Curriculum Vitae
Mohaddeseh Mozaffari

✉ mohaddeseh.mozaffarii@gmail.com   💼 MohiMozaffari   ⬡ MohiMozaffari   🌐 Personal Website

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EDUCATION

Sep 2022— Present	**Degree:**	Master of Science in Statistical Physics and Complex Systems
	Where:	Shahid Beheshti University, Tehran, Iran
	GPA:	18.5 of 20
Sep 2018— May 2022	**Degree:**	Bachelor of Science in Physics
	Where:	Shahid Beheshti University, Tehran, Iran
	GPA:	17.3 of 20

RESEARCH INTEREST

- Biological Physics
- Cognitive Science
- Complex Systems
- Computational physics
- Data Science
- ML & AI

RESEARCH EXPERIENCE

Jan 2024— Present

Project: Topological Analysis of Brain Networks in the Autism Spectrum Disorder and Control Group
Where: Shahid Beheshti University, Tehran, Iran
Advisor: Prof. G. Reza Jafari

- Applied Vietoris-Rips persistent homology to extract Betti numbers, persistence diagrams, and Betti curves from fMRI-derived brain networks.
- Investigated topological differences in brain subnetworks connectivity between ASD and neurotypical groups using persistence entropy, Wasserstein distance, and bottleneck distance to quantify topological features.
- Utilized persistent images as features for machine learning-based classification.

Dec 2023— Present

Project: Segmentation of Coronary Arteries Using Deep Learning
Where: Shahid Rajaei Heart Hospital, Tehran, Iran
Advisor: Mehdi Yousefzadeh

- Collected and processed medical data from the hospital, working with DICOM files to identify and label vessels and catheters.
- Developed custom augmentation techniques to enhance data quality and improve segmentation accuracy.

Aug 2022— Oct 2022

Project: Abnormality Detection in Head CT Scan Reports using Text Mining
Where: Imam Hossein Hospital Research Council, Tehran, Iran
Advisor: Mehdi Yousefzadeh

- Conducted text mining and preprocessing on radiology reports to detect abnormalities.

PUBLICATIONS

- Mohammadi, M.S., Shahrokhi, S., **Mozaffari, M.** et al. Nonlinear optical response of IMIP ionic liquid-stabilized magnetic graphene oxide sheets. J Mater Sci: Mater Electron 33, 13224–13233 (2022).

HONORS AND AWARDS

- **Second rank** in M.Sc. Statistical Physics and Complex Systems, Shahid Beheshti University (2023).
- Admitted to the master's program through **the Exceptional Talent initiative** for top students (2022).
- **First rank** among B.Sc. students, Physics Department, Shahid Beheshti University (2021-2022).
- **Top 1%** in nationwide university entrance exam in Iran (2018).

SKILLS

Cumputing

- Python (Advanced)
- C++ (Intermediate)
- Git (Intermediate)
- Bash/Linux (Intermediate)
- Adobe Illustrator (Advanced)
- Adobe Photoshop (Intermediate)
- HTML, CSS (Elementary)
- LaTeX (Advanced)
- Microsoft Office Suite: Word, Excel, PowerPoint (Advanced)

Languages

- Persian (Native)
- English (Fluent)
- French (Beginner)

WORK EXPERIENCE

Jul 2024—
Present
Position: Python Instructor
Where: Ostadbank, Tehran, Iran

- Teaching Python object-oriented programming, machine learning, and AI to students, focusing on real-world applications and mini projects.

Jun 2023—
Present
Position: Python Instructor
Where: Picha Club, Tehran, Iran

- Instructing pre-teens and teens in Python fundamentals, algorithms, and Tkinter.
- Guiding students through game development projects.

TEACHING EXPERIENCE

Position: Teaching Assistant
Where: Department of Physics, Shahid Beheshti University, Tehran, Iran
Courses:

- Complex Systems Physics (Jan 2025 – Jul 2025)
- Graph Theory (Jan 2025 – Jul 2025)
- Stochastic Processes (Jan 2024 – Jul 2024)
- Foundations of Numerical Simulations (Sep 2023 – Jan 2024)
- Complex Systems Physics (Sep 2023 – Jan 2024)
- Analytical Mechanics (Sep 2022 – Jan 2023)

CERTIFICATIONS

- Machine Learning Specialization, Coursera (2023).
- Neural Networks and Deep Learning, Coursera (2022).
- Quantum Computing and Implementation in Python, Qorpi Engineering Workgroup – KNTU Innovation Center (2022).
- Quantum Information and Computers, Interdisciplinary Schools, Sharif University of Technology (2021).

CONFERENCES & SCHOOLS ATTENDED

Nov 2024—
Nov 2024
Where: Shahid Beheshti University, Tehran, Iran
Title: fMRI Image Processing With CONN Toolbox

- Gained hands-on experience in preprocessing, denoising, and connectivity analysis for resting-state and task-based fMRI using the CONN toolbox.

Sep 2024—
Sep 2024
Where: Shahrood University of Technology, Semnan, Iran
Title: 5th National Conference on Quantum Information and Computing

- Attended presentations on the latest advancements in quantum information theory and quantum computing.

Oct 2023—
Dec 2023
Where: School of Biological Sciences, IPM, Tehran, Iran
Title: The School of Evolutionary Dynamics of Cells and Viruses

- Participated in lectures and discussions on evolutionary dynamics in cells and viruses.
- Explored theoretical models and their biological applications.

Jul 2023—
Jul 2023
Where: Institute for Advanced Studies in Basic Science, Zanjan, Iran
Title: The 28th Special School on Topics in Physics

- Engaged in advanced discussions on topics like condensed matter physics, quantum mechanics, and biosensing technologies.

PERSONAL INFORMATION

- Gender: Female
- Nationality: Iranian
- Date of Birth: Aug. 10th, 2000

REFERENCES

- **G. Reza Jafari**, Professor of Physics, Department of Physics and Institute for Cognitive Science and Brian, Shahid Beheshti University, Tehran, Iran.

  ☎ (+98) 21 2990 2773   ✉ g_jafari@sbu.ac.ir   ✉ gjafari@gmail.com   🌐 HomePage

- **Seyed Ali Hosseiny Esfidvajani**, Assistant Professor, Faculty of Physics, Shahid Beheshti University, Tehran, Iran.

  ☎ (+98) 21 2990 5043   ✉ al_hosseiny@sbu.ac.ir   ✉ alihd22@gmail.com   🌐 HomePage

- **Marzieh Farhang**, Associate Professor, Faculty of Physics, Shahid Beheshti University, Tehran, Iran.

  ☎ (+98) 21 2990 5053   ✉ m_farhang@sbu.ac.ir   ✉ marzieh.farhang@gmail.com   🌐 HomePage