Curriculum Vitae (C.V.)

Masoud Amiri

Contact Addresses

Address: Tehran university of medical science, school of medicine, biomedical engineering department.

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Education

2020-2023: PhD on biomedical engineering

2015-2016: M.Sc. on Electrical Engineering (Electronics)

2006-2010: B.Sc. on Electrical Engineering (Electronics)

B.Sc. Thesis

Title: Design of Spirometry measurement device.

M.Sc. Thesis

Title: New de-synchronization method in a network of tripartite synapses through the control of processing system of zynq using the Programmable Logic.

PhD Thesis

Title: Recognition of intertwined patterns using biological spiking networks based on neuroreceptors

Publications Journals (Published)

[1] Amiri, M., & Nazari, S. (2024). Efficient hardware design of spiking neurons and unsupervised learning module in large scale pattern classification network. Engineering Applications of Artificial Intelligence, 137, 109255.
https://www.sciencedirect.com/science/article/abs/pii/S0952197624014131

[2] Nazari, S., & Amiri, M. (2025). An accurate and fast learning approach in the biologically spiking neural network. Scientific Reports, 15(1), 6585
https://www.nature.com/articles/s41598-025-90113-0

[3] Amiri, M., Jafari, A. H., Makkiabadi, B., & Nazari, S. (2022). Recognizing intertwined patterns using a network of spiking pattern recognition platforms. Scientific Reports, 12(1), 19436.

https://www.nature.com/articles/s41598-022-23320-8

[4] Amiri, M., Jafari, A. H., Makkiabadi, B., & Nazari, S. (2022). A Novel Unsupervised Spatial–Temporal Learning Mechanism in a Bio-inspired Spiking Neural Network. Cognitive Computation, 1-16.

https://link.springer.com/article/10.1007/s12559-022-10097-1

[5] Amiri, M., Jafari, A. H., Makkiabadi, B., Nazari, S., & Van Hulle, M. M. (2023). A novel un-supervised burst time dependent plasticity learning approach for biologically pattern recognition networks. Information Sciences, 622, 1-15.https://www.sciencedirect.com/science/article/abs/pii/S0020025522014852

[6] Amiri, M., Makkiabadi, B., Jafari, A. H., & Nazari, S. (2022). A New Brain-Machine Interface Algorithm Based on Neural Firing: A Study Based on Modeling. Journal of Neurodevelopmental Cognition, 5(1), 38-54.

https://jncog.sbu.ac.ir/index.php/researchejuridique/article/view/article_103011.html

[7] Amiri, M., Nazari, S., Jafari, A. H., & Makkiabadi, B. (2023). A new full closed-loop brain-machine interface approach based on neural activity: A study based on modeling and experimental studies. Heliyon, 9(3).https://www.cell.com/heliyon/pdf/S2405-8440(23)00973-8.pdf

[8] Nazari, S., Amiri, M., Faez, K., & Van Hulle, M. M. (2020). Information Transmitted From Bioinspired Neuron-Astrocyte Network Improves Cortical Spiking Network's Pattern Recognition Performance. IEEE transactions on neural networks and learning systems.

https://ieeexplore.ieee.org/abstract/document/8685782

[9] Amiri, M., Nazari, S., & Faez, K. (2019) Digital Realization Of The Proposed Linear Model Of The Hodgkin-Huxley Neuron. *International Journal of Circuit Theory and Applications*.

https://onlinelibrary.wiley.com/doi/abs/10.1002/cta.2596

[10] Amiri, M., Nazari, S., & Janahmadi, M. (2018). Digital configuration of astrocyte stimulation as a new technique to strengthen the impaired astrocytes in the tripartite synapse network. Journal of Computational Electronics, 17(3), 1382-1398.

https://link.springer.com/article/10.1007/s10825-018-1207-8

[11] Amiri, M., Amiri, M., Nazari, S., & Faez, K. (2016). A new bio-inspired stimulator to suppress hyper- synchronized neural firing in a cortical network. *Journal of Theoretical Biology*, *410*, 107-118.

https://www.sciencedirect.com/science/article/pii/S0022519316302958

[12] Nazari, S., Amiri, M., Faez, K., & Amiri, M. (2015). Multiplier-less digital implementation of neuron–astrocyte signalling on FPGA. *Neurocomputing*, *164*, 281-292.

