Mohammad Reza Iravani

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ResearchGate | LinkedIn | GitHub | Website

Education

B. Sc. In Biomedical Engineering   (September 2019 – February 2024)

Islamic Azad University Khomeinishahr Branch, Isfahan, Iran

- **GPA: 3.49 (16.94/20)**
- **BME GPA: 3.62 (17.38/20)**
- Capstone Project: "Sleep stage classification based on electrocardiogram using fully connected neural network"
- Advisor: Dr. Sadaf Moharreri

Publications

- **M. R. Iravani**, S. Moharreri, **"Sleep stage classification based on electrocardiogram using fully connected neural network"** (Ready to Submit)   2023

- **M. R. Iravani**, S. Moharreri, **"Autism disorder classification based on pediatric brain MRI images using convolutional neural networks"** (In Preparation)   2023

Research Interests

- Computational Neuroscience
- Neuro-Engineering
- Image Processing
- Signal Processing
- Deep Learning
- Machine Learning

Skills

- **Programming:**   Python (TensorFlow, NumPy, Pandas, OpenCV), C#, JavaScript, MATLAB
- **Research Methodology:** Quantitative Research, Analytical Research, Statistical Analysis, Scientific Writing
- **Language Skills:**   English (IELTS: 7), Persian (Native)

English Scores

- **IELTS(Academic): 7.0 (Overall Score)**
  - Listening: 8.0, Reading: 6.5, Writing: 6.5, Speaking: 6.0
  - Test Date: 25th September, 2023

Experiences

Research Experiences:

- **Research Assistant** (Dr. Moharreri's Lab)   (January 2022 - Present)
  Islamic Azad University Khomeinishahr Branch, Isfahan, Iran
  - Signal Processing Assistant
  - Vital Signals Recording Assistant (ECG, EEG)

- **Member of the Young Researchers and Elite Club**   (March 2023 – Present)

Teaching Experiences:

- **Teaching Assistant** (Dr. Moharreri's Lab)   (October 2022 - Present)
  Islamic Azad University Khomeinishahr Branch, Isfahan, Iran
    - o   Mid-term exam and assignment grader for the "Bioelectric phenomena" course
    - o   Undergraduate capstone project advisor
    - o   Issues in signal and image processing projects for students are addressed and resolved

Vocational:

- **Preventive Maintenance and Troubleshooting of Medical Equipment**   (July 2022 – July 2023)
  Technical and Vocational Training Organization, Tajhizteb Educational Institute, Isfahan, Iran

- **Biomedical Engineering Internship**   (June 2022 – September 2022)
  Isfahan University of Medical Sciences, Isfahan, Iran

Volunteering:

- **TED Translators**   (September 2023 - Present)
  Translator
    - o   Translator of English Subtitles of TED's Videos to Farsi (Persian)

Honors and Awards

- **Selected as a competitor team for the AI Contest, October 2023**
  Isfahan University, Isfahan, Iran
  Competition tasks:
    - o   Present an MRI segmentation model for patients with MS.
    - o   Predict reflux occurrence based on esophagus impedance in six channels.

  Delivery Date: November 28th, 2023

- **Ranked within the top 5% GPA among undergraduate students, July 2023**
  Biomedical Engineering Department, Islamic Azad University Khomeinishahr Branch, Isfahan, Iran

- **1st place in Programming Contest, May 2023**
  Islamic Azad University Khomeinishahr Branch, Isfahan, Iran

- **National Exam Entrance, 2019**
  Ranked within the top 1% of Iranian university exam entrances for bachelor's degrees among approximately 700,000 students

Selected Workshops/Courses Certificates

- **"Fundamental Neuroscience for Neuroimaging"** Arnold Bakker, Johns Hopkins University, Coursera online MOOC, 2023 (Attending)
- **"AI for Medical Prognosis"** Pranav Rajpurkar, DeepLearning.AI, Coursera online MOOC, 2023
- **"Convolutional Neural Networks"** Andrew Ng, DeepLearning.AI, Coursera online MOOC, 2023
- **"AI for Medical Diagnosis"** Pranav Rajpurkar, DeepLearning.AI, Coursera online MOOC, 2023
- **"Machine Learning Specialization"** Andrew Ng, Stanford Online, Coursera online MOOC, 2022
    - o   Supervised Machine Learning: Regression and Classification
    - o   Advanced Learning Algorithms
    - o   Unsupervised Learning, Recommenders, Reinforcement Learning

- **"Troubleshooting and Preventive Maintenance of Medical Equipment in the Operation Room and Hospital Intensive Care Department"** Technical and Vocational Training Organization, Isfahan, Iran, 2023
- **"Responsive Web Design"** freeCodeCamp, 2023

Selected Projects

- **Sleep Stage Classification based on Electrocardiogram Using Fully Connected Neural Network**
  - Features extracted from the Poincare plot were manipulated and fed into the network for classifying the proper sleep stage.
- **Autism Disorder Classification based on Pediatric Brain MRI Images Using Convolutional Neural Networks**
  - A classification output of the status of being autistic or not is obtained by a 2D convolutional neural network followed by flattened dense layers.
- **Classifying Sleeping Status of Drivers with EEG Signal**
  - The classification of whether a driver is sleeping based on features of the EEG signal, such as lowAlpha, highAlpha is undertaken, and the complexity of features is increased by assigning weights to engineered features.
- **Patient Condition Prediction Based on Blood Tests**
  - The patient status is detected through the analysis of blood tests conducted by artificial neural networks, and recommendations for remedies or actions to mitigate adverse effects are provided.
- **Naive Bees: Deep Learning with Images (Datacamp)**
  - Build a deep learning model that automatically detects honey and bumble bees in images.
- **Heart Failure Prediction**
  - The risk of heart failure for patients is predicted based on features such as age, anemia, diabetes, etc.
- **Designing a UI for Controlling Radiology Devices Using Mobile Phones.**
  - The UI of an application to control radiology devices is designed using common ways of connection such as Wi-Fi and Bluetooth.

Hobbies

Sports (Gym, Swimming), Video Games, Watching Movies, Hangout with Friends