# Farhad Abedinzadeh Torghabeh

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## EDUCATION

**Islamic Azad University,** MS in Biomedical Engineering (Sports Engineering) | Mashhad, Iran | GPA:17.40/20 | Aug 2023

Thesis Title: Detection & Prediction of FoG Using Multimodality Data and Deep Learning Algorithms

**Sadjad University of Technology,** BS in Biomedical Engineering | Mashhad, Iran | Sep 2020

Thesis Title: Kidney Stone Detection Using Image Processing and Artificial Neural Networks

## AREAS OF INTEREST

- Biomedical Image/Signal Processing
- Cognitive Neuroscience
- Neurodegenerative Disorders
- Pattern Recognition
- Machine Learning & Deep Learning
- Computer Aided Diagnosis

## SELECTED COURSES

- Biomedical Signal Processing 19/20
- Biomedical Signal Processing 19/20
- Biofeedback Engineering in Sport 18.75/20
- Neuromuscular Control Systems 18.5/20
- Digital Image Processing 18/20
- Pattern Recognition 15.75/20

## PUBLICATIONS

### Published/Accepted*

1. Y.Modaresnia, **F.Abedinzadeh Torghabeh**, and S.A.Hosseini. Enhancing Multi-class Diabetic Retinopathy Detection Using Tuned Hyper-parameters and Modified Deep Transfer Learning. Journal of Multimedia Tools and Applications. (2024) DOI
2. **F.Abedinzadeh Torghabeh**, Y.Modaresnia, and S.A.Hosseini. An Efficient Tool for Parkinson's Disease Detection and Severity Grading Based on Time-Frequency and Fuzzy Features of Cumulative Gait Signals through Improved LSTM Networks. Journal of Medicine in Novel Technology and Devices. (2024) DOI
3. **F.Abedinzadeh Torghabeh**, Y.Modaresnia, and M.Moattar. Hybrid Deep Transfer Learning Based Early Diagnosis of Autism Spectrum Disorder Using Scalogram Representation of Electroencephalography Signals. Journal of Medical & Biological Engineering & Computing. (2023) DOI
4. **F.Abedinzadeh Torghabeh**, S.A.Hosseini, and Y.Modaresnia. Potential Biomarker for Early Detection of ADHD Using Phase-Based Brain Connectivity and Graph Theory. Journal of Physical and Engineering Sciences in Medicine. (2023) DOI
5. **F.Abedinzadeh Torghabeh**, S.A.Hosseini, and E.Ahmadi Moghadam. Enhancing Parkinson's Disease Severity Assessment through Voice-Based Wavelet Scattering, Optimized Model Selection, and Weighted Majority Voting. Journal of Medicine in Novel Technology and Devices. (2023) DOI
6. Y.Modaresnia, **F.Abedinzadeh Torghabeh**, and S.A.Hosseini. EfficientNetB0's Hybrid Approach for Brain Tumor Classification from MRI Images Using Deep Learning and Bagging Trees. 13th ICCKE Conference. (2023) DOI
7. **F.Abedinzadeh Torghabeh**, Y.Modaresnia, and S.A.Hosseini. An Efficient Approach for Breast Abnormality Detection through High-Level features of Thermography Images. 13th ICCKE Conference. (2023) DOI
8. **Farhad Abedinzadeh Torghabeh**, Y.Modaresnia, and S.A.Hosseini. Auto-UFSTool: An Automatic Unsupervised Feature Selection Toolbox for MATLAB. Journal of Artificial Intelligence and Data Mining. (2023) DOI
9. **F.Abedinzadeh Torghabeh**, Y.Modaresnia, and S.A.Hosseini. EEG-Based Effective Connectivity Analysis for ADHD Detection Using Color-Coded Granger-Causality Images and Custom Convolutional Neural Network. Journal of International Clinical Neuroscience. (2023) DOI
10. **F.Abedinzadeh Torghabeh**, Y.Modaresnia, and M.M.Khalilzadeh. Effectiveness of Learning Rate in Dementia Severity Prediction Using VGG16. Journal of Biomedical Engineering: Applications, Basis and Communications. (2023) DOI
11. **F.Abedinzadeh Torghabeh** and S.A.Hosseini. Deep Learning-Based Brain Tumor Segmentation in MRI Images: A MobileNetV2-DeepLabv3+ Approach. Iranian Journal of Medical Physics. (2023) *DOI

### Under Review

1. Y.Modaresnia, **F.Abedinzadeh Torghabeh**, and S.A.Hosseini. Parkinson's Disease Detection via Source Density Enhanced Functional Connectivity Vectors and Genetic Algorithm-based Paired Node Selection. Submitted to Journal of Physical and Engineering Sciences in Medicine. (2023)
2. **F.Abedinzadeh Torghabeh** and E.Tahami. Detection of Freezing of Gait in Parkinson's Disease Using Multimodality Data and Custom-Designed Convolutional-LSTM Neural Network. Submitted to Journal of Neurology. (2023)

