Mohammad Barzegar

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• LinkedIn • GitHub • ORCID • Google Scholar

Education

M.Sc. Artificial Intelligence and Robotics **Sep 2022 - May 2025**
Persian Gulf University, Bushehr, Iran

- **Total GPA:** 17.86 out of 20.00 (ranked 1st among graduating class)
- **Thesis:** Chest X-ray Report Generation by Combining VLMs, Classifier Prompts, and Shortcut Bias Mitigation
  - Supervisor: Prof. Habib Rostami, Advisor: Prof. Ahmad Keshavarz
- **Coursework:** Machine Learning, Deep Learning, Pattern Recognition, Data Mining, Natural Language Processing, Algorithms Design, Image Processing, Multi-Agent Systems, Reinforcement Learning, Artificial Intelligence

B.Sc. Civil Engineering **Sep 2016 - Mar 2022**
Persian Gulf University, Bushehr, Iran

- **Total GPA:** 14.64 out of 20.00
- **Relevant Coursework:** MATLAB, Statistics and Probabilities, Numerical Methods, Mechanics

Publications & Ongoing Research

Multi-Modal Classification of Breast Cancer Lesions in Digital Mammography and Contrast Enhanced Spectral Mammography Images [DOI]
Computers in Biology and Medicine, December 2024

- Developed a novel multimodal approach for breast cancer lesion classification in DM/CESM images that outperforms existing methods and uncovers new insights.
- Contributed to writing the original draft, coding, visualization, data curation, and validation.

A Dataset of Smartphone-Captured Throat Images for Bacterial and Viral Pharyngitis Classification
Submitted to Scientific Data

- Created a dataset by capturing throat images using smartphones for classifying Pharyngitis.
- Collaborated with physicians to verify results, conducted technical validation, and wrote the manuscript.

Chest X-ray Report Generation by Combining VLMs, Classifier Prompts, and Shortcut Bias Mitigation
Ongoing (Publication Based on Master's Thesis)

- Enhanced chest X-ray captioning by integrating VLMs, classifier prompts, and shortcut bias mitigation techniques to generate more accurate and clinically relevant diagnostic outputs.

Data Synthesis and Multi-Agent Simulation of Electric Vehicle Charging in Residential Properties
Ongoing

- This work proposes a data synthesis method and uses reinforcement learning to predict user behavior as a mitigation method for the shortage of data in this field. [Link to the prototype of the project]

Research Interests

- Medical Imaging
- Computer Vision
- Vision-Language Models
- Reliability and Robustness
- Generative AI
- XAI

Skills

- **Programming Languages:** Python, MATLAB, Kotlin, Java, SQL, Bash
- **Other:** TensorFlow, Keras, PyTorch, Scikit-learn, Pandas, NumPy, Git, OpenCV, NLTK, MongoDB

Research Experience

Research Assistant — **Persian Gulf University** — **Mar 2023 - Now**
Laboratory of AI and Intelligent Health — *Bushehr, Iran*

- Contributed to various research projects, details included in the publications section.
- Assisted in data preprocessing, model development, and analysis for a predictive maintenance project.
- Engaged in cross-functional teamwork, presenting research findings at lab meetings.
- Acted as an executive committee member of the IBCAIDS2024 scientific conference. [Website]

Reviewer — **Persian Gulf University** — **Dec 2023 - Apr 2024**
IBCAIDS2024 — *Bushehr, Iran*

- Reviewer for the 1st International Biennial Conference of Artificial Intelligence and Data Science 2024 (IBCAIDS2024), evaluating 4 papers for their scientific contribution, providing comprehensive feedback to authors.

Teaching Experience

Teaching Assistant — **Persian Gulf University**
Faculty of Intelligent Systems Engineering and Data Science — *Bushehr, Iran*

- Held tutorials to convey concepts, applications, and assessed students during three semesters:
  - Machine Learning (Prof. Hamid Karamikabir) — Sep 2024 - Mar 2025
  - Machine Learning (Prof. Habib Rostami) — Sep 2023 - Mar 2024
  - Statistics and Probabilities (Prof. Hamid Karamikabir) — Feb 2022 - Aug 2022

Languages

- **English:** Proficient (C2) – IELTS Academic Band 8.5 (L: 8.5, R: 8.0, W: 8.0, S: 8.5)
- **Persian:** Native (C2)
- **German:** Basic (A1)

Work Experience

Research and Applications Engineer — **Plugzio Power Inc.** — **Jun 2023 - Present**
Vancouver, BC, Canada (Remote)

- Analyzed EV charging data to identify peak usage hours and optimize pricing strategies to ensure profitability.
- Performed root cause analysis to detect and prevent potential equipment failures.
- Created internal tools to automate technical workflows, reducing manual tasks.
- Built and managed a technical team to maintain thousands of EV chargers across North America.

Systems Engineer — **Electrolian Engineering Group** — **Jul 2018 - Jun 2021**
Bushehr, Iran

- Design the online shop website (www.electrolian.com), resulting in a more nationwide outreach.
- Created internal tools using Python to automate sales and technical workflows, reducing manual tasks by 80%.
- Design and install CCTV system networks for more than 500 residential projects in the Bushehr province, involving site assessment, preparing technical drawings and plans, and project management.
- Lead and manage a team of 4 electricians and IT technicians to ensure seamless deployment of CCTV systems.

Workshops and Courses

- Deep Learning Models' Explainability and Interpretability - IBCSAIDS2024 [Certificate]
- Challenges of Code Generation using Neural Networks - IBCAIDS2024 [Certificate]
- Introduction to Python Programming (University of Pennsylvania) - Coursera [Certificate]
- Supervised Machine Learning: Regression and Classification (DeepLearning.AI, Stanford) - Coursera [Certificate]
- The Complete Android 12 & Kotlin Development Masterclass - Udemy [Certificate]