MohammadJavad Vaez

Curriculum Vitae

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⑧ Google Scholar   🌐 Website

For the most updated CV, visit here.

Education

2022–Now **M.Sc. in Computer Science (AI Specialty)**, *University of Tehran, GPA: 3.82/4*
○ University of Tehran is ranked first for computer science in Iran, based on the U.S.News ranking.
○ **Thesis:** Sinusoidal Trainable Activation Functions for Implicit Neural Representation

2018–2022 **B.Sc. in Mathematics (Second Major)**, *University of Isfahan, GPA: 3.84/4*

2017–2022 **B.Sc. in Computer Engineering (Hardware Specialty)**, *University of Isfahan, GPA: 3.75/4*
Final Project: Applications of Group Theory and Automata Theory in Faster Searching of State Space

2013–2017 **High School Diploma in Mathematics and Physics**, *National Organization for Development of Exceptional Talents (NODET)*

Research Experience

2025 **Analysis of the neurons of larval zebrafish**, *In collaboration with the Computational Neural DNA Dynamics Lab (CNDD) at UCSD*

2024-2025 **Sinusoidal Trainable Activation Functions for Implicit Neural Representation**, *Under review for an A* AI conference*
○ The submission is compliant with the conference's double-blind review process and has not been uploaded to *arXiv*.

2024 **An alternative approach to inverse $\mathcal{Z}$-transform of rational functions**, *Paper Link - Under review for the Journal of Engineering Mathematics*
○ Implementation GitHub Repository

2021-2023 **Random generation of group elements using combinatorial group theory and automata theory**, *Paper Link - To be submitted to a prestigious journal*

Honors and Awards

2024 **Reviewer**, ICLR 2025 (International Conference on Learning Representations) – one of the highest-impact conferences in machine learning and AI research.

2022 **First Rank among Math Students (Class of 2017 and 2018)**, University of Isfahan.

2022 **Admitted to the Master's Program in Mathematics, Sharif University of Technology**, through direct admission based on academic excellence; declined the offer.

2020 $1.2 Reward Check from Donald Knuth for identifying a mistake in his book, *The Art of Computer Programming*[1]

Link of explanation

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[1] I included this in my CV because it was a unique and memorable reward.

Teaching Experience

Fall 2024 **TA for Advanced Theory of Algorithms**, University of Tehran, Instructor: Dr. Morteza Mohammad-Noori

Fall 2018 **TA for Calculus II**, University of Isfahan, Instructor: Dr. Ehsan Hakimian

Professional Experience

2021-2022 **Internship in Medical Equipment Development and Repair, *Shafa Medical Company***
Completed a hands-on internship at a company specializing in the manufacturing and repair of medical devices. Focused on hospital central sterilization systems, including autoclaves and plasma sterilizers, as well as respiratory support equipment like oxygen concentrators, BiPAP, and CPAP machines. Played a key role in programming and developing software for demo prototypes, facilitating rigorous testing and troubleshooting of new devices to ensure functionality and reliability.

Computer Skills

C/C++, Matlab, Python, LATEX, HTML, CSS

Hardware Engineering   Hspice, VHDL, Proteus, AVR Microcontrollers

Software Engineering   GitHub Project Management and Collaboration

Languages

Persian   Native

English   Fluent, IELTS score: 7 (Speaking: 7.5)

Important Projects or Presentations

Realtime Embedded Systems: LinkedIn Post

Buchberger Algorithm and Gröbner Basis in Inverse Kinematics of Manipulators: YouTube Video (Persian presentation)

Persian presentation of the paper "Learning the travelling salesperson problem requires rethinking generalization": YouTube Video

Presentation of the paper "BrainGB: A Benchmark for Brain Network Analysis with Graph Neural Networks": PDF File

Generally, this is my YouTube account on which I upload my presentations: youtube.com/@mohammadjavadvaez

This is my Stack Exchange account and you can see my activity: My Activity on Stack Exchange

Research Interests

Areas of Expertise:
- Machine Learning
- Neural Networks
- Graph Neural Networks (GNN)
- Signal Processing
- Randomized Algorithms
- Automata Theory
- Control Theory
- Stochastic Mathematics (including Probabilistic Graphical Models, Stochastic Cellular Automata, etc.)

Areas of Interest:
- Bioinformatics
- Quantum Computing
- Geometric Deep Learning
- (Computational) Neuroscience

Creative Works

I compose Persian poems. You can read some of my works here.