

# Omid Reza Heidari

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## RESEARCH INTERESTS

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Multimodal AI | Large Language Models | Reinforcement Learning | Deep Learning

## EDUCATION

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**Concordia University, Montreal, CA** 2026 - 2029  
Doctorate of Industrial Engineering GPA: 4.3/4.3  
Supervisor: Prof. Yassine Yaakoubi

**Concordia University, Montreal, CA** 2023 - 2025  
Master of Science in Computer Science GPA: 3.5/4.3  
Advisors: Prof. Yang Wang and Prof. Xinxin Zuo  
Research project: Domain Shifts in Object Detection in X-ray Images

**Islamic Azad University, Zanjan, IR** 2017 - 2022  
Bachelor of Engineering in Computer Engineering GPA: 3.47/4.00

## WORK EXPERIENCE

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**Vita Detection** Montreal, CA  
Research Intern Apr 2025 - Aug 2025

- 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** Vancouver, CA  
Research Intern Nov 2024 - Feb 2025

- 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** Zanjan, IR  
Data Research Analyst Jul 2022 - Jan 2023

- 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

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**Concordia University** Montreal, CA  
Teaching Assistant Jan 2024 - Present

- Machine Learning & AI:
  - 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:
  - 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)

## University of Zanjan

Teaching Assistant

Zanjan, IR

Sep 2021 - Jun 2022

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

## SKILLS

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

## PROFESSIONAL SERVICE

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### Reviewer

Jan 2026

*ICLR 2026 - Catch, Adapt, and Operate workshop.*

### Reviewer

Sep 2025

*NeurIPS 2025 - Efficient Reasoning workshop.*

### Ethics Reviewer

Jul 2025

*NeurIPS 2025*

## PUBLICATIONS

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### 2026

- 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. *In preparation for ECCV 2026 Conference*
- **Heidari, O. R.**, Reid, S., Wang, Y., Yaakoubi, Y. AGENTIQL: Agentic LLMs with Adaptive Routing for Text-to-SQL. *Submitted to ICML 2026 Conference*
- **Heidari, O. R.**, Wang, Y., Zuo, X. ALDI-ray: Adapting the ALDI Framework for Security X-ray Object Detection. *Submitted to CRV 2026 Conference*

### 2025

- 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*