

Sahar Rahimi Malakshan

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Third-year Ph.D. student; interested in Deep Learning, Machine Learning, Computer Vision, applications in Biometrics and health science.

Education

West Virginia University

Ph.D. in Electrical Engineering (GPA: 4.0/4.0)

• **Courses:** Deep Learning, Computer Vision, Application of Neural Networks, Stochastic System Theory, Pattern Recognition, Natural Language Processing Specialization (Coursera)

Morgantown, USA

Aug 2021 - Current

K. N. Toosi University of Technology

M.Sc. in Biomedical Engineering (GPA: 4.0/4.0)

Tehran, Iran

Sep 2017 - Sep 2020

K. N. Toosi University of Technology

B.Sc. in Electrical Engineering (GPA: 3.5/4.0)

Tehran, Iran

Sep 2012 - Sep 2016

Selected Papers

For a complete list of publications please refer to (Google scholar link).

[1] Joint Super-Resolution and Head Pose Estimation for Extreme Low-Resolution Faces, *In IEEE Access*, 2023.

[2] Deep boosting multi-modal ensemble face recognition with sample-level weighting, *In IJCB*, 2023.

[3] A Quality Aware Sample-to-Sample Comparison for Face Recognition, *In WACV*, 2023.

[4] Hyperspherical Classification with Dynamic Label-to-Prototype Assignment, *In IEEE Access*, 2023.

Skills

• Technical Skills:

- Proficient in Python (focused on PyTorch) for data analysis, data visualization, and machine learning and deep learning applications.
- Familiar with R and Microsoft Office products.
- Experienced in LaTeX for document preparation.
- Experienced in using biomedical image and signal processing tools such as FreeSurfer, EEGLab, FSL, and DtiStudio during master's thesis work.

• Soft Skills:

- Problem-Solving: Demonstrated creativity in problem-solving across various projects.
- Communication: Strong verbal and written skills, evidenced by presentations at academic meetings, poster sessions, and publications in peer-reviewed journals and conference proceedings.

Recent projects

- **Long Range Face Recognition:** Supported by the Intelligence Advanced Research Projects Activity (IARPA), contributed to presentations and PI review meetings for the IARPA-Biometric Recognition and Identification at Altitude and Range (BRIAR) program in Spring 2022, Fall 2022, Spring 2023, and Fall 2023. These efforts led to the publication of three papers, presented at two IEEE International Joint Conference on Biometrics (IJCB) conferences and one Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), detailing advancements in real-world face recognition.
- **Head Pose Estimation and Profile-to-Frontal Face Recognition:** Supported by the Office of the Director of National Intelligence (ODNI), conducted research resulting in one published paper presented at the IEEE International Joint Conference on Biometrics (IJCB) focusing on profile-to-frontal face recognition techniques. Additionally, authored another paper published in the IEEE Access journal covering challenges in head pose estimation for extremely low-resolution images.
- **Functional and Structural human brain changes:** Developed a model that integrates EEG data and MR images for analyzing age-related changes in the adult brain cortex. This work led to the publication of a research paper in the PLoS ONE journal and a review paper in the Reviews in the Neurosciences journal, showcasing significant findings in both venues.
- **Enhancing Metric Space:** In our recent project, we proposed a novel method to dynamically optimize prototype categories during training, improving metric space utilization in deep learning. Unlike previous static approaches, our method uses a two-step optimization over network parameters and label-to-prototype mapping. The approach showed benefits in balanced and long-tail classification tasks across various architectures, leading to a paper accepted at IEEE Conference on Computer Vision and Pattern Recognition (CVPR).
- **Efficient Dataset Condensation:** We are investigating a simple and efficient method for dataset condensation, which aims to reduce the computational cost of training advanced deep learning models by replacing large training datasets with smaller synthetic ones. Our study is ongoing and will be submitted to upcoming conferences.