3. **F.Abedinzadeh Torghabeh**, E.Ahmadi Moghadam and S.A.Hosseini. Simultaneous Time-Frequency Analysis of Gait Signals of Both Legs in Classifying Neurodegenerative Diseases. Submitted to journal of Gait and Posture. (2023)
4. **F.Abedinzadeh Torghabeh**, Y.Modaresnia, and S.A.Hosseini. A Pre-Processing Free Mental State Detection Model Suitable for Real-Time Applications. Submitted to Journal Biomedical Engineering: Applications, Basis and Communications. (2023)
5. Y.Modaresnia, **F.Abedinzadeh Torghabeh**, and S.A.Hosseini. A Deep Convertible Approach in Automated Diagnosis of Neurodegenerative Diseases Using Gait Signal. Submitted to Journal of Healthcare Informatics Research. (2023)

## PROFESSIONAL AND ACADEMIC EXPERIENCE

### Instructor

- Workshop of EEG Signal Processing, held by National Brain Mapping Laboratory | May 2024
- Project-Oriented Course of Biomedical Image & Signal Processing Using MATLAB | Jul–Oct 2022
  - Covering Fundamental Concepts of Image and Signal Processing, including Fast Fourier Transform, Wavelet Analysis, Pattern Recognition Techniques, and an Introduction to Machine Learning and Deep Learning Methods.
  - Designed and Delivered Engaging Lectures, Supervised Practical Sessions, and Guided Students Through Hands-on Projects, Conducted Re-Simulation of Scientific Papers Aligned with the Course Curriculum

### Undergraduate Research Assistant

- Under Prof.Seyyed Abed Hosseini at the Islamic Azad University, Mashhad, Iran | Oct 2021–Present
  - Currently Working With on Several Research Projects, Including "Analysing Brain Connectivity Using Multimodality Data on Various Neurological Diseases".

### Academic Peer Reviewer

- Journal of Physical and Engineering Sciences in Medicine, Springer. | Jan 2024–Present
- Journal of Computers in Biology and Medicine, Elsevier. | Sep 2023–Present
- Journal of Pattern Recognition Letters, Elsevier. | Jun 2023–Present
- Journal of Biomedical Signal Processing and Control, Elsevier. | Feb 2023–Present

### Freelance Programmer | On-site, Remote and Hybrid

- Freelance Programmer and Research Supervisor | Jan 2022–Present
  - Proficient in MATLAB and Python Programming Languages, With an Emphasis on Developing Solutions for Biomedical Engineering Applications.
  - Led and Supervised Bachelor's and Master's Students in Their Thesis Projects, Providing Guidance in Research Methodology, Programming Techniques, and Data Analysis.

## SKILLS

**Programming & Softwares:** MATLAB, Python, Mendeley & EndNote, Office Applications, LaTeX, Git, Photoshop & Illustrator.
**Technical:** Signal Preprocessing, Interpreting and Analyzing Various Data Modality Including ECG, EMG, VGRF, Gait, EEG, MEG, MRI, and fMRI. Working with Several Toolboxes: EEGLab, Brainstrom, FieldTrip, BrainNet Viewer, Braph, and Hermes.
**Soft Skills:** Self-motivated, Consistent, Fast learner, Independent Researcher, Analytical Mind.
**Languages:** Persian (Native), English (Professional), IELTS Academic Will Be Taken Soon.

## AWARDS & ACHIEVEMENTS

1. Ranked 2nd among All Master Students of Biomedical Engineering, Department of Biomedical Engineering, Mashhad Branch, Islamic Azad University, Mashhad, Iran.
2. Selected as a Finalist Among 100 Teams by Introducing the Concept of an Intelligent Ring for Epileptic Seizure Prediction using HRV Signal, One Thousand Technological Ideas Tournament, Islamic Azad University of Mashhad, Mashhad, Iran.
3. Member of Biomedical Engineering Scientific Association, Department of Biomedical Engineering, Mashhad Branch, Islamic Azad University, Mashhad, Iran.

## REFERENCES

**Seyyed Abed Hosseini:** Associate Professor, Department of Electrical Engineering, Mashhad Branch, Islamic Azad University, Mashhad, Iran. hosseyni@mshdiau.ac.ir
**Mohammad Hossein Moattar:** Associate Professor, Department of Computer Science, Mashhad Branch, Islamic Azad University, Mashhad, Iran. moattar@mshdiau.ac.ir
**Mohammad Mahdi Khalilzadeh:** Assistant Professor, Department of Biomedical Engineering, Mashhad Branch, Islamic Azad University, Mashhad, Iran. mmkhalilzadeh@gmail.com