

Omid Reza Heidari

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RESEARCH INTERESTS

Multimodal AI | Large Language Models | Reinforcement Learning | Computer Vision | Optimization

EDUCATION

Concordia University, Montreal, CA Doctorate of Industrial Engineering Supervisor: Prof. Yassine Yaakoubi	2026 - 2029
Concordia University, Montreal, CA Master of Science in Computer Science Advisors: Prof. Yang Wang and Prof. Xinxin Zuo Research project: Domain Shifts in Object Detection in X-ray Images	2023 - 2025 GPA: 3.5/4.3
Islamic Azad University, Zanjan, IR Bachelor of Engineering in Computer Engineering	2017 - 2022 GPA: 3.47/4.00

WORK EXPERIENCE

Vita Detection <i>Research Intern</i>	<i>Montreal, CA</i> Apr 2025 - Aug 2025
<ul style="list-style-type: none">Developed and implemented domain adaptation techniques for object detection in security X-ray images, applying the Align and Distill (ALDI) method to enhance model robustness.Designed and optimized deep learning models using PyTorch Lightning on Amazon Web Services (AWS) and Compute Canada for large-scale experiments.Analyzed and benchmarked multiple approaches for cross-domain object detection, improving model generalization under domain shifts.	
The University of British Columbia <i>Research Intern</i>	<i>Vancouver, CA</i> Nov 2024 - Feb 2025
<ul style="list-style-type: none">Implemented the state-of-the-art models including OmniMotion, real-valued non-volume preserving (Real NVP), Betrayed by Attention, and Neural Radiance Fields on Google Cloud Platform (GCP) and Compute Canada.Reviewed and discussed approximately 5-7 research papers per week, analyzing various approaches to improve the performance and accuracy of previous methodologies.Enhanced model accuracy for detecting occluded objects by around 7%.	
Zanjan University of Medical Sciences <i>Data Research Analyst</i>	<i>Zanjan, IR</i> Jul 2022 - Jan 2023
<ul style="list-style-type: none">Conducted research on machine learning and electroencephalogram signals.Utilized Welch, Convolution, and Fourier transform to compute connectivity, power, and amplitude.Applied low-data techniques, such as data augmentation and transfer learning, to prevent underfitting and improve model performance on limited datasets.	

ACADEMIC EXPERIENCE

Concordia University <i>Teaching Assistant</i>	<i>Montreal, CA</i> Jan 2024 - Present
<ul style="list-style-type: none">Machine Learning & AI:<ul style="list-style-type: none">COMP 6771 - Image Processing (Dr. Xiao)COMP 6321 - Machine Learning (Dr. Wang & Dr. Ayub)COMP 6961 - Graduate Seminar in Computer Science (Dr. Rilling)Programming & Software Engineering:<ul style="list-style-type: none">COMP 248 - Object-Oriented Programming I (Dr. Houari)COEN 243 - Programming Methodology I (Dr. Zuo and Dr. Fu)Data Structures & Algorithms:	

- COEN 352 - Data Structures and Algorithms (Dr. Hanna)
- COMP 352 - Data Structures and Algorithms (Dr. Goodarzi)
- Databases:
 - COMP 353 - Databases (Dr. Shiri and Dr. Jababo)

Sharif University of Technology

Teaching Assistant

Tehran, IR

Sep 2022 - Feb 2023

- CE 717 - Machine Learning (Dr. Sharifi-Zarchi and Dr. Azarkhalili)

Zanjan, IR

University of Zanjan

Teaching Assistant

Sep 2021 - Jun 2022

- Digital Logic Design (Dr. Azarpeyvand)
- Computer Architecture (Dr. Azarpeyvand)
- Principles of Database Design (Dr. Mohammadpur)

SKILLS

- **Programming Languages:** Python, MATLAB, C++
- **Frameworks:** PyTorch, PyTorch Lightning, scikit-learn, PySpark, OpenCV
- **Databases:** MySQL, PostgreSQL, Redis, MongoDB
- **Services:** AWS, GCP, RabbitMQ
- **Languages:** English (fluent), French (fluent), Persian (fluent)

PROFESSIONAL SERVICE

Reviewer

Sep 2025 - Oct 2025

NeurIPS 2025 - Efficient Reasoning workshop.

Ethics Reviewer

Jul 2025 - Jul 2025

NeurIPS 2025

PUBLICATIONS

2026

- **Heidari, O. R.**, Reid, S., Yaakoubi, Y., Wang, Y. AGENTIQL: Agentic LLMs with Adaptive Routing for Text-to-SQL. *In preparation for ICML 2026 Conference*

2025

- Reid, S., Chi, Z., Gu, L., **Heidari, O. R.**, Wang, Z., Wang, Y. DA-MergeLoRA: Hypernetwork-Based LoRA Merging for Few-Shot Test-Time Domain Adaptation. *Submitted to ICLR 2026 Conference*
- **Heidari, O. R.**, Wang, Y., Zuo, X. ALDI-ray: Adapting the ALDI Framework for Security X-ray Object Detection. *Submitted to ICASSP 2026 Conference*
- Wasi, A. T., **Heidari, O. R.***, Anam, N.*, Hasan Rafi, T. A Review of Human-Centric Evaluation of Cultural Bias in Indic Languages within LLMs: Rethinking Research Directions. *Submitted to PAKDD 2026 Survey Track*
- **Heidari, O. R.**, Reid, S., Yaakoubi, Y. AGENTIQL: An Agent-Inspired Multi-Expert Architecture for Text-to-SQL Generation. *NeurIPS 2025 Workshop on Efficient Reasoning*
- Yousefi, F., Dadashi, M., **Heidari, O. R.**. Efficacy of left prefrontal-temporoparietal tDCS on symptom reduction and cognitive improvement in schizophrenia: A randomized, sham, controlled, parallel-group study. *Brain Stimulation Journal*

2024

- **Heidari, O. R.***, Gu, L.*, Li, J. N.*., Wang, Y. Retrieval Augmented Generation for Natural Language Query in Egocentric Videos.  *Best Poster, Mila - Quebec AI Institute*