Moein Khajehnejad

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Summary

Applied scientist and postdoctoral researcher specializing in AI, Deep Learning, Graph Neural Networks, and Foundation Models in Neuroscience. Experienced in scalable ML pipelines, reinforcement learning, multimodal AI, and large-scale fMRI analysis. Passionate about developing AI-driven solutions for complex data-driven challenges. Strong expertise in Transformers, PyTorch, Graph-based ML, and Large-Scale Data Processing. Extensive experience in machine learning and AI research among prestigious teams in 6 different countries.

Work Experience

Cortical Labs **Melbourne**
Applied Scientist *2022 – Present*
- Developed **deep reinforcement learning** algorithms to analyze biological neurons vs AI.
- Studied the neural correlates of **consciousness and intelligence** in vitro.
- Built **scalable ML pipelines** for neural activity prediction and decision modeling.
- Applied **graph-based deep learning** to extract insights from multi-electrode array data.

Max Planck Institute for Software Systems (MPI-SWS) **Germany**
Machine Learning Researcher *Jan 2019 – May 2019*
- Mathematically solved problem of **optimal decision-making** under strategic behaviour using real credit card data.
- Designed optimal decision-making models using **probabilistic ML** and **causal inference**.
- Applied **game-theoretic approach** on **large-scale datasets** for **fairness analysis**.

statNLP @ SUTD-MIT **Singapore**
Machine Learning Intern *Jul 2016 – Oct 2016*
- Developed low-dimensional **network embedding** methods for large-scale social networks.
- Applied **NLP inspired algorithms** to improve representation learning in graphs.

LSIR @ EPFL **Switzerland**
Information Systems Research Intern *Jan 2016 – May 2016*
- Significantly modified the accuracy of several state-of-the-art deep learning algorithms in **word embedding**.

SyMLab @ HKUST **Hong Kong**
Machine Learning Intern *Jul 2015 – Oct 2015*
- Introduced a novel measure for mean first traverse distance on **complex networks**.

Technical Skills

Programming: Python, R, Matlab, Bash

Machine Learning: PyTorch, TensorFlow, Scikit-learn, Hugging Face

Deep Learning & AI: Spatio-temporal Transformers, Graph Transformers, ViT, Graph Neural Networks

Multimodal Representation Learning: Contrastive Learning (e.g. CLIP), Cross-Modal Attention, Perceiver Models, MoE (Mixture of Experts)

Visualization & Analysis: Matplotlib, Seaborn, Plotly, Tableau

Data Science & Statistics: Bayesian Inference, Causal Inference, Probabilistic ML, Graph Based ML, Network Science and Graph Theory, Feature Engineering, Time Series Analysis

Selected Publications (Google Scholar)

Preprint 2024: *TAVRNN: Temporal Attention-enhanced Variational Graph RNN Captures Neural Dynamics And Behavior* [link]

NeurIPS 2023: InfoCog, GenBio, RealML, & NeurReps (Oral): *On Complex Network Dynamics of an In-Vitro Neuronal System during Rest and Gameplay* [link]

NeurIPS 2022: DeepRL, MemARI, & LMRL: *Biological Neurons vs Deep Reinforcement Learning: Sample efficiency in a simulated game-world* [link]

ICML 2022 (Spotlight): *Neural Network Poisson Models for Behavioural and Neural Spike Train Data* [link]

AAAI 2022: *CrossWalk: Fairness-enhanced Node Representation Learning* [link]

IJCAI 2020: *Adversarial Graph Embeddings for Fair Influence Maximization over Social Networks* [link]

NeurIPS 2019: Human-Centric ML: *Optimal Decision Making Under Strategic Behavior* [link]

Education

Monash University - Monash Data Future Institute — **Melbourne**
Postdoctoral Research Fellow — *2023 - Present*

Monash University - Department of Data Science and AI — **Melbourne**
Ph.D. in Computer Science — *2019 - 2023*

Sharif University of Technology — **Tehran**
B.Sc. in Computer Science and Electrical Engineering — *2011 - 2016*

Honors & Awards

- Selected for **CIFAR Neuroscience of Consciousness Winter School, 2024** - 42 selected globally
- Best Reviewer Award – **Learning on Graphs (LoG) Conference 2022**
- Travel Award – **NeurIPS 2019, ICML 2022, NetSciX 2022, CNS* 2024**
- Accepted to **Machine Learning Summer School (MLSS 2020)** - acceptance rate of 13.8%
- Accepted to **NETHIKE Summer School by ETHZürich, 2022** - 17 accepted globally
- Summer Internship Grant:
  Max Planck Institute for Software Systems **(MPI-SWS)**, 2019
  Singapore University of Technology and Design **(SUTD-MIT)**, 2018
  Swiss Federal Institute of Technology Lausanne **(EPFL)**, 2016
  Hong Kong University of Science and Technology **(HKUST)**, 2015
- Full attendance scholarship, **National University of Singapore (NUS) Workshop** on Contemporary Research in Computer Science and Information Systems, 2016.

Professional Experience

- **Organizer:** NeuroAI Workshop @ NeurIPS 2024 (1,400+ attendees)
- **Conference Reviewer:** ICML 2022-2025, NeurIPS 2023-2024, ACM FAccT 2022, ICLR 2021, IJCAI 2020
- **Journal Reviewer:** IEEE Transactions on Neural Networks and Learning Systems 2023 (IEEE TNNLS), Journal of Future Generation Computer Systems 2020 (FGCS)
- **Mentorship:** Impact Scholars Program @ NeuroMatch Academy