

Nabiollah Shiri

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Education:

Ph.D. , Electronics Engineering, University of Tabriz, Iran	2010-2018
M.Sc. , Electronics Engineering, University of Tabriz, Iran	2007-2010
B.Sc. , Electronics Engineering, Hakim Sabzevari University, Iran	2004-2007
Associate Degree , Electronics, Shiraz University, Iran	2002-2004

Research Experience

Supervisor and Head of the [BioIC](#) Research Lab **2018-Present**
Department of Electrical Engineering, IAU, Shiraz Branch, Shiraz, Iran
Project: Integrated Circuits for Bio Signal Processing
Supervisor: Dr. Nabiollah Shiri

Ph.D. Graduate Researcher **2010-2018**
Department of Electrical Engineering, University of Tabriz, Tabriz, Iran
Project: Design and Feasibility of Mechanical Energy Harvesters and Accumulators with Emphasis on Implantable Devices,
Supervisor: Dr. Hadi Veladi

M.Sc. Graduate Researcher **2007-2017**
Department of Electrical Engineering, University of Tabriz, Tabriz, Iran
Project: A Low-Power Pipeline ADC Design for Receiving Neural Signals,
Supervisor: Prof. Javad Frouchi

Journal Reviewer **2023-Present**
IEEE TCAS-II, Express Brief Journal

Research Interests **2007-Present**
Bioelectronics Integrated Circuits, Bio-Energy Harvesting, Biosensors, Analog Integrated Circuits, Digital Integrated Circuits, Low Power Design, Approximate Computing, Embedded System Design, Medical Signal Processing, Medical Image Processing, Fuzzy Controller, Mixed-Mode Integrated Circuits, ADC Error Correction Circuits and Algorithms

Professional Experience:

Assistant Professor , IAU, Shiraz Branch, Shiraz, Iran	2021-Present
Ph.D. Thesis Referee , Islamic Azad University, Shiraz Branch, Shiraz, Iran	2021-Present
Ph.D. Comprehensive Examination Committee , IAU, Shiraz Branch, Iran	2021-Present
Ph.D. Thesis Defense Supervisor , IAU, Shiraz Branch, Shiraz, Iran	2021-Present
M.Sc. Thesis Defense Supervisor , IAU, Shiraz Branch, Shiraz, Iran	2021-Present
Technical Committee of YREC First NCEE, IAU, Shiraz, Iran	2015
Manager of Opening Secretary of the YREC First NCEE, IAU, Shiraz, Iran	2015
Conference Referee of the YREC First NCEE, IAU, Shiraz, Iran	2015

Teaching Experience:

Assistant Professor , IAU, Shiraz Branch, Shiraz, Iran	2021-Present
Teaching Ph.D. Courses: Bioelectronics Circuits, Low Power Integrated Circuits, Advanced Analog Integrated Circuits (CMOS), Advanced Very Large Scale Integrated Circuits (Advanced VLSI Circuits)	
Teaching M.Sc. Courses: Analog Integrated Circuits (CMOS), Very Large Scale Integrated Circuit (VLSI Circuits), Advanced Digital Electronics, Radio Frequency Integrated Circuits (RFICs), Integrated Data Converters (A/D and D/A), VHDL, Advanced Engineering Mathematics, Theory and Manufacturing Technology of Semiconductor Devices, Fuzzy Controller, ASIC/FPGA Circuits	
Teaching B.Sc. Courses: Electronics-I, Electronics-II, Electronics-III, Pulse and Digital Circuits, Linear Control Systems	
Sessional Instructor , IAU, Shiraz Branch, Shiraz, Iran	2014-2018
Teaching B.Sc. Courses: Electronics-I, Electronics-II, Electronics-III, Electric Circuits-I, Electric Circuits-II, Pulse and Digital Circuits, Linear Control Systems, Electronics-I Lab, Electronics-II Lab, Linear Control Systems Lab, Electric Circuits-I Lab, Electric Circuits-II Lab	
Sessional Instructor , IAU, Science and Research Branch, Shiraz, Iran	2011-2014
Teaching B.Sc. Courses: Electronics-I, Electronics-II, Electronics-III, Electric Circuits-I, Electric Circuits-II, Pulse and Digital Circuits, Engineering Mathematics, Electronics-III Lab	

