Kian Ahrabian

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Viterbi School of Engineering
University of Southern California
Los Angeles, CA, USA

Education

University of Southern California, ISI — **May 2022 - Present**
Ph.D. in Computer Science — *Supervisor: Jay Pujara*

McGill University, Mila — **Jan 2019 - Mar 2021**
M.Sc. in Computer Science — *Supervisors: Jin L.C. Guo, Daniel Tarlow*
Thesis: GitHub Events Through the Lens of Knowledge Graphs

University of Tehran — **Sep 2014 - July 2018**
B.Sc. in Computer Science — *Supervisor: Bagher Babaali*
Thesis: A Survey on Autoencoders for Online Signature Verification

Work Experience

Microsoft | *Applied Scientist Intern, Turing Team* — **May 2025 - Aug 2025**

– Worked on improving the efficiency of reasoning language models (RLMs) through approaches such as latent thinking and speculative decoding.

Microsoft | *Applied Scientist Intern, Turing Team* — **May 2024 - Aug 2024**

– Worked on reinforcement learning from human feedback (RLHF) and preference optimization for human alignment in large language models (LLMs).

Microsoft | *Applied Scientist Intern, Turing Team* — **May 2023 - Aug 2023**

– Worked on extending the context length of large language models (LLMs) using a retrieval-augmented attention mechanism.

Sotoon | *Data Scientist, Deep Learning Team* — **Mar 2021 - Apr 2022**

– Worked on detecting musical notes using deep learning models on edge devices.

Noah's Ark Lab | *Associate Researcher, Graph Learning Team* — **Dec 2020 - Feb 2021**

– Worked on novel techniques for incremental learning on graph-based recommender systems.

Salesforce | *Data Science Intern, Marketing Cloud Team* — **May 2019 - Aug 2019**

– Implemented a tweet recommendation system based on historical data and Twitter Firehose using Word2vec and Word Mover's Distance.

Cafe Bazaar | *Software Engineer, Recommender Systems Team* — **Sep 2015 - Dec 2018**

– Led two engineering teams to design and deliver a universal ETL pipeline, increasing the uptime from 95% to 99.99%.

– Implemented a scalable recommendation service responding to more than 60,000 requests per second with 99.99% uptime.

Selected Publications

[1] **Kian Ahrabian**, Pegah Jandaghi, Negar Mokhberian, Sai Praneeth Karimireddy, and Jay Pujara. "A Systematic Analysis of Base Model Choice for Reward Modeling". In: *Accepted at EMNLP 2025*.

[2] **Kian Ahrabian**, Xihui Lin, Barun Patra, Vishrav Chaudhary, Alon Benhaim, Jay Pujara, and Xia Song. "A Practical Analysis of Human Alignment with *PO". In: *Findings of the Association for Computational Linguistics: NAACL 2025*. Ed. by Luis Chiruzzo, Alan Ritter, and Lu Wang. Albuquerque, New Mexico: Association for Computational Linguistics, Apr. 2025, pp. 8013–8021. ISBN: 979-8-89176-195-7. DOI: 10.18653/v1/2025.findings-naacl.446. URL: https://aclanthology.org/2025.findings-naacl.446/.

[3] Yifan Jiang, Jiarui Zhang, Kexuan Sun, Zhivar Sourati, **Kian Ahrabian**, Kaixin Ma, Filip Ilievski, and Jay Pujara. "MARVEL: Multidimensional Abstraction and Reasoning through Visual Evaluation and Learning". In: *The Thirty-eight Conference on Neural Information Processing Systems Datasets and Benchmarks Track*. 2024. URL: https://openreview.net/forum?id=vecFROHnL4.

[4] **Kian Ahrabian***, Zhivar Sourati*, Kexuan Sun*, Jiarui Zhang, Yifan Jiang, Fred Morstatter, and Jay Pujara. "The Curious Case of Nonverbal Abstract Reasoning with Multi-Modal Large Language Models". In: *First Conference on Language Modeling*. 2024. URL: https://openreview.net/forum?id=eDWcNqiQWW.

