Atefeh Ahmadi

PhD Candidate in Biomedical Engineering

Personal Information

Birth: 29/2/1996

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Google Scholar | Research Gate

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Scopus Author ID: 57200599363

Web of Science Researcher ID: AAS-3738-2021

Education

PhD in Biomedical Engineering, majoring in Bioelectric

Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran

2021-Present

Thesis Topic: Analyzing Synchronization in Neuronal Networks with Non-fixed Connections

Supervisor: Dr. Sajad Jafari

Advisor: Prof. Michael Small

GPA: 19.81/20

Master of Biomedical Engineering, majoring in Bioelectric

Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran

2018-2021

Thesis Topic: Simulated Brain Tumor Resection Using Reinforcement Learning Agents

Supervisor: Dr. Hamed Azarnoush

GPA: 19.41/20

Bachelor of Biomedical Engineering, majoring in Bioelectric

Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran

2014-2018

Thesis Topic: Design and Analysis of Simple Chaotic Systems with Extreme Multi-stability

Supervisor: Dr. Sajad Jafari

GPA: 18.21/20

Diploma

Farzanegan 1 High School (National Organization for Development of Exceptional Talents), Tehran, Iran

2010-2014

GPA: 19.83/20

Teaching Experiences

Teaching Assistant for the Neural Networks Course

Department of Biomedical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran

Lecturer: Dr. Fahimeh Nazarimehr

Collaboration Time: The first semester of the academic year 2024-2025

Teaching Assistant for an Introduction to Computational and Biological Intelligence Course
Department of Biomedical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
Lecturer: Dr. Fahimeh Nazarimehr
Collaboration Time: The first semester of the academic year 2024-2025

Teaching Assistant for the Chaos and its Applications in Engineering Course
Department of Biomedical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
Lecturer: Dr. Sajad Jafari and Dr. Fahimeh Nazarimehr
Collaboration Time: The first semester of the academic year 2022-2023

Electrical Circuits Laboratory Instructor
Department of Biomedical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
Collaboration Time: The second semester of the academic year 2021-2022

Teaching Assistant for the Biostatistics and Probability Course
Department of Biomedical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
Lecturer: Dr. Mehrdad Saviz
Collaboration Time: The second semester of the academic year 2020-2021

Teaching Assistant for the Image Processing Course
Department of Biomedical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
Lecturer: Dr. Hamed Azarnoush
Collaboration Time: The first semester of the academic year 2020-2021

Teaching Assistant for the Bioelectrical Phenomena Course
Department of Biomedical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
Lecturer: Dr. Mehrdad Saviz
Collaboration Time: The second semester of the academic year 2019-2020

Courses and Certificates

Internet Research Ethics Workshop
Elites Foundation of Tehran Province, Tehran, Iran, 2023, 3 hours

Photoshop Software
Student Scientific Association of the Department of Biomedical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, 2019, 20 hours

Implementation of Deep Neural Networks with PyTorch
Student Scientific Association of the Department of Biomedical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, 2019, 32 hours

Python Software
Student Scientific Association of the Department of Biomedical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, 2018, 30 hours

LaTeX Software
Student Scientific Association of the Department of Biomedical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, 2018, 16 hours

Advanced MATLAB Software
Student Scientific Association of the Department of Biomedical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, 2018, 40 hours

Workshop on Safety Instructions for Electromagnetic Radiation and Health Hazards
The 24th National Conference and the 2nd International Iranian Conference on Biomedical Engineering, Tehran, Iran, 2017, 3 hours

MATLAB Software
Student Scientific Association of the Department of Chemical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, 2014, 70 hours

Events

31st National and 9th International Iranian Conference on Biomedical Engineering
Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, 2024
21st Iranian Conference on Biomedical Engineering
Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, 2014

Skills

Programming Languages
C, Mathematica, MATLAB, Python, PyTorch, TensorFlow

Professional Software
Atmel Studio, Code Vision, Altium Designer, LabVIEW, Proteus, LTSPICE, Orcad, MATLAB Simulink, MATLAB GUI, Google Colab

Other Software
Beamer, LaTeX, Microsoft Office, Photoshop

Languages

English: Advanced (MSRT Test: 89/100)
Persian: Native

Journal Papers

Synchronization enhancement of complex networks by fast switching with their restricted complement
Nonlinear Dynamics-2026

A novel mega-stable system with attractors in real-life object shapes
Scientia Iranica-2026

Analysis of a five-dimensional chaotic multistable Lorenz model with a sinusoidal heating function
International Journal of Bifurcation and Chaos-2026

