

Farzad Beizaee

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Professional Summary

Ph.D. in Computer Science with over 5 years research and applied machine learning experience in computer vision, with core expertise in generative models (Diffusion, Normalizing flows, Rectified flows). Strong publication record in top-tier venues like CVPR, ICLR, NeurIPS, MICCAI, MedIA, etc., and passionate about pushing the boundaries of generative modeling and translating advanced machine learning into real-world solutions in multimedia generation, autonomous systems, and healthcare.

Education

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| Ph.D. in Computer Science
École de technologie supérieure (ÉTS), Montreal, Canada
• Thesis: Advancing brain MRI assessment using generative models | Sep. 2021 – Sep. 2025
GPA: 4.3/4.3 |
| M.Sc. in Artificial Intelligence & Robotics
Sharif University of Technology, Tehran, Iran
• Thesis: Human Action Recognition from RGB-D Videos using deep neural networks | Sep. 2017 – Jan. 2020
GPA: 17.58/20 |

Work/Research Experience

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| Machine Learning Researcher
Zebra Technologies (Mitacs accelerate program) | Jan. 2026 – present
Montreal, Canada |
| • Industrial Anomaly Detection: Adaptation and improvement of unsupervised anomaly detection methods for industrial inspection under limited supervision (few labeled samples). | |
| Research Assistant
LIVIA @ ÉTS Montreal + CHU Sainte-Justine | Sep. 2021 – Sep. 2025
Montreal, Canada |
| • Unsupervised Anomaly Detection: Proposed novel generative-model-based frameworks for unsupervised anomaly detection, enabling improved performance on both industrial inspection and medical imaging tasks. | |
| • Image Translation: Developed unsupervised methods for cross-site MRI harmonization using generative models, enabling more reliable downstream analysis. | |
| • Vision Language Models: Explored gist extraction to improve VLM (e.g., CLIP) zero-shot classification and contributed to research on VLM adaptation for reliable classification and segmentation under domain shifts. | |
| • Brain MRI analysis: Proposed learning-based approaches for brain segmentation, neonatal age estimation, and clinical outcome prediction, advancing automated analysis of brain MRIs. | |
| • Representation Learning: Contributed to research on modifying vision transformers to enhance local attention for dense prediction tasks and on exploring Mamba state space models for improved representation learning. | |
| Machine Learning Researcher Intern
Zebra Technologies | Dec. 2023 – Apr. 2024
Montreal, Canada |
| • Developed Character Detection for OCR: Developed and optimized a real-time object detection model for industrial OCR and performed comprehensive validation to ensure robustness and reliability. | |
| Machine Learning Researcher
BARAI startup | Aug. 2020 – Aug. 2021
Tehran, Iran |
| • Clothes visual search: Researched and developed high-performing models for clothes detection, segmentation, and image retrieval for a visual search application, while also creating the dataset. | |
| • Attribute Tagging: Developed multi-task networks for automated attribute tagging for online marketplace. | |

- **Document OCR:** Developed Persian document OCR using detection and recognition networks, leveraging a GNN for information parsing.

Research Assistant

IPL @ Sharif University of Technology

Sep. 2017 – Jan. 2020

Tehran, Iran

- **Human Action Recognition:** Designed and implemented multiple deep learning architectures for human action recognition, including *Distilled Auto-Encoder*, *Depth-map 3D Network*, and *3D Capsule Network*.
- **Comprehensive Analysis on human action recognition:** Conducted in-depth analysis of network architectures, different modality combinations, modality fusion strategies, and their robustness to perturbations.

Teaching Assistant


Sharif University of Technology

Sep. 2018 – Jan. 2020

Tehran, Iran

- Teaching assistant for courses in **Advanced 3D computer vision**, **Deep learning**, **Machine learning** and, **Fundamentals of Programming**.

Selected Publications

Please see the full list at: [Google Scholar](#) 

- **CVPR 2025:** Correcting Deviations from Normality: A Reformulated Diffusion Model for Multi-Class Unsupervised Anomaly Detection, *F. Beizaei et al.*
- **MICCAI 2025:** REFLECT: Rectified Flows for Efficient Brain Anomaly Correction Transport, *F. Beizaei et al.*
- **Medical Image Analysis:** Harmonizing Flows: Leveraging normalizing flows for unsupervised and source-free MRI harmonization, *F. Beizaei et al.*
- **IPMI 2025:** MAD-AD: Masked Diffusion for Unsupervised Brain Anomaly Detection, *F. Beizaei et al.*
- **ICLR 2025:** Locality-Attending Vision Transformer, *S. Hajimiri et al.*
- **NeurIPS 2025:** Test-Time Adaptation of Vision-Language Models for Open-Vocabulary Semantic Segmentation, *M. Nouri et al.*
- **ICML 2025:** SMART-PC: Skeletal Model Adaptation for Robust Test-Time Training in Point Clouds, *A. Bahri et al.*
- **CVPR 2025:** Spectral State Space Model for Rotation-Invariant Visual Representation Learning, *S. Dastani et al.*
- **NeurIPS 2024:** WATT: Weight Average Test-Time Adaption of CLIP, *D. Osowiechi et al.*

Skills

Programming Languages: Python, MATLAB, C/C++

Core ML Concepts: Diffusion, Flows, Vision-Language Models, Transformers, CNNs, Mamba

Frameworks: PyTorch, TensorFlow, Keras, OpenCV, scikit-learn, HuggingFace, Pandas, Weights & Biases

Tools: Docker, Git, Linux, PyQt, Slurm, LaTeX

Languages: English (fluent), French (basic), Persian (native)

References

References available upon request.