CURRICULUM VITAE

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"Studying medicine made my background heavy in physiology. In my research, I would like to learn how the macro- and micro-circuits within the mammalian brain perform computations necessary to process and utilize information. I'm interested in using high-resolution neurophysiological methods, computational techniques, and deep neural networks to unravel the mysteries of brain. Standing at the interface of biology, clinic, computational neuroscience, and artificial intelligence is very well-aligned with a long-term plan of finding solutions to neural disabilities of humans. I am eagerly looking forward to learning more and making collaborations to advance out understanding of brain."

EDUCATION

Sep 2015 - Jan 2023	M.D., Medicine School of Medicine, Zahedan University of Medical Sciences (ZAUMS), Zahedan, Iran (GPA = 3.61/4)
Sep 2012 - Sep 2015	Diploma, Biological Sciences Imam Sadeq High School, Lamerd, Iran (GPA = 4/4)

WORKSHOP and CERTIFICATE

Computational Neuroscience Summer Course	Neuromatch Academy, Virtual Event | Jul 2022 | Certificate
Computational Neuroscience	Sadra Neuroscience Association, Virtual Event | Jun-Aug 2021
Cognitive Neuroscience	Sadra Neuroscience Association, Virtual Event | Oct-Dec 2020

EXPERIENCE

Research

Jul 2023 - present **Research Assistant**
Department of Brain and Cognitive Sciences, Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, ACECR, Tehran, Iran

- *Monkey neurophysiology: recording neuronal activity and LFP from Inferior Temporal and Ventrolateral Prefrontal Cortices*
- *Studying cortical computations underlying visual processing*
- ***Output**: see Publication > Preprint > Mooziri et al., In Prep., 2024a*

Jun 2020 - Dec 2022 **Research Assistant**
Laboratory Animals Research Center, ZAUMS, Zahedan, Iran

- *Set up a rodent electrophysiology lab (first time at ZAUMS)*
- *Rodent behavior and neurophysiology: study LFP activities underlying memory and anxiety in rodents*
- ***Output**: see Publication > Journal Article > Mooziri et al., Sci. Rep., 2024*

Teaching

Jul 2024 **Project TA**
Computational Neuroscience Summer Course
Neuromatch Academy (NMA) | Virtual Event | Certificate

- *Description*
- *I've led several projects with students from USA, UK, Iran, Germany, China, India, Turkey, etc.*

Jul 2023 **Regular TA**
Computational Neuroscience Summer Course
Neuromatch Academy (NMA) | Virtual Event | Certificate

- *I've led students from Iran, India, and USA.*

PROJECT

Jul 2023 - present **Visual object recognition in macaque inferior temporal and ventrolateral prefrontal cortices**
Royan Institute, ACECR, Tehran, Iran.

- *Roles: Data Collection, Data Analysis, Writing*
- ***Output**: see Publication > Preprint > Mooziri et al., In Prep., 2024a*

Jun 2020 - Dec 2022 **Evaluation of the functional connectivity between olfactory bulb and prefrontal cortex during anxiety behavior in rat**
Laboratory Animals Research Center, ZAUMS, Zahedan, Iran.

- *Roles: Surgery, Data Collection, Data Analysis, Writing*
- ***Output**: see Publication > Journal Article > Mooziri et al., Sci. Rep., 2024*

PUBLICATION ($ denotes co-first authors)

Preprint

2024a ***Mooziri*** [$], *Zare* [$], *Qolami, Javan, Shakerian, & Dehaqani*
Semantic processing in primate ventral visual stream and machines | In Prep.

2024b ***Mooziri***, *Samii Moghaddam, & Bahmani*
Distinct tuning properties of human hippocampal neuronal sub-populations encode working memory | In Prep.

