures, Recursive and non-recursive algorithms, Abstract data types and Object oriented programming in Java. I worked with [Prof. Giulia Alberini](#) for this course.

Mentorship

- “Mila Industry Mentorship Program for Machine Learning Internships”, Mentor, Mila - Quebec AI Institute.
Mentored Master students for their internship projects.
 - Work with Arvind Nair for mentoring his internship at Bell Canada with Prof. Dhanya Sridhar.
 - Work with Paul Kelendji for mentoring his internship at DeepRiver with Prof. Bang Liu.
- “Mentor and Collaborate with Junior Students for Research Projects”
Mentored and collaborated with several undergraduate and junior graduate students:
 - Linfeng Du (McGill)
 - Zipeng Sun (McGill)
 - Weixu Zhang (McGill)
 - Jiaxuan Chen (McGill)
 - Changjiang Han (MBZUAI)
 - Zichen Zhao (MBZUAI)
 - Zhengxi Li (MBZUAI)
 - Yonghan Yang (MBZUAI)

Professional & Community Service

Conferences Reviewer

- ICLR 2026
- AISTATS 2026
- NeurIPS 2025
- ACL Rolling Review 2025 (ACL, EMNLP)
- ICML 2025
- ICLR 2025
- AISTATS 2025
- NeurIPS 2024

Journals Reviewer

- TMLR
- ACM TOIS

Workshops Reviewer

- ICLR DeLTa 2025
- AAAI Undergrad Consortium 2025
- AAAI KnowFM 2025
- NeurIPS SafeGenAi 2024
- ICML FM-Wild 2024

Community Service

- Mentor and Judge for McGill McHacks Hackathon 9, 10, 11

Extracurricular Activities

- One of my biggest hobby is playing **Xiangqi** (Chinese Chess), which is a strategy board game and is the most popular board game in China. The game represents a battle between two armies, with the primary object being to checkmate the enemy's general. It is my fortunate to be mentored by the World Xiangqi Federation international master Bo Peng.

- When I was at junior high and senior high school, I was a member of the school's **basketball varsity**. We won the district's championship once, and the International Schools Basketball Cup Championship once.
- Before studying computer science, I was quite interested in **aerodynamics for plane design**. I received the China National First Tier Project award once, and Beijing Municipal First Tier Project award once.