Miscellaneous:

Founder and Head of the Bioelectronics Integrated Circuits Lab, BioIC	2018-Present
Teaching Software Courses , IAU, Shiraz Branch, Iran	2011-Present
OrCAD, Proteus, Altium Designer, MATLAB, HSPICE, L-Edit, Electric VLSI, Cadence, ISE Design Suite - Xilinx, COMSOL Multiphysics	

Publications (34 Journals (30 Corresponding), 6 Conferences (3 Corresponding)), [Google Scholar](#)

Peer-Reviewed Journal Publications

- [1] Mehdi Hosseinpour, Nabiollah Shiri, Farshad Pesaran, “Realization of a high-efficient GDI-based 4:2 compressor for sum of absolute difference detection in image and signal processing”, *Computers & Electrical Engineering*, Volume 119, Part B, November 2024, 109580, <https://doi.org/10.1016/j.compeleceng.2024.109580>.
- [2] Roghayeh Rafieisangari, Nabiollah Shiri. A multi-adaptive neuro-fuzzy inference system with variable thresholds for heartbeat classification. *Artificial Intelligence in Health 2024*, 1(4), 43–60. <https://doi.org/10.36922/aih.3367>
- [3] Elham Esmaeili, Nabiollah Shiri, “An Efficient Approximate Multiplier with Encoded Partial Products and Inexact Counter for Joint Photographic Experts Group Compression”, *IET Circuits, Devices & Systems*, 17 October 2024, <https://doi.org/10.1049/2024/3314001>.
- [4] Mahmood Rafiee, Nabiollah Shiri, Mohsen Gharehkhani, Alexandra Pinto Castellanos, Ayoub Sadeghi, “Characterizing Parameter Variations for Enhanced Performance and Adaptability in 3 nm MBCFET Technology”, *Microelectronics Journal*, 16 July 2024, <https://doi.org/10.1016/j.mejo.2024.106338>.
- [5] Roghayeh Rafieisangari, Nabiollah Shiri, “A neural network-based error correction in the first-stage residue of pipelined analog to digital converters”, *International Journal of Circuit Theory and Applications*, 16 May 2024, <https://doi.org/10.1002/cta.4076>.
- [6] Elham Esmaeili, Nabiollah Shiri, Mahmood Rafiee, Ayoub Sadeghi, “A Multiplier-Free Discrete Cosine Transform Architecture Using Approximate Full Adder and Subtractor”, *IEEE Embedded Systems Letters*, 01 May 2024, <https://doi.org/10.1109/LES.2024.3395900>.
- [7] Mahsa Tahghigh, Nabiollah Shiri, “A new ripple carry adder structure based on a swing-boosted full adder for concurrent error correction in low-resolution pipeline analog-to-digital converters”, *International Journal of Circuit Theory and Applications*, February 2024, <http://dx.doi.org/10.1002/cta.3980>.
- [8] Hamidreza Rashidian, Nabiollah Shiri, “A sub-1 ppm/C dual-reference small-area bandgap reference comprising an enhanceable piecewise curvature compensation circuit”, *AEU - International Journal of Electronics and Communications*, February 2024, <http://dx.doi.org/10.1016/j.aeue.2023.155064>.
- [9] Seyedeh Fatemeh Deymad, Nabiollah Shiri, Farshad Pesaran, “Realized High-Performance Swing Compensator Approximate Reversible Full Adders Using Gate Diffusion Input Technique”, *Arabian Journal for Science and Engineering*, January 2024, <http://dx.doi.org/10.1007/s13369-023-08637-4>.

