

Mehrnaz Monajati

Assistant Professor

Graduate University of Advanced Technology, Kerman, Iran

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Research Interests

Digital Circuit Design
VLSI, Computer Architectures
Incorporating AI algorithms into VLSI designs
Approximate Computing
Enhancing AI hardware reliability through approximate computing
Hardware implementation of image processing algorithms
Low power, real-time, and fault-tolerant design of CMOS nanoscale circuits

Education

Ph.D.: Tarbiat Modares University

Tehran, Iran

Major: Electrical Engineering, Electronics (Circuit and Systems)
Thesis: Approximate Computing in Image Processing Considering Reliability
Supervisors: [Dr. S.M. Fakhrai](#), [Prof. E. Kabir](#)

June 2015

M.Sc.: Tarbiat Modares University

Tehran, Iran

Major: Electrical Engineering, Electronics (Circuit and Systems)
Thesis: Design and Implementation of ASIC chip for Image Moment Computing
Supervisor: [Prof. E. Kabir](#)
Advisor: [Dr. A. Nabavi](#)

B.Sc.: Shahid Bahonar University

Kerman, Iran

Major: Electrical Engineering, Electronics
Thesis: Design and Implementation of FSK Modem

Honors and Awards

Ranked 4th among more than 500 students in the PhD Entrance Exam of the Electronic Engineering, 2009. Tarbiat Modares University
Tehran, Iran

Ranked 2nd in Electronics Major in the Faculty of Electrical and Computer Engineering at the end of B.Sc. Program, 2003. Shahid Bahonar University
Kerman, Iran

Selected Graduate Courses

CMOS analog integrated circuit design
VLSI System Design
Theory and Technology of Semiconductor Fabrication
VHDL

Reviewer

Journals

IEEE Transactions on Circuits and Systems II: Express Briefs
IET Circuit, Device and Systems

Microelectronics Journal
 IET Image Processing Journal
 International Journal Of Coastal, Offshore And Environmental Engineering (IJCOE)
 Integration, the VLSI Journal
 Machine Vision and Image Processing Journal (JMVIP)

Conferences

Reviewer of 5 th -7 th Iranian International Conference on Microelectronics	October 2023-2025
Reviewer and session chairman in 13 th Iranian Student Conference on Electrical Engineering (ISCEE), Tarbiat Modares University	Tehran, Iran Sep. 2010
Reviewer and session chairman in 15 th Iranian Student Conference on Electrical Engineering (ISCEE), PNU	Mashhad, Iran Sep. 2015
Reviewer and session chairman in 15 th Iranian Student Conference on Electrical Engineering (ISCEE), Sharif University of Technology, International Campus – Kish Island	Kish Island, Iran Sep. 2014
Reviewer of 16 th Iranian Student Conference on Electrical Engineering (ISCEE)	Kazerun, Iran Sep. 2013
Reviewer and session chairman in 2 nd Intel. Conference on E-Citizen & Cellphone (ICECC).	Tehran, Iran Jan. 2012
Reviewer of 1 st International Electrical Engineering Conference (IEEC)	Isfahan, Iran Oct. 2012
Reviewer and session chairman in 15 th Iranian Student Conference on Electrical Engineering (ISCEE), University of Kashan.	Kashan, Iran Aug. 2012
Reviewer of National Congress on Electrical, Computer and Information Technology Engineering (CECIT), Khayyam Higher Education Institute	Mashhad, Iran Nov. 2012
Reviewer and session chairman in 14 th Iranian Student Conference on Electrical Engineering (ISCEE), Kermanshah University of Technology.	Kermanshah, Iran Sep. 2011

Publications

1. S. Akbari, **M. Monajati**, "The Role of Cloud Computing in Optimizing the Performance of BMS Systems in Port and Offshore Infrastructures," *Iranian Journal of Oceanography Research*, pp. 118–139, Vol. 16, No. 61, Winter 2026. (in Farsi)
2. S. Akbari, **M. Monajati**, "Design of a Low-Power, High-Stability Phase-Locked Loop at 2.45 GHz," *Iranian Journal of Electrical and Computer Engineering*, pp. 58–68, Vol. 23, No. 1, Spring 2026. (in Farsi)
3. A. Shafiei, **M. Monajati**. "Efficient and Lightweight IoT Security Using CNTFET-Based Ultra-Low Power SRAM-PUF." *AUT Journal of Electrical Engineering* (2024).
4. **M. Monajati**, "Underwater Image Enhancement Using FPGA-Based Gaussian Filters with Approximation Techniques." *International Journal Of Coastal, Offshore And Environmental Engineering (IJCOE)* vol. 8, no. 4, pp. 49-58, 2023.
5. **M. Monajati**, "Hardware-Accelerated Image Moment Computation for UUV Navigation." *International Journal Of Coastal, Offshore And Environmental Engineering (ijcoe)*, Articles in Press (2024).

