NOOSHIN SAFARI

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EDUCATION AND TRAINING

Ph.D. in Neuroscience   **May 2024**
George Mason University, Fairfax, VA

M.Sc. in Bioinformatics and Computational Biology   **Aug 2020**
George Mason University, Fairfax, VA

B.Sc. in Agricultural Engineering, Plant's Biotechnology   **Sep 2014**
Isfahan University of Technology, Isfahan, Iran

Publications:

- **Safari N**, Fang H, Veerareddy A, Xu P, Krueger F. The anatomical structure of sex differences in trust propensity: A voxel-based morphometry study. Cortex. 2024 Jul;176:260-273. doi: 10.1016/j.cortex.2024.02.018. Epub 2024 Apr 8. PMID: 38677959.
- Veerareddy A, Fang H, **Safari N**, Xu P, Krueger F. Cognitive empathy mediates the relationship between gray matter volume size of dorsomedial prefrontal cortex and social network size: A voxel-based morphometry study. Cortex. 2023 Dec;169:279-289. doi: 10.1016/j.cortex.2023.09.015. Epub 2023 Oct 27. PMID: 37972460.

RESEARCH EXPERIENCE

Research Assistant | GMU Interdisciplinary Program in Neuroscience (IPN)   **Sep 2020 - Present**
Krasnow Institute, College of Science, George Mason University – Fairfax, VA
Research Focus: MRI Neuroimaging, Statistics, Game Theory
Supervisor: Dr. Frank Krueger

Key achievements:

- Utilized MRI neuroimaging to acquire and analyze high-resolution brain scans, contributing to a deeper understanding of neural mechanisms.
- Applied advanced statistical methods to interpret complex datasets, enhancing the accuracy and reliability of research findings.
- Integrated game theory models to study decision-making processes and social interactions in neural networks, providing novel insights into cognitive functions.
- Worked closely with a multidisciplinary team, fostering a collaborative atmosphere that drove innovative research solutions and successful project outcomes.
- Contributed to the preparation of research manuscripts and presentations, resulting in publications in peer-reviewed journals and presentations at national conferences.
- Developed protocols for using neuroimaging software such as SPM, VBM, and FSL, ensuring efficient and accurate data processing.
- Prepared guidelines for running analyses in Linux OS using Ubuntu, facilitating seamless integration of advanced computational tools.
- Conducted mediation analysis and executed cluster analysis using cloud computing resources, including Hopper and ORC, to optimize data analysis workflows.

Professional Lab Rotation   **Aug 2022 - Dec 2022**
Information Science and Technology, College of Engineering and Computing, George Mason University – Fairfax, VA
Supervisor: Dr. Liang Zhao

    Project: Functional Connectivity Prediction With Deep Learning for Graph Transformation

- Spearheaded the integration of meta-features into the SF-GAN model, leveraging the Human Connectome Project dataset to significantly enhance the model's predictive capabilities for functional connectivity.
- Identified and analyzed key meta-features, substantially improving the model's accuracy in predicting neural connections.

Professional Lab Rotation   August 2020 to December 2020
Institution: George Mason University
Department: Department of Psychology, College of Humanities and Social Sciences
Supervisor: Dr. Eva Wiese

Project: Preliminary Studies on Oxytocin Role in Social Affiliation Between AIBO- Human Using Temporal Pattern
- Adapted and refined an existing behavioral coding protocol to suit the specific requirements of our human-robot interaction research, ensuring high accuracy and relevancy.
- Conducted detailed transcriptions and analyses of behavioral data using THEME software, enhancing the precision of pattern detection and temporal analysis.
- Worked collaboratively with a cross-disciplinary team, integrating complex behavioral insights into broader research on social robotics.

Master's of Science Thesis Project   January 2020 to August 2020
Institution: George Mason University – Fairfax, VA
Department: School of Systems Biology, College of Science
Bioinformatics Lab Rotation
Supervisor: Dr. Frank Krueger

Project: Prediction of social cognition deficits based on individual differences in resting-state
- Proposed the application of cutting-edge neuroimaging techniques, including resting-state functional MRI and diffusion tensor imaging, to analyze brain connectivity and function.
- Initiated a multidisciplinary approach by integrating computational neuroscience with clinical psychology to improve diagnostic and therapeutic methods.
- Outlined a methodological framework for employing functional connectivity as a biomarker for early detection of social cognition anomalies.

Project- Neurobiology of Decision Making   January 2019 to May 2019
Institution: George Mason University – Fairfax, VA
Department: School of systems biology, College of Science
Supervisor: Dr. Frank Krueger

Project: NIH proposal on Impulsive Decision Making and Bipolar Disorder in Human
- Developed a detailed NIH research proposal at George Mason University, focusing on impulsive decision-making linked to bipolar disorder.
- Integrated MRI-based imaging, such as fMRI and DTI, with behavioral questionnaires and decision-making tasks to explore brain function and structure.
- Explored the application of machine learning to enhance diagnostic accuracy in bipolar disorder.

Project- Metabolism and Homeostasis   May 2017 to June 2017
Institution: George Mason University – Fairfax, VA
Department: School of Systems Biology, College of Science
Supervisor: Dr. Ancha Baranova

Project: Mechanism of C-reactive protein as an Inflammatory Biomarker
- Discovered crucial protein interactions and regulatory genes associated with CRP, dramatically enhancing our understanding of its role and functionality as a biomarker.

- Mastered and leveraged advanced software tools like Pathway Studio to analyze data and create intricate visualizations of protein-gene interactions, significantly enhancing the predictive capabilities of CRP's biological functions.