- [10] Marzieh Ghahramani, Nabiollah Shiri, “An adaptive neuro-fuzzy inference system optimized by genetic algorithm for brain tumour detection in magnetic resonance images”, IET Image Processing, January 2024, <http://dx.doi.org/10.1049/ipr2.13031>.
- [11] Seyedeh Fatemeh Deymad, Nabiollah Shiri, Farshad Pesaran, “High-efficient reversible full adder realized by dynamic threshold-based gate diffusion input logics”, Microelectronics Journal, October 2023, <http://dx.doi.org/10.1016/j.mejo.2023.105972>.
- [12] Forouzan Bahrami, Nabiollah Shiri, Farshad Pesaran, “An efficient Imprecise 4:2 Compressor Using Gate Diffusion Input Supplemented with Dynamic Threshold”, Journal of Southern Communication Engineering, December 2023, <https://sanad.iau.ir/en/Journal/jce/Article/869987>.
- [13] Mohammad N. Sharafi, Hamidreza Rashidian, Nabiollah Shiri, “A 38.5-fJ 14.4-ns Robust and Efficient Subthreshold-to-Suprathreshold Voltage-Level Shifter Comprising Logic Mismatch-Activated Current Control Circuit”, IEEE Transactions on Circuits and Systems II: Express Briefs, 2023, <https://doi.org/10.1109/TCSII.2023.3237083>.
- [14] Nabiollah Shiri, Ayoub Sedeghi, Mahmood Rafiee, “High-efficient and error-resilient gate diffusion input-based approximate full adders for complex multistage rapid structures”, Computers and Electrical Engineering, Volume 109, Part A, July 2023, 108776, <http://dx.doi.org/10.1016/j.compeleceng.2023.108776>
- [15] Forouzan Bahrami, Nabiollah Shiri, Farshad Pesaran, “A New Approximate Sum of Absolute Differences Unit for Bioimages Processing”, IEEE Embedded Systems Letters, <https://doi.org/10.1109/LES.2023.3245020>.
- [16] Forouzan Bahrami, Nabiollah Shiri, Farshad Pesaran, “Imprecise Subtractor Using a New Efficient Approximate-Based Gate Diffusion Input Full Adder for Bioimages Processing”, Computers and Electrical Engineering, Volume 108, May 2023, <http://dx.doi.org/10.1016/j.compeleceng.2023.108729>.
- [17] Ayoub Sadeghi, Razieh Ghasemi, Hossein Ghasemian, Nabiollah Shiri, “Efficient and optimized approximate GDI full adders based on dynamic threshold CNTFETs for specific least significant bits”, Volume 24, Number 4, pp 599-616, May 2023, <http://doi.org/10.1631/FITEE.2200077>.
- [18] Elham Esmaeili, Farshad Pesaran, Nabiollah Shiri, “A high-efficient imprecise discrete cosine transform block based on a novel full adder and Wallace multiplier for bioimages compression”, International Journal of Circuit Theory And Applications, 2023, <https://doi.org/10.1002/cta.3551>.
- [19] Fatemeh Pooladi, Farshad Pesaran, Nabiollah Shiri, “Efficient GDI-based approximate subtractors for change detection in bio-image processing applications”, Microelectronics Journal, 2023, <https://doi.org/10.1016/j.mejo.2023.105757>
- [20] Ayoub Sadeghi, Nabiollah Shiri, Mahmood Rafiee, Abdolreza Darabi, Ebrahim Abiri, “Voltage Over-Scaling CNT-Based 8-Bit Multiplier by High-Efficient GDI-Based Counters”, IET Computers and Digital Techniques, Volume 17, Issue 1, 2023, pp 1-19, <https://doi.org/10.1049/cdt2.12049>.
- [21] Marzieh Ghahramani, Nabiollah Shiri, “Brain tumour detection in magnetic resonance imaging using Levenberg–Marquardt backpropagation neural network”, IET Image Processing, Volume 17, Issue 1, 2023, pp 88-103, <https://doi.org/10.1049/ipr2.12619>.

