Amir Mohammad Babaei

COMPUTER VISION ENGINEER

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Career Objectives

As an aspiring Computer Vision researcher, I aim to leverage my robust academic background in AI and practical experience in image processing and ML to drive innovation and contribute to cutting-edge research. With a Master's degree from Sharif University and a top-ranked Bachelor's from Amirkabir University, I have honed my skills through research at Sharif's Image Processing Lab and collaborations with University of Toronto. I am dedicated to advancing the field of computer vision through rigorous research and scholarly contributions. I am passionate about exploring novel approaches to complex problems, fostering interdisciplinary collaboration, and mentoring the next generation of engineers and scientists.

Education

Sharif University of Technology   *Tehran, Iran*
MASTER OF SCIENCE IN COMPUTER ENGINEERING, ARTIFICIAL INTELLIGENCE AND ROBOTICS   *Sep. 2023 - Present*
- member of Sharif Image Processing Lab (Sharif IPL)

Amirkabir University of Technology   *Tehran, Iran*
BACHELOR OF SCIENCE IN COMPUTER ENGINEERING   *Sep. 2019 - Sep. 2023*
- GPA: **19.09/20**
- Ranked **4th** among 149 students.

    Final Thesis: Design and Implement a Novel Spatiotemporal Method based on SCINet and Graph Convolution Networks to Estimate and Predict Next Hour Traffic in Urban Streets.

Professional Experience

Feb 2024 - May 2024	**Computer Vision Engineer,** Nazru, Refined both airborne and spaceborne imagery through advanced processing techniques, ensuring they were primed for seamless integration into the subsequent stages of the image processing pipeline
May 2023 - Feb 2024	**Data Scientist,** Bale Messenger, Collaborated with Omid Mirabzadeh at Bale to develop data-driven solutions for various challenges. Contributed to the development of a channel classifier, channel recommender system, and intelligent advertisement projects as part of the data science team at Bale.
Sep 2022 - Mar 2023	**Machine Learning Engineer,** Asr Gooyesh Pardaz, under the supervision of Soroush Gooran, we conducted research and development activities related to the following projects: 1. Benchmarking and investigation of the Nvidia NeMo framework for the Persian Automatic Speech Recognition task. 2. Development of a simple FAQ chatbot using the RASA framework to provide a valuable service for commercial websites.

Publications

IN PREP

Esmaeilzehi, A., **Babaei, A.M.**, Nooshi, F., Zaredar, H., Ahmad, M.O., "A Manuscript on Kerenl Estimation for Blind Image Super Resolution," Image and Vision Computing Journal, Ongoing

Babaei, A.M., Nabati, S., Dehghanian, Z., AmirMazlaghani, M., "A Manuscript on a Novel Approach to Traffic Forecasting, Integrating Time Series Models with Graph Convolution Networks to Effectively Capture Spatiotemporal Dependencies within the Traffic Dataset.", Ongoing

Skills

Programming Languages	Python, Java, C/C++
Tools	Git, Linux, Bash, Docker, Kubernetes, GDAL, LaTeX, ffmpeg, Selenium, Relational Databases & SQL, LangChain, Ollama
Libraries & Frameworks	Keras, TensorFlow, PyTorch, PyTorch Geometric, Hugging Face Transformers, Numpy, OpenCV, Pandas, Scikit-learn, Django, FastAPI, Nvidia Nemo, gensim
Languages	English, Persian(Native)

Honors and Awards

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.	*Sharif University of Technology*
2023	Ranked **4th** Highest GPA among 149 Undergraduate Computer Engineering Students	*Amirkabir University of Technology*
2019	Among the **top 2%** of the Iranian University Entrance Exam and Recognized as an Outstanding Student	*Amirkabir University of Technology*

Teaching Experience

Feb 2023 - Jul 2023	**Data Mining Head Teaching Assistant,** Computer Engineering Dept., Amirkabir University of Technology, under the supervision of Dr. Nazerfard
Feb 2023 - Jul 2023	**Applied Linear Algebra Teaching Assistant,** Computer Engineering Dept., Amirkabir University of Technology, under the supervision of Dr. AmirMazlaghani
Sep 2021 - Feb 2022	**Applied Linear Algebra Head Teaching Assistant,** Computer Engineering Dept., Amirkabir University of Technology, under the supervision of Dr. Nazerfard

Research Experience

Sharif University of Technology - Image Processing Lab (IPL) *Tehran, Iran*
ADVISORS: DR. SHOHREH KASAEI *Nov 2023 - Present*

Amirkabir University of Technology - Dept of Computer Engineering *Tehran, Iran*
ADVISOR: DR. MARYAM AMIRMAZLAGHANI *Sep. 2022 - Present*
- Thesis: "Design and Implementation of Urban Traffic Forecasting System"

University of Toronto - Dept of Computer Science *Full Remote*
ADVISORS: DR. ALIREZA ESMAEILZEHI *Nov 2022 - Nov 2023*
- Collaborated with Dr. Alireza Esmaeilzehi, a Postdoctoral Research Fellow at the University of Toronto, on advanced Machine Learning and Computer Vision research projects since Fall 2022. Successfully co-authored and submitted a paper to a top-tier conference in the areas of computer vision, image processing, and deep learning

Sharif University of Technology - Dept of Computer Engineering *Tehran, Iran*
ADVISORS: DR. HOSSEIN SAMETI, SOROUSH GOORAN *Jul 2022 - Sep 2022*
- Developed a research project on Audio-Visual Speech Recognition at Asr Gooyesh Pardaz Company, under the guidance of Soroush Gooran and Dr. Hossein Sameti. Due to the lack of a Persian audio-visual dataset, we collected a new dataset in Persian. However, due to time constraints and resource limitations, we were unable to proceed with the fine-tuning phase of the project.

Outreach & Professional Development

SERVICE AND OUTREACH

Summer 2022	**Computer Webinar Series(CWS) 2022** Member of Research Team, As a member of the research team, I have been actively engaged in reaching out to lecturers, professors, and outstanding researchers, inviting them to present at our upcoming event.	*Amirkabir University of Technology*

DEVELOPMENT

Online Courses I Have Passed:

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