
HALEH FALAKSHAHI, PH.D.

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SUMMARY

I specialize in artificial intelligence, with a focus on deep learning, graphical models, and network science. My research aims to enhance the robustness and scalability of AI systems, leveraging the power of graph-based algorithms and network theory to model complex relationships in data. By developing innovative approaches to improve model performance, I seek to advance AI technologies across diverse domains, ensuring they can effectively manage large-scale, interconnected data. I am passionate about bridging cutting-edge research and practical solutions, positioning myself to contribute to the development and management of AI-driven products that solve real-world challenges.

SKILLS

- Programming (Python, C/C++, SQL, MATLAB, HTML, CSS)
 - Deep Learning Frameworks and Machine Learning tools (TensorFlow, Keras, PyTorch, Scikit-learn, Statsmodels)
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EXPERIENCE

Postdoctoral Research Associate | TReNDS Center | January 2024 – Present

In this role, I lead research in machine learning, focusing on applying advanced models to neuroimaging and psychology data. I design experiments to uncover meaningful insights, managing the full data lifecycle from collection and analysis to curation. Collaborating closely with principal investigators, I contribute to publishing our findings in peer-reviewed journals and presenting them at major conferences. Additionally, I support the development of grant proposals, working with both internal and external teams to secure funding for innovative and impactful projects in neuroscience and psychology.

Graduate Student Research Assistant | Georgia Institute of Technology, TReNDS Center | May 2019 – December 2023

During my tenure at Georgia Tech, I led innovative research at the intersection of machine learning and neuroimaging, where I orchestrated efforts across diverse teams to develop and implement advanced solutions. My role involved designing and executing strategic machine learning experiments tailored to neuroimaging applications, ensuring that our approaches were both rigorous and aligned with our research objectives. I actively collaborated with principal investigators and multidisciplinary teams, working closely to prepare and publish scientific manuscripts. This experience honed my ability to coordinate and communicate effectively across different areas of expertise. Additionally, I showcased our research findings at various conferences and academic venues, presenting complex data insights to both technical and non-technical audiences. This role underscored my capacity to drive projects forward, foster collaborative relationships, and deliver impactful results.

Graduate Student Research Assistant | University of New Mexico | August 2015 – May 2019

At UNM, I conducted research in machine learning, neuroimaging, and cybersecurity. My work involved designing and evaluating experiments to apply advanced machine learning techniques to these interdisciplinary domains, contributing to the development of innovative research methodologies.

EDUCATION

- **Ph.D. Electrical and Computer Engineering | Georgia Institute of Technology** December 2023
 - **Ph.D. Student Computer Science | University of New Mexico** MAY 2019
 - **Master of Science Computer Science | University of New Mexico** DECEMBER 2018
 - **Master of Software Engineering | Azad University** SEPTEMBER 2013
 - **Bachelor of Software Engineering | Azad University** JUNE 2008
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PUBLICATIONS

- Rokham, Hooman, et al. "Label NOISE-Robust Ensemble Deep Multimodal Framework for NEUROIMAGING Data" 46th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), 2024
 - Falakshahi, Haleh, et al. "Paht-Based Differential Analysis in Near-Centenarians and Centenarians Brain Network" 46th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), 2024
 - Rokham, Hooman, et al. "A Deep Learning Approach for Psychosis Spectrum Label Noise Detection from Multimodal Neuroimaging Data" 45th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), 2023
 - Falakshahi, Haleh, et al. " Network Differential in Gaussian Graphical Models from Multimodal Neuroimaging Data" 45th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), 2023
 - Rokham, Hooman, et al. "Evaluation of boundaries between mood and psychosis disorder using dynamic functional network connectivity (dFNC) via deep learning classification" Human Brain Mapping, 2023
 - Rokham, Hooman, et al. "MultiModal Framework for Mental Disorders Classification" Biological Psychiatry (2023)
 - Rokham, Hooman, et al. "Relationship of Hemodynamic Delay and Sex Differences Among Adolescents Using Resting-state fMRI Data" IEEE International Conference on Biomedical and Health Informatics (BHI'22), September 2022
 - Rokham, Hooman, et al. "Multimodal Classification of Mood and Mental " Biological Psychiatry (2022)
 - Falakshahi, Haleh, et al. "Disorders Path-Based Differential in Multi-Modal Brain Networks" Biological Psychiatry (2022)
 - Falakshahi, Haleh, et al. "Path analysis: A method to estimate altered pathways in time-varying graphs of neuroimaging data" Network Neuroscience (2022)
 - Rokham, Hooman, et al. "Classification of Dynamic Resting fMRI Connectivity of Mood and Mental Disorders Using Different Categorization." Biological Psychiatry (2021)
 - Falakshahi, Haleh, et al. "Dynamic Brain Graph Analysis Show Unique Path Trajectory Weights in Schizophrenia" Biological Psychiatry (2021)
 - Falakshahi, Haleh, et al. "Time-varying Graphs: A Method to Identify Abnormal Integration and Disconnection in Functional Brain Connectivity with Application to Schizophrenia." IEEE Bioinformatics and Bioengineering (2020)
 - Rokham, Hooman, et al. "Addressing Inaccurate Nosology in Mental Health: A Multi Label Data Cleansing Approach for Detecting Label Noise from Structural Magnetic Resonance Imaging Data in Mood and Psychosis Disorders." Biological Psychiatry: Cognitive Neuroscience and Neuroimaging (2020).
 - Falakshahi, Haleh, et al. "A Method for Analyzing Abnormal Integration Between the Brain Regions in Schizophrenia." Biological Psychiatry 87.9 (2020): S136.
 - Rokham, Hooman, et al. "Detecting Label Noise from Multi-site Structural Magnetic Resonance Imaging Data to Mitigate Inaccurate Nosology in Mental Health." Biological Psychiatry 87.9 (2020): S269.
 - Rokham, Hooman, Haleh Falakshahi, and Vince D. Calhoun. "A data-driven approach for stratifying psychotic and mood disorders subjects using structural magnitude resonance imaging data." Medical Imaging 2020: Computer-Aided Diagnosis. Vol. 11314. International Society for Optics and Photonics, 2020.
 - Falakshahi, Haleh, et al. "Capturing Dysconnectivity in Schizophrenia Using Resting-state Functional Magnetic Resonance Imaging." OHBM 2020
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- Falakshahi, Haleh, et al. "Meta-modal Information Flow: A Method for Capturing Multimodal Modular Disconnectivity in Schizophrenia." IEEE Transactions on Biomedical Engineering (2020)
 - Rokham, Hooman, and Hale Falakshahi. "Web Users Clustering Analysis." International Journal of Computer Science and Information Security 12.9 (2014): 49.
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