

Bardiya Kariminia

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Education

Shahid Beheshti University, BS in Computer Engineering

Sept 2022 – Jan 2027

- Cumulative GPA: 18.78/20.00 (3.90/4.0 on the U.S. Scale)

Teaching Assistantships:

- Machine Learning, Artificial Intelligence, Linear Algebra, Advanced Programming, Discrete Math and Statistics, Computer Architecture, Operating Systems.

Research Interests

- **Generative AI:** Diffusion Models and Flow-based Architectures, Diffusion Transformers, Image and Video Editing, Camera Control
- **Neural Rendering:** NeRF, Gaussian Splatting, 3D Reconstruction, Epipolar Geometry
- **Vision-Language Models:** Multimodal learning, Hallucination Detection and Pattern Analysis
- **Optimization:** Bayesian Optimization

Publications

GIA: Geometry-Aware Image Analogy

Amirhossein Alimohammadi¹, **Bardiya Kariminia**¹, Mahan Vaisi, [Ali Mahdavi Amiri](#).
preprint 2026.

SIA: Selective Image Analogy

[Link](#)

Amirhossein Alimohammadi, Kian Izadpanah, **Bardiya Kariminia**, [Yiorgos Chrysanthou](#), [Ali Mahdavi Amiri](#).
SIGGRAPH Asia 2026.

UHP Detection: LLMs have their Unique Hallucination Pattern in the Consistency Space

[Link](#)

Amir Mohammad Ezzati, Kiyan Rezaee, **Bardiya Kariminia**, Mohamad Amin Yousefi, Asal Mohammadjafari Mamaqani, Behrad Samimi, [Mohammad Hossein Rohban](#).
arXiv preprint, 2026.

A Race Bias Free Face Aging Model for Reliable Kinship Verification

[Link](#)

Ali Nazari, **Bardiya Kariminia**, [Mohsen Ebrahimi Moghaddam](#).
arXiv preprint, 2025.

¹ indicates co-first authorship.

Experience

Volunteer Undergraduate Research Assistant at [GruviLab](#), Simon Fraser-University.

Apr 2026 – Ongoing

- Introduced **Selective Image Analogy (SIA)**, a new problem statement that enables users to selectively transfer a chosen subset of edits from a multi edit before/after pair to a new query image. Developed SIA upon *FLUX.2-Klein* framework with adaptive LoRA layers. The edit suppression task is performed using a selective token-gated LoRA (**STLoRA**) and a Concept Suppression Vector to push the feature representations of text tokens toward the semantic representation of the targeted suppressed edits, enhancing STLoRA's effectiveness.
- Extended image analogy to **Multi-View Image Analogy**, enabling joint transfer of camera viewpoint and image edits under uncalibrated and arbitrary reference/query camera configuration. Developed **GIA (Geometry-Aware Image Analogy)** using dense feature matching and modified RoPE positional encodings for 3D geometry-aware query/key tokens attention calculation. **Submitted to ICLR 2027.**

- Created a **100K+ sample GIA dataset** specifically designed for Multi-View Image Analogy, supporting training and evaluation of joint camera and edit transfer. The dataset was generated using an additional model fine-tuned upon *FLUX.2-Klein*, epipolar correspondence attention and Plücker reciprocal penalty term.

Remote Research Internship at AIDAM Group; Max Planck Institute of Informatics; supervisors: Prof. Vahid Babaei.

May 2025 - Mar 2026

The research internship mainly focused on artificial intelligence-aided engineering designs using Diffusion models. Currently, **manuscript in preparation**.

- Developed a framework to add diversity via Determinantal Point process penalty term in forward pass to engineering designs such as structural 2D beams and wind turbine airfoils.
- Optimized the Pareto-front performance coefficient problem for designs with Bayesian Optimization and Evolutionary Algorithm such as *NSGAI* to iteratively explore the diffusion models generated manifold for efficient designs.

Research Assistant at RIML Group; Sharif University of Technology; supervisors: Prof. Mohammad Hossein Rohban.

Aug 2025 - Mar 2026

- Investigated the consistency space of Vision-Language Models (VLMs) across image and text modalities, analyzing logical polarity to extract features in order to uncover model-specific hallucination patterns in black-box settings.

Research Internship, Shahid Beheshti Computer Vision Lab; supervisor: Prof. Mohsen Ebrahimi Moghadam.

Sep 2024 - July 2025

Developed a deep generative framework for face age transformation using cyclic domain loss, used for improvement in Kinship classification task.

- Developed a face aging GAN (RA-GAN) for arbitrary target ages via race-specific feature injection into the encoder's pyramidal layers to reduce racial bias.
- A cyclic aging loss enforces consistent domain transformation across age groups while preserving identity,
- Used ArcFace feature loss to retain the identity for each sample across different ages.

Projects

Diff-MOBO

[Github Link](#)

- Diversity-aware diffusion framework for engineering design, introduced DPP diversity penalty loss for outer loop to prevent mode collapse and encourage model to explore the latent manifold of designs. Additionally, solving the Psareto-front multi-performance coefficient problem using Bayesian optimization.

DDPM from scratch

[Github Link](#)

- A complete from-scratch implementation of Denoising Diffusion Probabilistic Models (DDPM) in PyTorch from the original paper.

Deep Learning for Image Denoising verification

[Github Link](#)

- A survey on neural frameworks for image restoration and noise reduction.

Skills

- Python, NumPy, Pandas, Matplotlib, Scikit-learn, Seaborn
- **Image processing Libraries:** OpenCV, Pillow
- **AI frameworks:** JAX, Transformers, Diffusers, gsplat, DeepFace, PyTorch, TensorFlow, TorchVision, Pytorch3D
- LaTeX