Neda Sardaripour

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Google Scholar
Github

Technical Skills

Programming Languages: Python, Matlab, Linux/Bash Scripting, SQL, C++
Data Science Tools: Git, Jupyter notebooks, Visual Studio, PyCharm, Freesurfer, FSL, Genomics Toolbox:GCTA
Libraries: Pandas, NumPy, Matplotlib, Scikit-learn, Keras, PyTorch

Education

Vanderbilt University — Nashville, TN
Ph.D. Candidate in Biomedical Engineering — *2021 – 2025 (expected)*

Research focus: Systems/Network Neuroscience, Machine Learning, Connectomes in Rubinov Lab

K. N. Toosi University of Technology — Tehran, Iran
M.Sc. in Biomedical Engineering, Bioelectrics — *2016 - 2020*

Member of Machine Vision and Medical Image Processing Lab

Shiraz University — Shiraz, Iran
B.Sc. in Electrical Engineering, Electronics — *2012 - 2016*

Research Experience

Transcriptomic and Cellular Basis of Large-Scale Brain Network Individuality | *Python, Matlab* *Ongoing*

- Multimodal Multiscale Data Integration: Uncover the genetic and molecular underpinnings of brain networks
- Developing data-driven advanced analytical pipelines
- Applying Explainable Machine Learning and statistical models
- Implementing permutation testing as a rigorous validation technique

GeneExpression, Neuroimaging and Clinical Data Integration | *Python, Matlab, Bash* *2021 - 2024*

- Data curation, time-series and image processing, and feature extraction on large scale dataset
- Building an advanced computational framework for brain region-specific data
- Code Integration into the released software

Visual System Dysfunction in Multiple Sclerosis(MS) Patients | *Matlab, FreeSurfer, Bash* *2018 - 2020*

- Designed and implemented imaging protocols and visual stimulation tasks
- Collected functional MRI Data in MS and Healthy Groups
- Data Curation, Preprocessing, and Statistical Analysis
- Discovered the functional impairment in visual pathways of MS patients

Development of a Novel ECG Signal Segmentation and Abnormality Detection Method *2018 - 2021*

- Contributed to developing a piecewise linear approach for accurate ECG segmentation and peak detection
- Optimized preprocessing pipeline to improve the precise classification of healthy vs. diseased groups.

Publications

- N. Hoang, **N. Sardaripour**, et al. *"Integration of estimated regional gene expression with neuroimaging and clinical phenotypes at biobank scale"*. **PLOS Biology**, **2024**.
- K. Nezamabadi, **N. Sardaripour**, et al. *"Unsupervised ECG Analysis: A Review*. **IEEE Reviews in Biomedical Engineering"**, **2022**.
- K. Nezamabadi, S.Sivalokanathan, J.Lee, T.Tanriverdi, M.Chen, D.Lu, **N. Sardaripour**, et al. *"XplainScar: Explainable Artificial Intelligence to Identify and Localize Left Ventricular Scar in Hypertrophic Cardiomyopathy from 12-lead Electrocardiogram"*. **medRxiv preprint**, **2024**. *Under review in Nature Cardio Research.*

- **N. Sardaripour**, et al. *"Functional Impairment of the Lateral Geniculate Nucleus in Multiple Sclerosis"*. **bioRxiv preprint**, **2022**.
- **N. Sardaripour**, et al. *"Assessment of Functional Disorders of Magno, Parvo, and Konio-Cellular Pathways in MS Patients Using fMRI"*. **Iranian Journal of Biomedical Engineering**, **2019**.

Mentorships

2023	**Steering Committee**, *Women of Vanderbilt Institute for Surgery and Engineering (VISE)*	*Vanderbilt University*
2021	**Teaching Assistant**, *Intro to Engineering: Microfluidics in BME*	*Vanderbilt University*
2021	**Teaching Assistant**, *Biomedical Devices and Systems' Design*	*Vanderbilt University*
2019	**Teaching Assistant**, *Statistical Pattern Recognition*	*K.N.Toosi University*
2019	**Teaching Assistant**, *Digital Image Processing*	*K.N.Toosi University*
2019	**Teaching Assistant**, *Functional Brain Imaging System*	*K.N.Toosi University*
2018	**Workshop**, *Preprocessing and Analysis of fMRI Data*	*K.N.Toosi University*

Talks & Poster Presentations

Jun. 2024	*10th Annual BRAIN Initiative conference* - Poster presentation	*Bethesda, MD*
Nov. 2023	*Society for Neuroscience (SfN) conference* - Oral presentation in Nanosymposium	*Washington DC*
Nov. 2023	*American Society of Human Genetics (ASHG) conference* - Poster presentation	*Washington DC*
Nov. 2022	*Society for Neuroscience (SfN) conference* - Poster presentation	*San Diego, CA*
Oct. 2022	*Vanderbilt University Institute for Imaging Science annual retreat* - Oral presentation	*Nashville, TN*

Academic Achievements & Recognitions

2023	Vanderbilt Award for Doctoral Discovery (VADD)	*Vanderbilt University*
2021	Biomedical Engineering Doctoral fellowship	*Vanderbilt University*
2020	Graduated in the top 5% of the class, ranked 2nd out of 18 graduate students	*K.N.Toosi University*
2016	Graduated from the National Organization for Development of Exceptional Talents (NODET), a selective high school for gifted students.	

Professional Service

Peer-Review, Served as a reviewer for the following Journals (+20 reviews): *2020 - present*

- *Signal, Image and Video Processing*
- *IEEE Access*
- *Journal of Medical Internet Research (JMIR) Cardio*