Mohammad Reza Shafie

Tehran | mr.shafie7731@gmail.com | 09369349943 | Personal Page | Scholar | LinkedIn | Git repositories

Research Interests

- Computer Vision
- Robotics and Robot Perception
- Machine Learning
- Autonomous Vehicles
- Pattern Recognition
- Image Processing

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

Selected Courses

- **Statistical Pattern Recognition** — 4/4
- **Medical Image Processing** — 4/4
- **Smart Systems Design (Deep Learning and Optimization Algorithms)** — 4/4
- **Machine Vision** — 4/4
- **Machine Learning Specialization**, Stanford University (Coursera) — 95/100
- **Deep Learning Specialization (5 Courses)**, DeepLearning.AI (Coursera) — 93/100
- **Generative Adversarial Networks Specialization**, DeepLearning.AI (Coursera) — 97/100
- **Deep Neural Networks with PyTorch**, IBM (Coursera) — 91/100
- **Applied Machine Learning in Python**, University of Michigan (Coursera) — 94/100

Publications

KANGURA:Kolmogorov-Arnold Network-Based Geometry-Aware Learning with Unified Representation Attention for 3D Modeling of Complex Structures in Advanced Manufacturing — May 2025
Mohammad Reza Shafie, Morteza Hajiabadi, Hamed Khosravi, Dr. Imtiaz Ahmed
Under preparation (Link to draft)

LNUCB-TA: Linear-nonlinear Hybrid Bandit Learning with Temporal Attention — March 2025
Hamed Khosravi, Mohammad Reza Shafie, Ahmed Shoyeb Raihan, Dr. Srinjoy Das, Dr. Imtiaz Ahmed
Submitted to Journal of Machine Learning (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

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

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)

Projects

Object Rearrangement in Dynamic Environments Project Repo

- Recently joined this project that automates the task of object rearrangement in a robotic simulation environment to integrate it with LLM models.
- Tools Used: Python, AI2THOR, Ollama

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

Bird's-Eye-View Panoptic Segmentation Using Monocular Frontal View Images (Paper presentation for course project)

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

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

Work Experience

AI Robotics Engineer: Octa Startup Accelerator – Tehran, Iran Aug 2023 – Present

- **Real-time object recognition:** Template matching algorithms,
- **Real-time object tracking and motion analysis:** Optical flow
- **Sensor fusion:** IMU, LiDAR range finder, camera integration
- **Embedded AI:** Jetson Orin, Raspberry Pi, Orange Pi, ARM64-based Linux
- **AI Model Optimization:** Accelerated inference on Jetson platforms using ONNX and NVIDIA TensorRT.
- **High-performance processing:** Digital signal processing, image processing
- **Optimized vision pipeline:** NVIDIA VPI (Vision Programming Interface)
- **Programming:** Python for scripting, automation, and data analysis
- **Robotics middleware:** ROS (used for simulation and system-level testing)
- **Version control:** Git for collaborative development

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

- **Pose estimation system:** Athlete movement counting and correctness assessment (SmartRefree) More Info
- **Face analytics system:** Real-time face verification, tracking, and age estimation for retail analytics (SmartCommute) More Info

Test Scores

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

TOEFL: Reading: **30**, Listening: **29**, Speaking: **24**, Writing: **25**, Overall: **108** May 2025

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, AI2THOR
- **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