SeyedHasan MirHosseini

Email: seyedhasan.mirhoseini1367@gmail.com | Google Scholar | LinkedIn | GitHub

Research interests

I am interested in the intersection of AI, neuroscience, and multimodal learning from large-scale datasets. My research focuses on developing trustworthy and fair models that generalize well across diverse populations and support human decision-making, particularly in medical and clinical domains.

Education

Master of Science in Statistical Data Analytics 2023-2025

Tampere University, Tampere, Finland

Thesis topic: Seizure Detection from EEG Signals Using Multimodal Deep Learning

Supervisors: Prof. Jaakko Peltonen, Doctoral researcher Saana Seppälä

Thesis Grade: 5 (out of 5)

GPA: 4.37 (out of 5), Graduated with Distinction

Master of Business Administration 2013-2016

Tehran University, Tehran, Iran

GPA: 16.84 (out of 20)

Master of Science in Pure Mathematics 2008-2013

Damghan University, Damghan, Iran

GPA: 13.02 (out of 20)

Current Employment

Data Scientist (Intern) August 2025-Current

First-Stage Researcher, University of Eastern Finland

Research Focus: EEG data analysis for cognitive and psychological trait prediction

Supervisors: Mastaneh Torkamani Azar (mastaneh.torkamani@uef.fi)

Main Responsibilities: Developing a foundation model from EEG recordings for Psychopathology Factor and Reaction Time Prediction using self-supervised strategies (contrastive learning: VICReg) to learn generalizable neural representations , then fine-tune the pretrained model in EEG Foundation Challenge 2025

Technologies and tools: Python, PyTorch

Previous research and Experience

Research Assistant (Trainee) 2024-2025

First-Stage Researcher, Gamification Group of Tampere University

Research Focus: The effects of the gamified system on students' performance

Supervisors: Dr. Wilk Oliveira Dos Santos (wilk.oliveira@tuni.fi)

Main Responsibilities: Conducting statistical analysis on "Participants' Performance", "flow state" data from FaceReader Camera, and physiological processing (PPG and EDA signals)

Technologies and tools: Python, PyTorch

GitHub Repository

Research Assistant (Trainee) 2024-2025

First-Stage Researcher, Gamification Group of Tampere University

Research Focus: The effects of the gamified system on students' performance

Supervisors: Dr. Wilk Oliveira Dos Santos (wilk.oliveira@tuni.fi)

Main Responsibilities: Conducting statistical analysis on "Participants' Performance", "flow state" data from FaceReader Camera, and physiological processing (PPG and EDA signals)

Technologies and tools: Python, PyTorch

GitHub Repository

Business Analyst 2018-2022

BORNA Science and Technology Institute

Main Responsibilities: Business analytics, developing business plan, marketing plan

Publications

[1] **MirHosseini**, S. H. (2025). Detection of seizure from EEG signals using multimodal deep learning [master's thesis]. Tampere University, https://urn.fi/URN:NBN:fi:tuni-202507317975

[2] Oliveira, W., Scaico, P. D., Brambilla, A., Soltiyeva, A., Hamari, J., **MirHosseini**, S., & Dindar, M., "The Effects of Gamification on Students' Academic Performance: A Controlled Experimental Study," 2024 IEEE International Conference on Advanced Learning Technologies (ICALT), Nicosia, North Cyprus, Cyprus, 2024, pp. 47-49. https://doi.org/10.1109/ICALT61570.2024.00020

[3] P. D. Scaico, W. Oliveira, J. Hamari, S. **MirHosseini** and A. Brambilla, "Understanding Undergraduate Students' Flow State in Gamified and Non-Gamified Educational Systems: A Qualitative Case Study," 2024 IEEE Frontiers in Education Conference (FIE), Washington, DC, USA, 2024, pp. 1-9. https://doi.org/10.1109/FIE61694.2024.10892842

[4] P. D. Scaico, W. Oliveira, J. Hamari, S. **MirHosseini** and A. Brambilla, "Observing Undergraduate Students' Emotions in Gamified and Non-Gamified Educational Systems: A Qualitative Case Study," 2024 IEEE Frontiers in Education Conference (FIE), Washington, DC, USA, 2024, pp. 1-9. https://doi.org/10.1109/FIE61694.2024.10893345

Machine Learning and Deep Learning Projects

- **Detection of seizure from EEG signals using multimodal deep learning (Thesis)** 2024-2025
  Models, Evaluation Metric and Performance:
  LSTM-Transformer, Accuracy: 79%
  CNN-Transformer, Accuracy: 82%
  Fusion [LSTM+CNN]-Transformer, Accuracy: 90%
  Technologies and tools: Python, PyTorch, SciPy, Pandas, NumPy, SciPy, scikit-learn, Matplotlib, Seaborn
  GitHub Repository
- **Predicting Loan Payback** 2025
  Model: LightGBM, CatBoost
  Evaluation metric and performance: ROC Curve, 0.92135%,
  GitHub Repository
- **Predicting the Beats-per-Minute of Songs** 2025
  Model: Deep Learning (MLP)
  Evaluation metric and performance: RSME, 26.41
  GitHub Repository
- **Binary Classification with a Bank Dataset** 2025
  Models, Evaluation metric and performance:
  LightGBM, ROC AUC, 97%
  Autoencoder, ROC AUC, 96,4%
  GitHub Repository
- **Predicting Road Accident Risk** 2025
  Model: Autoencoder
  Evaluation metric and performance: RMSE, 0.056
  GitHub Repository
- **Predict the Introverts from the Extroverts** 2025
  Model: LightGBM, CatBoost, Random Forest

Evaluation metric and performance: Accuracy, 0.974%,

GitHub Repository

- **Image2Biomass Prediction (in progress)** 2025

  Model: U-Net, Resnet

  Evaluation metric and performance: R^2, 0.60

  GitHub Repository

- **Digitization of ECG Images (in progress)** 2025

  Model: Self-supervised learning-Transformer

  Evaluation metric and performance: ROC Curve, 0.92135%,

- **Detect Behaviour with Sensor Data** 2025

  Model: GRU + CNN

  Evaluation metric and performance: F1-Score, 81%

  GitHub Repository

- **Protein Function Prediction (in progress)** 2025

  Model: Embedding**,** Self-supervised learning,Transformer

  Evaluation metric and performance: -

Awards and Honors

- **Granted a 100% scholarship for master's study at Tampere university** 2023-2025
- **Graduated in master's degree in Statistical Data Analytics with Distinction** 2023-2025

Languages

- Persian (mother tongue)
- English (C1)
- Finnish (A2)

Technical Skills

- Deep Learning & Machine Learning: Expert in designing, developing, and deploying advanced deep learning and machine learning models, including multimodal architectures for complex data processing.
- Signal/Image Processing: Experienced in advanced signal analysis, including filtering, and comprehensive frequency-time domain analysis for biomedical data types (e.g., EEG, EDA, PPG), image classification
- NLP: Text analysis
- Transformer: Building multimodal models with Transformer Architecture from large-scale datasets
- Data Science: Proficient in data mining, statistical analysis, and data visualization
- Programming and Web development: Python, Django, HTML, CSS

Soft Skills

- Organized and Punctual
- Self-Directed Research
- Collaborative Teamwork
- Communication and Engagement
- Project Management & Organization
- Problem-Solving Mindset