

Amir Mohammad Babaei

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Education

Sharif University of Technology (SUT)

MSc IN COMPUTER ENGINEERING, **ARTIFICIAL INTELLIGENCE AND ROBOTICS**

Tehran, Iran
Sep. 2023 - Present

- GPA: **18.32/20.00 (4.00/4.00)**
- Member of [Sharif Image Processing Laboratory \(Sharif IPL\)](#)
- Supervisor: [Prof. Shohreh Kasaei](#)
- **Thesis:** Blind Image Super-Resolution Using Deep Generative Neural Network Architectures

Amirkabir University of Technology (AUT)

BSc IN COMPUTER ENGINEERING

Tehran, Iran
Sep. 2019 - Sep. 2023

- GPA: **19.09/20.00 (3.96/4.00)**
- Ranked **4th** among 149 students
- Supervisor: [Dr. Maryam AmirMazlaghani](#)
- **Thesis:** Graph-based Convolutional Multivariate Time Series Forecasting Approach for Urban Traffic Forecasting

Research Interests

Deep Generative Models
Computer Vision

3D Reconstruction
Multimodal Learning

Image/Video Restoration
Deep Learning

Research Experience

Sharif University of Technology - Image Processing Laboratory (IPL)

ADVISOR: [PROF. SHOHREH KASAEI](#)

Tehran, Iran
Nov. 2023 - Present

- My thesis focuses on improving the efficiency of deep generative models for Image Super-Resolution, especially diffusion models.
- Developed a novel weakly-supervised approach for video instance segmentation (VIS), enabling accurate segmentation without relying on video mask annotations.

University of Toronto - Dept of Electrical and Computer Engineering

ADVISOR: [DR. ALIREZA ESMAEILZEHI](#)

Full Remote
Nov. 2022 - Aug. 2024

- Collaborated with Dr. Alireza Esmailzehi, Postdoctoral Fellow at the University of Toronto, on advanced deep learning and computer vision research since Fall 2022. Co-authored a paper on Computer Vision accepted by a highly reputable journal.

Publications

PUBLISHED

Esmailzehi, A., **Babaei, A.M.**, Nooshi, F., Zaredar, H., and Ahmad, M.O., "**CLBSR: A deep curriculum learning-based blind image super-resolution network using geometrical prior**," *Image and Vision Computing*, vol. 154, p. 105364, Feb. 2025. DOI: [10.1016/j.imavis.2024.105364](#)

Mansourian, A., Ahmadi, R.*, Ghafouri, M.*, **Babaei, A.M.***, et. al., "**A Comprehensive Survey on Knowledge Distillation**," *ArXiv*: arXiv:2503.12067, Mar 2025. DOI: [10.48550/arXiv.2503.12067](#) (* denotes equal contribution.)

UNDER REVIEW

Arefi, F., **Babaei, A.M.**, Ramezani, V., Mansourian, A.M., Kasaei, S., "**Improving Weakly-supervised Video Instance Segmentation Using Keypoints Consistency**," *Computer Vision and Image Understanding Journal*, Submitted in November 2024

Honors and Awards

2024	Nominated for the Best Bachelor Thesis Award in the Computer Engineering Department	AUT
2023	Reviewer for the <i>Circuits, Systems, and Signal Processing (CSSP)</i> Journal	SUT
2023	Admitted to the Master of Science program at Sharif University of Technology based on exceptional academic performance , without the need for an entrance exam	SUT
2023	Ranked 4th Highest GPA among 149 Undergraduate Computer Engineering Students	AUT
2019	Ranked top 1% in the Iranian University Entrance Exam; Recognized as Outstanding Student	AUT

Languages

- English (TOEFL iBT: **101 (R:28, L:27, S:23, W:23)**)
- Persian (Native)

Teaching Experience

Fall 2024	Deep Learning Teaching Assistant , Computer Engineering Dept., under the supervision of Prof. Hamid Beigy	SUT
	Advanced 3D Computer Vision Teaching Assistant , Computer Engineering Dept., under the supervision of Prof. Shohreh Kasaei	SUT
Spring 2024	Fundamental of 3D Computer Vision Teaching Assistant , Computer Engineering Dept., under the supervision of Dr. Hanieh Naderi	SUT
Spring 2023	Head of Data Mining Teaching Assistance , Computer Engineering Dept., under the supervision of Prof. Ehsan Nazerfard	AUT
	Applied Linear Algebra Teaching Assistant , Computer Engineering Dept., under the supervision of Prof. Maryam AmirMazlaghani	AUT
Spring 2022	Signals and Systems Teaching Assistant , Computer Engineering Dept., under the supervision of Dr. Atefeh TermehChi	AUT
Fall 2021	Head of Applied Linear Algebra Teaching Assistance , Computer Engineering Dept., under the supervision of Prof. Ehsan Nazerfard	AUT

Professional Experience

May 2023 - Feb. 2024	Data Scientist , Collaborated to develop data-driven solutions for the company challenges. Contributed to the development of <i>channel classifier</i> , <i>channel recommender system</i> , and <i>intelligent advertisement</i> projects as part of the data science team at Bale.	Bale Messenger
Jul. 2022 - Sep. 2022	Machine Learning Engineer , Collaborated to develop audiovisual speech recognition for Persian language, and also gathering Persian audiovisual dataset for training phase.	Asr Gooyesh Pardaz

Skills and Expertise

Programming Languages	Python, Java, C/C++, MATLAB (GNU Octave)
Tools	Git, Linux, Bash, GDAL, L ^A T _E X, FFmpeg, OpenMP, CUDA, LangChain, Ollama, AWS EC2
Libraries & Frameworks	PyTorch, BasicSR, KAIR, PyTorch Geometric, Hugging Face Transformers, JAX, Keras, TensorFlow, Numpy, OpenCV, Pandas, Scikit-learn, Matplotlib

Selected Projects

For a complete list of projects, please visit my GitHub: github.com/AmirMohamadBabaei

- **Deep Learning Homework Assignments**
In these assignments, I implemented various algorithms, including *PCA*, *t-SNE*, *autoencoders*, *CNNs*, *RNNs*, *LSTMs*, *GRUs*, *language models*, *GNNS*, *GANs*, *VAEs*, and *reinforcement learning*. Each method was applied to different tasks, and the results were documented throughout the project. ([Link](#))
- **Deep Generative Models Homework Assignments**
The assignments involved implementing popular generative models, including *autoregressive models*, *VAEs*, *GANs*, *NF*, *EBM*, and diffusion models like *DDPM*. ([Link](#))
- **Digital Image Processing Homework Assignments**
In this series of assignments, I explored *Fourier Series Analysis*, *quantization techniques*, *DCT compression*, and *CLAHE* for image enhancement. I also worked on *image restoration*, *Hough transform*, *template matching*, *classical segmentation*, *image compression*, and *morphological image processing*. ([Link](#))
- **Panorama**
This project focused on creating an application replicating a cellphone camera's panoramic feature. It included tasks like *feature matching* and *image stitching* to build the panorama from scratch. ([Link](#))

Certificates

Coursera	Machine Learning (Certificate)	Stanford	CS224n: NLP with Deep Learning (Audited)
Coursera	Deep Learning (Certificates: 1 , 2 , 3 , 4 , 5)	Stanford	CS224W: Machine Learning with Graphs (Audited)
Coursera	Mathematics for Machine Learning (Certificate)	Stanford	CS236: Deep Generative Models (Audited)