ARSALAN FIROOZI

GitHub LinkedIn arsalan.firoozi@gmail.com
Personal Website (+43)-66565152465

FIELDS OF INTEREST

Biomedical Signal Processing, Brain Computer Interface, Neuroscience
Image Processing, Machine Learning

EDUCATION

Sharif University of Technology, Iran *2018 - Present*
Bachelor of Science in Electrical Engineering, Supervisors: Prof. Mehrzad Namvar and Prof. Shamsollahi
GPA: 18.41/20

Allame Helli High School, Iran *2014 - 2018*
Activities: Computer Vision and Mathematics

SKILLS

Languages:	Persian(native language), English
Programming:	Matlab, Python, C++, Java
	Altium, Verilog, CUDA
	PHP, Web Design, Android Studio

RESEARCH EXPERIENCE

Complementary Hemispheric Lateralization of Language and Social Processing in the Human Brain
Jan 2020 - Nov 2022
- A paper about the core areas of language and social processing. We tried to analyze these areas and identify their relationship and seek the reason for the results. This paper was published in Cell Reports (Link). The project was done under the supervision of Dr. Reza Rajimehr. [Github Link]

DMN role in movie-watching *July 2022 - Dec 2022*
- As a research intern at MRC Cognition and Brain Sciences Unit of Cambridge University under the supervision of Prof. John Duncan and Prof. Reza Rajimehr, we demonstrated the activity of DMN is strongly covaries with categorical transitions in movies. The manuscript is written and is under revision of supervisors at this time.

PROJECTS

Microglia Cell Segmentation *Feb 2024 - Ongoing*
- As a research intern at the Institute of Science and Technology Austria (ISTA), I am using 3D microscope imaging to detect Microglia cells, segment branches, and finally find the skeleton of the cell. So far, the soma of Microglia cells has been detected, and the project is currently in the stage of detecting branches.

IQ Estimation based on Brain Activity *Oct 2021 - July 2022*
- As my Bachelor's project, I tried to investigate the relationship between IQ and resting-state brain activity by using different dimensionality reduction methods and models of classifier and regression. I've used MEG and fMRI resting state data recorded by the HCP team. The project was done under the supervision of Prof. Mohammad B. Shamsollahi. [Github Link]

Skin Lesion Classification *Oct 2023 - Mar 2024*
- Based on ISIC 2018 dataset, we are trying to detect seven different types of skin lesions by deep learning methods. This project is under the supervision of Prof. Mohammad Hossein Rohban and Dr. Elahe Badali. [Github Link]

A Review on Interacting Adaptive Processes Which Underlie Short-Term Motor Learning *July 2022*
- Simulations of two latest models suggested by Maurice A. Smith in a paper entitled "Interacting Adaptive Processes with Different Timescales Underlie Short-Term Motor Learning" and by David J. Herzfeld in a paper entitled "A memory of errors in sensorimotor learning". [Github Link]

Temporal Neural Analysis on Motor Cortex *Jan 2022*

- Using recorded motor cortex neural activity of macaque monkey during a reach-to-grasp task, we studied how motor and premotor neural responses are related to events in time. This study shows that some neurons have different tuning curves for the direction of the stimulus. [Github Link]

Magnetic Field Sensor *July 2022*

- Analyzing a circuit aiming to detect changes in magnetic field by creating a digital signal which the frequency encodes the rate of change in the magnetic field. An ARM microcontroller is used and programmed to measure the output signal frequency. [Github Link]

Implementation of IEEE 802.11a protocol *June 2021*

- Based on Xilinx FPGA, all modules indluding Scrambling, Descrambling, Encoding, Decoding (Viterbi Decoder), Interleaving, and Deinterleaving were implemented. [Github Link]

Implementation of Single-Cycle/Pipeline Processors *July 2020*

- Single-Cycle/Pipeline processors were implemented by Verilog as the project of the Computer Structure course. [Github Link]

Book Store *Jan 2022*

- As the final project of Web Programming course, we developed a website by Nginx as a load balancer and Parse server connected to two Postgress databases (Master and Slave). We used React for the frontend service and NodeJS for the backend. All services are run and maintained by Docker. [Github Link, Assignments]

TEACHING EXPERIENCE

Fundamentals of Neuroscience *Fall 2022*

- Designing and grading the final project of the course.

Signals & Systems *Spring 2021, 2022*

- Designing assignments and holding solving sessions in Spring 2022
- Designing MATLAB homework in Spring 2021

Digital Image Processing *Spring 2022*

- Designing and grading one assignment and the final project of the course.

Logic Circuits *Fall 2021*

- Designing homework and managing lab sessions.

Computer Structure *Spring 2020, 2021, and Fall 2022*

- As a laboratory assistant for three academic semesters.

Personal Web Design *Summer 2020*

- Teaching basics and advanced topics of developing back-end and front-end web pages. This class was held as a part of Resana's summer workshops.

WORK EXPERIENCE

Sharif Neuroscience Symposium *Jan 2021, 2022, 2023*

- Holding the 5th Sharif Neuroscience Symposium as the head of executive team.
- Holding the 3rd and 4th Sharif Neuroscience Symposium as a member of technical team.

ReACT *Dec 2020*

- Holding the first Resana's Annual Conference of Technology

Mm-wave laboratory *Apr 2021*

- Designing and implementation of a mm-wave body scanner based on FPGA & microprocessor. I have dedicated three months to this project as a digital engineer in the duration of my university summer internship.

Back-end web developer *Apr 2021*

- Designing multiple websites and developing the appropriate back-end for them.

NOTABLE COURSES

Computer Structure, Designing Systems Based on Microprocessor, Principles of Image Processing, Designing Systems Based on FPGA, Communication Systems, Signals and Systems, Logic Circuits, Robotics, Artificial Intelligence, Fundamentals of Neuroscience, Advanced Neuroscience [Github Link], Deep Learning