A novel megastable chaotic system with hidden attractors and its parameter estimation using the sparrow search algorithm
Computation-2024

A nonlinear megastable system with diamond-shaped oscillators
International Journal of Bifurcation and Chaos-2024

Dynamics of a novel chaotic map
Journal of Computational and Applied Mathematics-2024

A novel multi-stable sinusoidal chaotic map with spectacular behaviors
Communications in Theoretical Physics-2023

A non-autonomous mega-extreme multistable chaotic system
Chaos, Solitons & Fractals-2023

Extreme multistability and extreme events in a novel chaotic circuit with hidden attractors
International Journal of Bifurcation and Chaos-2023

Coexisting attractors and multi-stability within a Lorenz model with periodic heating function
Physica Scripta-2023

The dynamics of a duopoly Stackelberg game with marginal costs among heterogeneous players
PLOS ONE-2023

Lower-dimensional simple chaotic systems with spectacular features
Chaos, Solitons & Fractals-2023

The impact of higher-order interactions on the synchronization of Hindmarsh–Rose neuron maps under different coupling functions
Mathematics-2023

Expanding the duopoly Stackelberg game with marginal costs into a multipoly game with lowering the burden of mathematical calculations: A numerical analysis
Chaos, Solitons & Fractals-2022

Oyster oscillator: A novel mega-stable nonlinear chaotic system
The European Physical Journal Special Topics-2022

Extreme multi-stability analysis of a novel 5D chaotic system with hidden attractors, line equilibrium, permutation entropy and its secure communication scheme
The European Physical Journal Special Topics-2020

A novel 5D chaotic system with extreme multi-stability and a line of equilibrium and its engineering applications: Circuit design and FPGA implementation
Iranian Journal of Science and Technology, Transactions of Electrical Engineering-2020

Coexisting infinitely many attractors in a new chaotic system with a curve of equilibria: Its extreme multi-stability and Kolmogorov–Sinai entropy computation
Advances in Mechanical Engineering-2019

A new hidden chaotic attractor with extreme multi-stability
AEU-International Journal of Electronics and Communications-2018

Extreme multi-stability: When imperfection changes quality
Chaos, Solitons & Fractals-2018

Conference Papers

Synchronization and chimera in a network of multistable memristive Hindmarsh-Rose models

The 29th National and 7th International Iranian Conference on Biomedical Engineering (ICBME 2022)

Book Chapters

Recent advances in chaotic systems and synchronization from theory to real-world applications
Elsevier-2019

Editorial Board Memberships

Scientific supervisor of the bioelectric section
Tapesh scientific-student journal affiliated with the Scientific Association of the Department of Biomedical Engineering of Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, since 2023

Journal Referees

- AIMS Mathematics
- Applied Mathematical Modelling
- Chaos
- Chaos, Solitons and Fractals
- Computational Intelligence and Neuroscience
- Discrete Dynamics in Nature and Society
- Dynamics of Atmospheres and Oceans
- Frontiers in Network Physiology
- IEEE Transactions on Industrial Informatics
- International Journal of Bifurcation and Chaos
- International Journal of Electronics and Communications
- International Journal of Numerical Modelling
- Journal of Applied Nonlinear Dynamics
- Journal of the Franklin Institute
- Machine Learning: Science and Technology
- Mathematics
- Nonlinear Dynamics
- Physica A: Statistical Mechanics and its Applications
- Physica Scripta
- Plos One
- Scientific Reports
- The European Physical Journal B
- The European Physical Journal Plus
- The European Physical Journal Special Topics

Achievements

- Best reviewer of the International Journal of Bifurcation and Chaos in 2024
- Trusted reviewer of the Institute of Physics in 2024
- Distinguished PhD degree student, Department of Biomedical Engineering, Amirkabir University of Technology (Tehran Polytechnic)- Achieving the first rank among seven students
- Selected for the award to provide facilities to the top graduates of universities to continue their studies in PhD (Martyr Ahadi Award of the National Elites Foundation) in 2021
- Rank 4 in the semi-centralized entrance exam for PhD in 2021
- Rank 3 in the semi-centralized entrance exam for PhD in 2020
- Selected for the award to support the scientific and cultural activities of the country's talented students (Martyr Vezvaei Award of the National Elites Foundation) in the years 2018-2025
- Distinguished Master's degree student, Department of Biomedical Engineering, Amirkabir University of Technology (Tehran Polytechnic)- Achieving the first rank among 28 students
- Rank 102 on the foreign language entrance exam in 2014

Volunteer Experiences

A volunteer member of the Iranian Red Crescent Youth Organization since 2022