

Omid Reza Heidari

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RESEARCH INTERESTS

Retrieval-Augmented Generation | Large Language Models | Multimodal AI | Reinforcement Learning | Foundation Models

EDUCATION

Concordia University, *Montreal, CA*

Master of Science in Computer Science

Advisers: Yang Wang and Xinxin Zu

Research project: Domain Shifts in Object Detection across X-ray and RGB Spaces

2023 | 2025

GPA: 3.5/4.00

Islamic Azad University, *Zanjan, IR*

Bachelor of Engineering in Computer Engineering

2017 | 2022

GPA: 3.47/4.00

WORK EXPERIENCE

Vita Detection

Machine Learning Intern

Montreal, CA

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, PyTorch Lightning, and Compute Canada resources 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

Machine Learning Intern

Vancouver, CA

Nov 2024 | Feb 2025

- Implementing the state-of-the-art models in PyTorch and PyTorch Lightning, such as OmniMotion, Real NVP, Betrayed by Attention, and NeRF 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 Science

Data Research Analyst

Zanjan, IR

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

Concordia University

Teaching Assistant

Montreal, CA

Jan 2024 | Aug 2025

- COMP 353 - Databases
- COMP 6321 - Machine Learning
- COMP 6771 - Image Processing
- COEN 243 - Programming Methodology I
- COMP 248 - Object-Oriented Programming I
- COEN 352 - Data Structures and Algorithms
- COMP 352 - Data Structures and Algorithms

Sharif University of Technology

Teaching Assistant

Tehran, IR

Sep 2022 | Feb 2023

- CE 717 - Machine Learning

Zanjan University

Teaching Assistant

Zanjan, IR

Sep 2021 | Jun 2022

- Principles Of Database Design
- Digital Logic Design
- Advanced Programming

SKILLS

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


PUBLICATIONS

2025

- **Heidari, O. R.**, Wang, Y., Zuo, X. Applying Domain Adaptation Technique(s) from RGB to X-ray Images. *Work in progress (Planning for ICPR2026)*
- **Heidari, O. R.**, Wang, Y., Zuo, X. Using Align and Distill in Object Detection of Security X-ray Images. *In preparation for WACV2026*
- 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

- 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 Language Resources and Evaluation Journal*
- **Heidari, O. R.***, Gu, L.*, Li, J. N. *, Wang, Y. Retrieval Augmented Generation for Natural Language Query in Egocentric Videos.

 Selected as the Best Poster at *Mila - Quebec AI Institute*

April 2024

2023

- Zakerian Zadeh, A., Dadashi, **Heidari, O. R.** Assessment of Structural Connectivity and Brain Volumes after tDCS in Stroke: A Machine-learning Method. *Authorea*