

Amin Ghaffari

Bioengineering PhD candidate – Neuroimaging data analyst at UCR

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Summary of Qualifications

Data analyst with 5+ years of research experience in neuroscience and multi-omics, integrating clinical data, medical imaging, and machine learning to identify functional and molecular biomarkers associated with disease outcomes.

Proficient in:

- Clinical and medical data analysis
- Bioinformatics and multi-omics
- Signal processing
- Machine learning and data mining
- Deep learning and AI

Experience with

- Multi-omics biomarkers for cancer
- Neurological conditions
- Medical imaging: MRI, MRA, PET, CT
- Large datasets
- Graph neural network (GNN) analysis

Computer skills:

- Programming: Python, MATLAB, R
- Libraries: OpenCV, NumPy, PyTorch, Keras
- Visualization libraries: Matplotlib, Seaborn
- Operating Systems: Linux
- Environments: Docker, Singularity, Conda

Education

- **Ph.D. in Bioengineering, University of California, Riverside (UCR)** Jan 2022 – Dec 2026
- **M.Sc. in Bioengineering, University of California, Riverside (UCR)** Jan 2022 – Jun 2023
- **B.Sc. in Mechanical Engineering, Amirkabir University** Sep 2016 – Jun 2021

Research and Work Experience

- **Research assistant, Bioengineering Department, University of California, Riverside** Jan 2022 – Dec 2026
 - Analyzing resting-state functional MRI (fMRI) data to identify personalized functional biomarkers of clinical measures.
 - Development of transformer models (LLM-based models) for the detection of Parkinson's disease at the preclinical stage.
 - Identifying pancreatic cancer biomarkers from blood-based multi-omics data using liquid biopsy (in collaboration with USC).
 - Applying bioinformatics approaches to mice multi-omics data models to study autism neurodevelopmental biomarkers.
- **Neuroimaging analyst intern, clinical development, Neurocrine Biosciences, San Diego, CA** Jun 2025 – Aug 2025
 - Developed and implemented an image processing pipeline to denoise and standardize multi-site fMRI data, enabling reliable group-level comparisons of brain activation and functional connectivity for translational biomarker analysis.
 - Analyzed the effects of a candidate Alzheimer's disease therapeutic on activation patterns in memory-related brain areas.
 - Conducted literature reviews to support selection of regions of interest for Alzheimer's disease therapeutic evaluation.
- **Undergraduate student research assistant, Amirkabir University** Jan 2020 – Apr 2021
 - Simulated coronary stent deployment within the artery as an implantable medical device, identifying geometrical features of optimized designs consistent with FDA regulatory constraints.

Selected first-authored Publications

- "Dynamic fingerprinting of the human functional connectome," **Amin Ghaffari et al.**, brain connectivity, Feb 2026. [link](#)
- "Functional connectome alterations across the spectrum of Alzheimer's disease," **Amin Ghaffari et al.**, Journal of Dementia and Alzheimer's disease, Dec 2025. [link](#)
- "Connectome-based predictive modeling of grip strength in older adults: a frailty-related physical marker," **Amin Ghaffari et al.** Frontiers in neuroscience. Nov 2025. [link](#)
- "Blood flow analysis of subject-specific cerebral arterial tree: A focus on the redistribution of the blood flow after occlusion," **Amin Ghaffari et al.**, IEEE 22nd International Symposium on Biomedical Imaging, May 2025. [link](#)
- "How does the interconnector design influence coronary stents structural and hemodynamic performance?," **Amin Ghaffari et al.** Journal of the Brazilian Society of Mechanical Sciences and Engineering, Jan 2025. [link](#)
- "A transformer-based approach for personalized early detection of Alzheimer's disease using dynamic functional connectivity," Amin Ghaffari et al., [in preparation]
- "Identification of Pancreatic Cancer Biomarkers from Blood-Based Multi-Omics Data Using Liquid Biopsy," Amin Ghaffari et al., [in preparation]

Honors and Awards

- [Research](#) highlighted by [Sage pub](#) for identifying dynamic brain fingerprints capable of predicting cognitive abilities. **2026**
- [Research](#) highlighted by [UCR News](#) for identifying functional brain connectivity markers predictive of grip strength. **2026**
- Runner-up and Semi-Final Audience Choice Award, Graduate Research Pitch Competition ([Grad Slam 2024](#)), UCR **2024**
- Dean's Distinguished Fellowship Award - University of California, Riverside. **2021**

Extra-Curricular Activities

- Spokesperson for the UCR Center for Advanced Neuroimaging, engaging older adult populations through community and health events to raise awareness about memory-related issues and promote participation in neuroscience studies. [link](#)

Other selected projects

- Conducted quantitative analysis of chest CT imaging data to distinguish COVID-19 from other pulmonary conditions. **Skills used:** Medical image analysis, Deep learning, statistical modeling, data visualization, Python, AI.
- Analyzed magnetic resonance angiography data to identify critical arteries for ischemic stroke prevention and recovery. **Skills used:** Medical imaging, translational clinical research, MATLAB, statistics.
- Designed a backend computational pipeline for processing and integrating genomics and transcriptomics data, enabling generalizable identification of disease-associated molecular signatures using Python.