Mohammad Reza Shafie

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Education

Iran University of Science & Technology, M.Sc. in Electrical Engineering — Oct 2021 – Aug 2023

- **Fifth Rank** in a class of **56** graduates, achieving a **GPA** of **18.44/20 (4/4)**
- **Thesis:** Age-invariant Face Recognition, employing continuous domain adoption and face age synthesis to minimize the impact of age variation on face recognition

Iran University of Science & Technology, B.Sc. in Electrical Engineering — Oct 2017 – Sep 2021

- **Second Rank** in a class of **37** graduates, achieving a **GPA** of **17.74/20 (3.77/4)**
- **Thesis:** Designing and Implementing Image Steganography model using Convolutional Neural Network on FPGA

Research Interests

- Image & Video Processing
- Deep Learning
- Computer Vision
- Robotics
- Pattern Recognition
- Machine Learning

Work Experience

AI Developer, Octa Startup Accelerator – Tehran, Iran — Aug 2023 – Present

- Developed and optimized **template matching** algorithms for real-time object recognition and tracking in video streams.
- Applied **optical flow** methods and **sensor fusion** techniques (IMU, cameras) to enhance motion analysis and system performance in real-world environments.
- Leveraged **digital signal processing** and **image processing** techniques on **Jetson Orin series** for high-performance, low-latency embedded system operations.
- Worked with **VPI (Vision Programming Interface)** of **NVIDIA** for optimized computer vision workflows, enhancing real-time processing.
- Integrated **V4L2**, **GStreamer**, and **FFmpeg** for camera interfacing, video capture, and stream processing, ensuring protocol compatibility and seamless operation.
- Utilized **Python** for scripting, automation, and data analysis to ensure system scalability and flexibility.
- Managed a product on **GitLab**, demonstrating expertise in **Git** for version control, and overseeing project workflows and collaboration.

Co-founder, Atlas Artificial Intelligence – Tehran, Iran — April 2022 – Present

- Developing an intelligent referee AI system using **human pose estimation** to count and assess the correctness of athletes' movements with a high degree of accuracy. For more details see SmarRefree in my Personal Page.
- Developing a smart face verification, tracking, and age estimator system using **deep learning** methods to track salespeople of a store and estimate customer ages. For more details see Face System in my Personal Page.

Publications

Chatbots and ChatGPT: A Bibliometric Analysis and Systematic Review of Publications in Web of Science and Scopus Databases — Apr 2023

Hamed Khosravi, Mohammad Reza Shafie, Morteza Hajiabadi, Ahmed Shoyeb Raihan, Dr. Imtiaz Ahmed

Link to paper

A cluster-based human resources analytics for predicting employee turnover using optimized Artificial Neural Networks and data augmentation — Apr 2024

Mohammad Reza Shafie, Hamed Khosravi, Sarah Farhadpour, Dr. Srinjoy Das, Dr. Imtiaz Ahmed

Link to paper

Optimizing Forest Fire Prediction: A Comparative Analysis of Machine Learning Models through Feature Selection and Time-Stage Evaluation — Dec 2023

Hamed Khosravi, Mohammad Reza Shafie, Dr. Imtiaz Ahmed

Link to paper

Projects

3D reconstruction application [Project Demo]
- operating in near real-time, utilizing image and video feeds to dynamically create 3D models. (Funded project for Iran Broadcasting)
- Tools Used: Python, C++, Nerf, Gaussing Splatting, ECON, HRN, Meshroom, Avatar

SmartRefree [Project Demo]
- Developing an intelligent referee AI system employing pose estimation deep learning models and geometry-based calculations to assess the correctness of athletes' movements (Funded project for Traditional Sports Federation of Iran)
- Tools Used: Python, C++, MediaPipe

Improving Road Semantic Segmentation using Deep Convolutional Generative Adversarial Network (Course project) [Repository]

High-Capacity Image Steganography using Fully-Convolutional DenseNet (Course project) [Repository]

Bird's-Eye-View Panoptic Segmentation Using Monocular Frontal View Images (Course project)

Leveraging denoising diffusion implicit model for strong and high quality face morphing attacks (Voluntary research)

Test Scores

GRE: Verbal Reasoning: **158**, Quantitative Reasoning:**166**, Overall: **324** — Oct 2022

TOEFL: Reading: **28**, Listening: **26**, Speaking: **24**, Writing: **23**, Overall: **101** — Dec 2021

Technical Skills

- **Programming Languages & Python Libraries:** Python, Bash, PyTorch, TensorFlow, Keras, OpenCV (cv2), Pandas, NumPy, Ray
- **Embedded Systems:** Sensor Driving & Integration (IMU, LiDAR, Barometer, OAK-D pro), Embedded Systems Programming (Raspberry Pi, Jetson series, different types of Microcontrollers)
- **Tools and Frameworks:** Linux, Git, LaTeX
- **Networking and Communication Protocols:** MAVLink, GStreamer, FFmpeg, V4L2, RTSP

Teaching Experience

Teaching Assistant at Iran University of Science & Technology — Oct 2022 - Dec 2022
- **Instructor & Course:** Dr. Mirzakochaki & Advanced Logic

Teaching Assistant at Iran University of Science & Technology — Oct 2021 - Dec 2021
- **Instructor & Course:** Dr. Mirzakochaki & Digital Systems

References

- **Prof. Sattar Mirzakuchaki**
  Department of Electrical Engineering, Iran University of Science and Technology, Tehran, Iran
  Email: m_kuchaki@iust.ac.ir

- **Prof. Imtiaz Ahmed**
  Department of Industrial and Management Systems Engineering, West Virginia University, WV, US
  Email: imtiaz.ahmed@mail.wvu.edu

- **Prof. Srinjoy Das**
  School of Mathematical and Data Sciences, West Virginia University, WV, US
  Email: srinjoy.das@mail.wvu.edu

Awards & Honors

- Being finalist for the Manufacturing AI Competition (2024). [Announcement](#)
- Ranked **672nd** among approximately **150,000** participants in the National Entrance Exam for Iranian Universities (2017).
- Graduated with rank **2** among **35** students of Eelctronics field and rank **5** among **127** entrants in Electrical engineering in Iran University of Science & Technology (2021). [Rank Certificates](#)
- Exempted from Iran's Universities Entrance Exam for Master's Degree at Iran University of Science & Technology (2021).
- Winner of the "Financial Educational Reward" from Iran's National Elites Foundation, Iran University of Science and Technology, Iran (2020, 2021).
- Government Tuition-fee scholarship for B.Sc. and M.Sc degrees (2017 - 2021, 2021 - 2023)