Farhad Abedinzadeh Torghabeh

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EDUCATION

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

Thesis Title: Detection of ADHD Using Phase-Based Brain Connectivity and Graph Theory

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

Thesis Title: Brain Tumor 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
- Computational Medicine

SELECTED COURSES

- Biomedical Signal Processing 19.00/20
- Digital Signal Processing 19.50/20
- Biofeedback Engineering in Sport 18.75/20
- Neuromuscular Control Systems 18.50/20
- Digital Image Processing 19.00/20
- Pattern Recognition 15.75/20

PUBLICATIONS

Published/Accepted*

1. E.Moghadam, **F.Abedinzadeh**, S.A.Hosseini, and M.Moattar. Improved ADHD Diagnosis Using EEG Connectivity and Deep Learning through Combining Pearson Correlation Coefficient and Phase-Locking Value. Journal of Neuroinformatics. (2024) DOI
2. **F.Abedinzadeh**, Y.Modaresnia, and S.A.Hosseini. A Pre-Processing Free Mental State Detection Model Suitable for Real-Time Applications. Journal Biomedical Engineering: Applications, Basis and Communications. (2024) DOI
3. Y.Modaresnia, **F.Abedinzadeh**, and S.A.Hosseini. A Deep Convertible Approach in Automated Diagnosis of Neurodegenerative Diseases Using Gait Signal. Journal of Healthcare Informatics Research. (2024) DOI
4. **F.Abedinzadeh**, E.Moghadam and S.A.Hosseini. Simultaneous Time-Frequency Analysis of Gait Signals of Both Legs in Classifying Neurodegenerative Diseases. Journal of Gait and Posture. (2024) DOI
5. A.Jahandoost, **F.Abedinzadeh**, S.A.Hosseini, and M.Houshmand. Crude Oil Price Forecasting Using K-means Clustering and LSTM Model Enhanced by Dense-Sparse-Dense Strategy. Journal of Big Data. (2024) DOI
6. Y.Modaresnia, **F.Abedinzadeh**, 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
7. **F.Abedinzadeh**, 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
8. **F.Abedinzadeh**, 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
9. **F.Abedinzadeh**, 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
10. **F.Abedinzadeh**, S.A.Hosseini, and E.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
11. Y.Modaresnia, **F.Abedinzadeh**, 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
12. **F.Abedinzadeh**, 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
13. **F.Abedinzadeh**, 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
14. **F.Abedinzadeh** and S.A.Hosseini. Deep Learning-Based Brain Tumor Segmentation in MRI Images: A MobileNetV2-DeepLabv3+ Approach. Iranian Journal of Medical Physics. (2023) DOI*
15. **F.Abedinzadeh**, 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

16. **F.Abedinzadeh**, 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

Under Review

1. **F.Abedinzadeh**, M.Mazidi, and S.A.Hosseini. Enhanced Diabetes Detection through Biochemical Markers and Fasting Lipid Profiles: A Machine Learning Approach. Submitted to Journal of Medicine in Novel Technology and Devices. (2024)
2. **F.Abedinzadeh**, S.A.Hosseini and M.Houshmand. Parkinson's Disease Detection via Source Density Enhanced Functional Connectivity Vectors and Genetic Algorithm-based Paired Node Selection. Submitted to Journal of Scientific Reports. (2024)
3. **F.Abedinzadeh** 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)

PROFESSIONAL AND ACADEMIC EXPERIENCE

Venture Capital Analyst of Medical Devices

- Venture Capital Analyst of Medical Devices, Razavi HighTech Industries, Mashhad, Iran | Feb 2024–Present

Instructor

- Workshop of EEG Signal Processing, National Brain Mapping Laboratory, Mashhad, Iran | May 2024
- Project-Oriented Course of Biomedical Image & Signal Processing Using MATLAB | Jul 2022–Oct 2022
  - Covering Fundamental Concepts of Image and Signal Processing, including Fast Fourier Transform, Wavelet, Pattern Recognition, and 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.

Research Assistant and Lab Manager

- Under Prof. Seyyed Abed Hosseini at the Islamic Azad University, Mashhad, Iran | Oct 2021–Present
  - Currently Working 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, Research Supervisor | On-site, Remote and Hybrid | Jan 2022–Present

- Proficient in MATLAB and Python Programming, Developing Biomedical Engineering Applications.
- Supervise Bachelor's and Master's Students in Their Thesis Projects, including Research Methodology, Programming Techniques, and Data Analysis.

SKILLS

Programming & Softwares: MATLAB, Python (Keras-Tensorflow-Pytorch-ScikitLearn-MNE), Mendeley & EndNote, SPSS, Office Applications, LaTeX, Git, Drawio, Visio, 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 (Advanced (C1), IELTS Academic)

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.

REFERENCES

Seyyed Abed Hosseini: Associate Professor, Department of Electrical Engineering, Mashhad Branch, Islamic Azad University, Mashhad, Iran. hosseyni@mshdiau.ac.ir | hosseini.s.ir@ieee.org

Mohammad Hossein Moattar: Associate Professor, Department of Computer Engineering, Mashhad Branch, Islamic Azad University, Mashhad, Iran. moattar@mshdiau.ac.ir | mohammad.moattar@gmail.com

Mahboobeh Houshmand: Assistant Professor, Department of Computer Engineering, Mashhad Branch, Islamic Azad University, Mashhad, Iran. houshmand@mshdiau.ac.ir | houshmand_iaum@yahoo.com

MohammadMahdi Khalilzadeh: Assistant Professor, Department of Biomedical Engineering, Mashhad Branch, Islamic Azad University, Mashhad, Iran. mmkhalilzadeh@gmail.com