Journal Article (Peer-reviewed)

2024 ***Mooziri*** [$], *Samii Moghaddam* [$], *Mirshekar, & Raoufy*
Olfactory bulb-medial prefrontal cortex theta synchronization is associated with anxiety | Scientific Reports

2023 *Dehdar,* ***Mooziri****, Samii Moghaddam, Salimi M, Nazari, Dehghan, Jamaati, Salimi A, & Raoufy*
Corticosteroid treatment attenuates anxiety and mPFC-amygdala circuit dysfunction in allergic asthma | Life Sciences

2022 *Gholami-Mahtaj,* ***Mooziri****, Bamdad, Mikaili, Jamaati, & Raoufy*
Neural signature of attention impairment in allergic asthma: an ERP study | International Journal of Neuroscience

Gholami-Mahtaj, ***Mooziri****, Dehdar, Abdolsamadi, Salimi, & Raoufy*
ACC-BLA functional connectivity disruption in allergic inflammation is associated with anxiety | Scientific Reports

INVITED TALK

2024 On the mysteries of neural space | Lecture series
Neuromodulation Lab, Department of Physiology, Tarbiat Modares University, Tehran, Iran

2023 Principles of deep brain recording
Student Research Committee, ZAUMS, Zahedan, Iran

RESOURCE

2024 Visual episodic memory task | Github Repository
Description: Matlab scripts and functions for a visual episodic memory task in human, implemented in PsychToolbox.

RESEARCH INTEREST

Systems/Computational/Cognitive Neuroscience	Neurophysiological and computational foundations of brain function and behavior, esp. for working memory, attention, and visual perception
Neural Coding	Information processing mechanisms by neurons and circuits, esp. population coding and latent dynamics of population activity as well as local and long-range connectivity of neurons and oscillations
NeuroAI	Using artificial intelligence to model/explain brain phenomena, esp. deep neural networks
Theory	Using theoretical frameworks to describe brain function and behavior, e.g., Bayesian framework

SKILL

Computational

Programming

MATLAB

Description: Advanced programming skills
Toolboxes: Chronux, PsychToolbox

Python

Description: Advanced programming skills
Libraries: Numpy, Pandas, PyTorch, Scikit-learn, SciPy, Matplotlib, Seaborn, etc

Artificial Intelligence

Machine Learning

Description: Intermediate-to-advanced knowledge and skills in MATLAB and python, for classification, clustering, and regression purposes

Deep Learning

Description: Intermediate-to-advanced knowledge and skills in Python (using PyTorch), esp. for CNNs and RNNs

Mathematics

Linear Algebra

Description: Intermediate knowledge

Neural Data Analysis

Advanced knowledge and skills in MATLAB

- *Experience in working with neurophysiological data of **rat** (Mooziri et al., Sci. Rep., 2024), **monkey** (Mooziri et al., In Prep., 2024a), & **human** (Mooziri et al., In Prep., 2024b)*
- *LFP: Time-frequency domain transformation; Regional activity; Functional connectivity; Directionality analysis*

- *Spiking activity: Single-neuron rate and temporal coding; Population coding; Directionality analysis*
- *General: Machine learning, Information theory & Signal detection theory*

Computational and Theoretical Neuroscience Intermediate knowledge and skills in Python
- *Modeling electrical properties of neurons and microcircuits*
- *Dealing with high-dimensional data*

Data Science Advanced knowledge and skills in working with public datasets of neurophysiology
- *See Mooziri et al., In Prep., 2024b*

Behavioral Data Analysis Intermediate-to-advanced knowledge and skills in MATLAB/Python
- *General metrics, e.g., anxiety index, d-prime, etc (Rat, Monkey, Human data)*

Statistics Intermediate knowledge and skills in Graphpad Prism, MATLAB, and Python

Lab *(only those with advanced experience)*

Rat Handling
Stereotaxic Brain Surgery
Behavioral Data Acquisition
Electrophysiological Data Acquisition

Monkey Handling
Electrophysiological Data Acquisition
Functional Brain Mapping with DBS

Other

English Full Professional Proficiency
Advanced Communication Skills

Scientific Writing Advanced skills

Tools Adobe Illustrator
Description: Intermediate skills for data visualizations

Soft Skills Scientific vision
Leadership
Group work

VALUE

Respect
Ambition
Cooperation-Teamwork
Responsiveness
Openness to Experience

HOBBY

Explore Scientific Community (Journals, Science News, etc.)
Watch Movie (Sci-fi, Sitcom, Documentary, Astronomical, Drama)
Sports (Soccer, Ping-pong)
Play Video Games

REFERENCE

Mohammad Reza Raoufy	Associate Professor, Department of Physiology, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran
Mohammad-Reza A. Dehaqani	Assistant Professor, School of Electrical and Computer Engineering, University of Tehran, Tehran, Iran
Zahra Bahmani	Assistant Professor, Department of Biomedical Engineering, Faculty of Electrical & Computer Engineering, Tarbiat Modares University, Tehran, Iran