[5] **Kian Ahrabian**, Alon Benhaim, Barun Patra, Jay Pujara, Saksham Singhal, and Xia Song. "On the Adaptation of Unlimiformer for Decoder-Only Transformers". In: *Proceedings of the 2024 Joint International Conference on Computational Linguistics, Language Resources and Evaluation (LREC-COLING 2024)*. Ed. by Nicoletta Calzolari, Min-Yen Kan, Veronique Hoste, Alessandro Lenci, Sakriani Sakti, and Nianwen Xue. Torino, Italia: ELRA and ICCL, May 2024, pp. 12395–12402. URL: https://aclanthology.org/2024.lrec-main.1085.

[6] **Kian Ahrabian***, Dong-Ho Lee*, Woojeong Jin, Fred Morstatter, and Jay Pujara. "Temporal Knowledge Graph Forecasting Without Knowledge Using In-Context Learning". In: *Proceedings of the 2023 Conference on Empirical Methods in Natural Language Processing*. Ed. by Houda Bouamor, Juan Pino, and Kalika Bali. Singapore: Association for Computational Linguistics, Dec. 2023, pp. 544–557. DOI: 10.18653/v1/2023.emnlp-main.36. URL: https://aclanthology.org/2023.emnlp-main.36.

[7] Ana Iglesias-Molina, **Kian Ahrabian**, Filip Ilievski, Jay Pujara, and Oscar Corcho. "Comparison of Knowledge Graph Representations for Consumer Scenarios". In: *The Semantic Web – ISWC 2023*. Cham: Springer Nature Switzerland, 2023, pp. 271–289. ISBN: 978-3-031-47240-4.

[8] **Kian Ahrabian**, Yishi Xu, Yingxue Zhang, Jiapeng Wu, Yuening Wang, and Mark Coates. "Structure Aware Experience Replay for Incremental Learning in Graph-Based Recommender Systems". In: *Proceedings of the 30th ACM International Conference on Information & Knowledge Management*. CIKM '21. Virtual Event, Queensland, Australia: Association for Computing Machinery, 2021, pp. 2832–2836. ISBN: 9781450384469. DOI: 10.1145/3459637.3482193. URL: https://doi.org/10.1145/3459637.3482193.

[9] **Kian Ahrabian***, Aarash Feizi*, Yasmin Salehi*, William L. Hamilton, and Avishek Joey Bose. "Structure Aware Negative Sampling in Knowledge Graphs". In: *Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing (EMNLP)*. Ed. by Bonnie Webber, Trevor Cohn, Yulan He, and Yang Liu. Online: Association for Computational Linguistics, Nov. 2020, pp. 6093–6101. DOI: 10.18653/v1/2020.emnlp-main.492. URL: https://aclanthology.org/2020.emnlp-main.492.

[10] **Kian Ahrabian**, Daniel Tarlow, Hehuimin Cheng, and Jin LC Guo. "Software Engineering Event Modeling using Relative Time in Temporal Knowledge Graphs". In: *Graph Representation Learning and Beyond (GRL+) Workshop at the 37th International Conference on Machine Learning* (July 2020).

Technical Skills

Programming Languages:	Python, C/C++, Golang, Java, SQL
Libraries:	PyTorch, Transformers, Megatron-LM, Verl, TRL, Pandas, Django
Tools:	Git, Docker, Kubernetes, Slurm, LaTeX

Awards and Honors

Recipient of Viterbi School of Engineering/Graduate School Fellowship	May 2022
Recipient of Kharusi Family International Science Fellowship	Jan 2020
Ranked 13th, ACM ICPC Asia Tehran Regional Contest	Nov 2015
Ranked 12th, ACM ICPC Asia Tehran Regional Contest	Dec 2014