6. **M. Monajati**, "A Novel Approach to Image Moment Computation for Sonar Image Registration in Underwater Vehicle Autonomy." *International Journal Of Coastal, Offshore And Environmental Engineering (IJCOE)* , Articles in Press (2024).
7. **M. Monajati** and E. Kabir, "A Modified Inexact Arithmetic Median Filter for Removing Salt-and-Pepper Noise From Gray-Level Images," in *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 67, no. 4, pp. 750-754, April 2020.
8. **Monajati, M.**, Fakhraie, S.M., and Kabir, E., "Approximate Arithmetic for Low-Power Image Median Filtering", *Circuits Syst. Signal Process.*, vol. 34, no. 10, pp. 3191-3219, 2015.
9. **Monajati, M.**, Fakhraie, S.M., and Kabir, E., 'Approximate Arithmetic for Low-Power Image Median Filtering', *Circuits Syst Signal Process*, Springer, 2015, 34, (10), pp. 3191-3219.
10. **M. Monajati**, E. Kabir, A. Nabavi, "Design and Implementation of Two Pipeline Structures for Real-Time Computation of High Order Image Moments in Gray Scale Images," *Iranian Journal of Electrical and Computer Engineering (IJECE)*, Vol. 6, No. 3, 2008, pp 227-234 (in Farsi)
11. S. Akbari, **M. Monajati**, "Intelligent Energy Consumption Optimization in Cloud-Based BMS Systems Using Digital Twin and Artificial Intelligence Approaches," *1st National Conference on Smartization in Industry*, Kerman, Iran, October 2025. (in Farsi)
12. A. Shafiei, **M. Monajati**, "Lightweight SRAM-PUF Identity Authentication for Edge Devices," *2024 32nd International Conference on Electrical Engineering (ICEE)*, Tehran, Iran, 2024, pp. 1-5, doi: 10.1109/ICEE63041.2024.10668027.
13. A. Shafiei, **M. Monajati**, "Ultra-Low Power SRAM-PUF for IoT Devices Based on CNTFETs," *2023 5th Iranian International Conference on Microelectronics (IICM)*, Tehran, Iran, 2023, pp. 86-90, doi: 10.1109/IICM60532.2023.10443207.
14. **Monajati, M.**, "High Performance Ladder Bridge Style Adder," In the Proc. of 7th International Conference on Interdisciplinary Researches in Electrical, Computer, Mechanical and Mechatronics Engineering, Tehran, Iran, Sep. 2022. (in Farsi)
15. **Monajati, M.**, Fakhraie, S.M., and Kabir, E., 'Design and Implementation of a Low Complexity Approximate Image Median Filter', *In the Proc. of 8th Iranian Conference on Machine Vision and Image Processing (MVIP'08)*, pp. 88-92, Zanzan, Iran, Sep. 2013. (in Farsi)
16. **Monajati, M.**, Fakhraie, S.M., and Kabir, E., 'Realization of Approximate Gaussian Filter with Improved Functionality for Noise Suppression', In the Proc. of 21st Iranian Conference on Electrical Engineering (ICEE2013), Mashhad, Iran, May. 2013. (in Farsi)
17. **M. Monajati**, E. Kabir, A. Nabavi, "Design and Implementation of a Systolic Array for Real-Time Computation of High Order Image Moments in Gray Scale Images," *In the Proc. of 4th Iranian Conference on Machine Vision and Image Processing (MVIP'06)*, pp. 1042-1049, Mashhad, Iran, Feb. 2006. (in Farsi)
18. **M. Monajati**, A. Nabavi, E. Kabir, "Design and Implementation of a Real-Time Computing Architecture for High-Order Moments of Two-Dimensional Grey-Level Image ," In *Proc. of IEEE International Conference on Computer, Information, and Systems Sciences, and Engineering (CISSE 06)*, USA, Nov. 2006

Master Theses

Supervisor

1. 2025, H. Kodoori, Title: Implementation and Evaluation of Noise Removal Methods for Electrocardiogram Signals.

2. 2025, E. Rahimpour, Title: Design of a Field-Effect Transistor-Based Biosensor for Cardiovascular Disease Detection and Integration with an IoT-Based Monitoring System.
3. 2025, M. R. Rezazadeh, Title: Efficient Design of FinFET-Based VLSI Circuits Using Optimization Algorithms.
4. 2024, M. Rezaei, Title: Design of an Efficient Approximate Adder for Internet of Things Applications.
5. 2024, A. Shafiee, Title: Effective hardware design of physical unclonable functions for IoT applications.
6. 2023, H. Amirinezhad, Title: Implementing an algorithm to improve image quality in adverse lighting conditions.
7. 2023, R. Ghalandari, Title: Efficient hardware implementation of artificial neural networks using approximate calculations.
8. 2022, H. Kahnooji, Title: Design and implementation of convolution operations using approximate calculations for image processing applications.
9. 2022, S. Akbari, Title: Design and simulation of a low power and stable phase-locked loop at 4.2 GHz.

Other Honors

- Ranked 3rd in the Ph.D. Entrance Exam, Tarbiat Modares University, Tehran, 2009
- Best Paper Award, 1st National Conference on Smartization in Industry, October 2025
- Best Paper Award, 5th Iranian International Conference on Microelectronics, November 2023