Project- Systems Biology   **August 2016 to December 2016**
Institution: George Mason University – Manassas, VA
Department: School of systems biology, College of Science
Term: **Fall 2016**
Supervisor: Dr. Christopher Lockhart

Project: Systems Biology View of Hepatocellular Carcinoma and Its Causation Through Aflatoxin B1
- Developed the ability to construct predictive models that elucidate the genetic pathways affecting Aflatoxin B1 (AFB1) production, essential for understanding its role in carcinogenesis.
- Utilized gene modification and mutagenesis techniques within the project to explore potential interventions for preventing AFB1-induced carcinogenesis, demonstrating innovative approaches to complex biological problems.
- Took the lead in a critical project, effectively coordinating the integration of genetic, computational, and environmental research methods to study AFB1's impact on liver cancer.

TEACHING EXPERIENCE

Teaching Assistant   **Aug 2023 - May 2024**
Krasnow Institute, College of Science, George Mason University – Fairfax, VA
Seminar in Neuroscience: Nervous System Injury and Disease (NEUR 411)
Supervisor: Dr. Gwendolyn Lewis

Key achievements:
- Facilitated interactive and student-led discussions, significantly improving engagement and comprehension of complex neuroscience topics.
- Developed efficient grading protocols for journal entries, news articles, and grant applications, ensuring timely and constructive feedback for over 30 students.
- Conducted workshops and provided individualized feedback, enabling students to excel in scientific writing and presentation skills.
- Introduced creative teaching methods, including peer review sessions and mock grant applications, enriching the educational experience.

Teaching Assistant   **Aug 2022 - May 2023**
Institution: George Mason University – Fairfax, VA
Department: Krasnow Institute, College of Science
Cellular Neuroscience Lab (NEUR 328)
Supervisor: Dr. Greta Ann Herin

Key achievements:
- Contributed to the refinement of lab protocols, enhancing the quality and effectiveness of experiments conducted.
- Ensured compliance with safety regulations, fostering a secure laboratory environment.
- Guided students in mastering essential neurophysiological techniques, including electrophysiology, leading to improved practical skills and confidence in laboratory settings.
- Gained proficiency in 3D printing technology, applying it to create custom laboratory tools and models.

Teaching Assistant   **August 2020 to May 2021**
Institution: George Mason University – Fairfax, VA
Department: Krasnow Institute, College of Science
Introduction to Neuroscience (NEUR 101)

Supervisor: Dr. Gwendolyn Lewis

Key Achievements:
- Developed engaging online content and resources that significantly improved student participation and understanding in an asynchronous learning environment.
- Implemented efficient grading protocols for quizzes, activities, and exams, ensuring timely and accurate feedback for over 100 students.
- Guided students through complex neuroscience topics, resulting in a higher rate of comprehension and retention of course material.
- Applied creative approaches to teaching, including interactive discussions and project-based learning, which enhanced the overall educational experience.

Professional Affiliations
- Social Cognition and Interaction: Functional Imaging (SCI:FI) LAB, GMU, Since September 2020
- Iranian Students Union (ISU), GMU, Since August 2016

Presentations
- **Presentation:** "Male Sterility in Triticum Aestivum," Isfahan University of technology/School of Agriculture, Fall 2012
- **Presentation:** "Microbial Production of Xanthan Gum", Isfahan University of technology/School of Agriculture, Fall 2013
- **Bachelor Project:** "In silico Study of MYB Protein Family in Arabidopsis Thaliana," Supervisor: DR Tabatabai, Isfahan University of technology/School of Agriculture, Summer 2014
- **Presentation:** "A Systems Biology View of Hepatocellular Carcinoma and Its Causation Through Aflatoxin B1", School of Systems Biology, George Mason University, Fairfax, VA, December 2016.
- **Presentation:** "Unsupervised Learning: Clustering & Dimensionality Reduction of the Golub (training) dataset", School of Systems Biology, George Mason University, Fairfax, VA, May 2017.
- **Poster Presentation:** "Mechanism of C-reactive protein as an Inflammatory Biomarker," Mid-Atlantic Diabetes Research Symposium, NIH, Bethesda, MD, October 2017.
- **Poster Presentation:** Elsevier Office, Pathway Studio Group, Bethesda, MD, July 2017.
- **Presentation:** "Interpreting Correlated Mutations," Mason Modeling Day, GMU, Fairfax, VA, Summer 2017.
- **Master Project:** "Prediction of social cognition deficits based on individual differences in resting-state", School of Systems Biology, George Mason University, Fairfax, VA, August 2020.
- **Presentation:** "Role of GABA Interneurons in Brain Blood Flow Regulation," Krasnow Institute, GMU, Fairfax, VA, November 2020.
- **Project Presentation:** "Electrophysiological Study of Li-ion on GIRK3.1/3.2 Channel in Xenopus Oocyte," Krasnow Institute, GMU, Fairfax, VA, April 2021.
- **Ph.D. Defense:** "Anatomical structure of sex differences in trust propensity", Krasnow Institute, GMU, Fairfax, VA, April 2024.
- **Undergraduate selective speaker:** "Anatomical structure of sex differences in trust propensity", Mason Global, GMU, Fairfax, VA, April 2024.

SKILLS
Statistical and Analytical Tools: SPSS, Excel, Linux, MATLAB, Python, Perl, R studio.
Computer Proficiency: Microsoft Office, Outlook, Teams, Word, PowerPoint and social media platforms.
Neuroimaging Skills: Proficient in SPM and FSL for brain imaging data analysis.

ABILITIES
- Effective multitasking and prioritization under pressure.
- Creative problem-solving in a fast-paced neuroscience environment.
- Bilingual communication (Farsi and English) with strong interpersonal skills.
- Resilience and adaptability in demanding academic settings.