https://www.sciencedirect.com/science/article/pii/S0925231215001903

[13] Piri, M., Amiri, M., & Amiri, M. (2015). A bio-inspired stimulator to desynchronize epileptic cortical population models: a digital implementation framework. Neural Networks, 67, 74-83.https://www.sciencedirect.com/science/article/pii/S0893608015000398

[14] Shobiri, E., Amiri, M., Haghighat, M. J., Piri, M., Izadi, B., Nazari, S., ... & Najafi, F. (2016). The diagnostic value of impedance imaging system in patients with the breast mass. Journal of Kermanshah University of Medical Sciences, 19(7), 427-435.

https://www.ingentaconnect.com/content/doaj/22519068/2016/00000019/00000007/art00007

[13] Amiri, M., & Nazari, S. (2024). Efficient hardware design of spiking neurons and unsupervised learning module in large scale pattern classification network. *Engineering Applications of Artificial Intelligence*, *137*, 109255.

https://www.sciencedirect.com/science/article/abs/pii/S0952197624014131

[14] Nazari, S., & Amiri, M. (2025). An accurate and fast learning approach in the biologically spiking neural network. *Scientific Reports*, *15*(1), 6585.

https://www.nature.com/articles/s41598-025-90113-0

Honors

- Received 5 patents certificate in “2010”, “2013”, “2014”, “2014”, “2016” respectively.
- Publishing a book ” Universities of the future, four speeches about higher education” with the financial support of the Ministry of Health and Medical Education (2020).
- Obtaining the 3rd rank in the biomedical engineering PhD entrance exam (2020).
- Obtaining the 1rd rank among incoming biomedical engineering doctoral students (2020-2023).
- Outstanding National Research Student of the Ministry of Health in 2022
- Top Research Student of Tehran University of Medical Sciences in 2022
- Top Student Thesis of Tehran University of Medical Sciences 2022
- National Selection of the National Science to Action Festival
- Winner of the National Elite Foundation's Prosperity Festival Award
- Winner of the Alborz National Award (2025)
- A talented student of the Tehran University of Medical Science (2020-2023)
- Candidate of student yearbook, (2016). “Everything we need to know about an inventor and an invention” from “Publications (SID) of Tehran University”.
- Top question designer in Kermanshah, Iran (2011).
- Outstanding teacher in Kermanshah in the field of electronics (2012).

Membership

- Activity as a referee in the patent Office of Iran.
- Activity as a referee in the ISI Journals.
- Member of the National Elites Foundation from 2010.
- Activity as a referee in the INSF (Iran National Science Foundation) institute.

Research Interests

- Computational neuroscience
- Neural Engineering
- Artificial intelligence
- Neuromorphic Engineering
- FPGA Digital Circuits design
- Brain Machine Interface
- Neural Networks

Languages

Persian: native

Kurdish: native

English: Reading, Listening, Speaking, Writing

Computer Skills

Programming Languages

C , C++, Python, Basic, Verilog, VHDL.

Scientific Software

MATLAB, Modelsim, ISE, Visual Studio, Nengo.

OS

Microsoft Windows, Linux

Typography

Microsoft Office, Latex

References

Dr. Karim Faez (MSC Advisor)

Full Professor of Amirkabir University of Technology, Tehran, Iran (EE Department)

Email: kfaez@aut.ac.ir

Dr. Mahyar Janahmadi (MSC Advisor)

Full Professor of Physiology, Department of Physiology and Neuroscience Research Center, Faculty of Medicine, Shaheed Beheshti Medical Sciences University, Tehran, Iran.

Email: mjanahmadi@yahoo.com

Dr. Amir Homayoun Jafari (PhD Supervisor)

Full Professor of the Department of Medical Physics and Biomedical Engineering, School of Medicine, Tehran University of Medical Science (TUMS), Tehran, Iran

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Dr. Bahador Makkiabadi (PhD Supervisor)

Associate Professor of the Department of Medical Physics and Biomedical Engineering, School of Medicine, Tehran University of Medical Science (TUMS), Tehran, Iran

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Dr. Soheila Nazari (PhD & MSC Advisor)

Assistant Professor of Shahid Beheshti University, Tehran, Iran (EE Department)

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