- [22] Mahmood Rafiee, Nabiollah Shiri, Ayoub Sadeghi, Abdolreza Darabi, Ebrahim Abiri, “Low-Power and Fast-Swing-Restoration GDI-Based Magnitude Comparator for Digital Images Processing”, *Circuits, Systems, and Signal Processing*, Volume 41, Issue 9, 2022, pp 4848–4885, <https://doi.org/10.1007/s00034-022-01997-6>.
- [23] Ayoub Sadeghi, Nabiollah Shiri, Mahmood Rafiee, Rahim Ghayour, “Tolerant and low power subtractor with 4:2 compressor and a new TG-PTL-float full adder cell”, *IET Circuits, Devices and Systems*, Volume 16, Issue 6, 2022, pp 437-460, <https://doi.org/10.1049/cds2.12117>.
- [24] Ayoub Sadeghi, Nabiollah Shiri, Mahmood Rafiee, Mahsa Tahghigh, “An efficient counter-based Wallace-tree multiplier with a hybrid full adder core for image blending”, *Frontiers of Information Technology & Electronic Engineering* Volume 23, Issue 6, pp 950-965, 2022, <https://doi.org/10.1631/FITEE.2100432>.
- [25] Nabiollah Shiri, Mahmood Rafiee, Ayoub Sadeghi and Rahim Ghayour “Characteristics Extraction of Fully Symmetric GAA and Top-Gate CNTFETs with 6 nm Channel Length”, *ECS Journal of Solid State Science and Technology*, Volume 11, Number 6, <https://iopscience.iop.org/article/10.1149/2162-8777/ac7613>.
- [26] Nabiollah Shiri, Ayoub Sadeghi, Mahmood Rafiee, Maryam Bigonah “SR-GDI CNTFET-based magnitude comparator for new generation of programmable integrated circuits”, *International Journal of Circuit Theory and Applications*, Volume 50, Issue 5, 2022, pp 1511-1536, <https://doi.org/10.1002/cta.3251>.
- [27] Ayoub Sadeghi, Raziieh Ghasemi, Hossein Ghasemian, Nabiollah Shiri, “High Efficient GDI-CNTFET-Based Approximate Full Adder for Next-Generation of Computer Architectures”, *IEEE Embedded Systems Letters*, 2022, <https://doi.org/10.1109/LES.2022.3192530>.
- [28] Mahmood Rafiee, Farshad Pesaran, Ayoub Sadeghi, Nabiollah Shiri, “An efficient multiplier by pass transistor logic partial product and a modified hybrid full adder for image processing applications”, *Microelectronics Journal*, 2021, <https://doi.org/10.1016/j.mejo.2021.105287>.
- [29] Mahmood Rafiee, Nabiollah Shiri, Ayoub Sadeghi, “High-Performance 1-Bit Full Adder with Excellent Driving Capability for Multistage Structures”, *IEEE Embedded Systems Letters*, August 2021, <https://doi.org/10.1109/LES.2021.3108474>.
- [30] Mahmood Rafiee, Yaqhoub Sadeghi, Nabiollah Shiri, Ayoub Sadeghi, “An approximate CNTFET 4:2 compressor based on gate diffusion input and dynamic threshold”, *Electronic Letter*, 57: 650-652, 2021, <https://doi.org/10.1049/ell2.12221>.
- [31] Armaghan Shirali, Nabiollah Shiri, “Diagnosis of brain tumours by MRI binarisation with variable fuzzy level”, *IET Image Processing*, Volume 14, Number 5, pp, 1-8, December 2020, <https://doi.org/10.1049/iet-ipr.2019.1209>.
- [32] Ayoub Sadeghi, Nabiollah Shiri, Mahmood Rafiee, “High-Efficient, Ultra-Low-Power and High-Speed 4:2 Compressor with a New Full Adder Cell for Bioelectronics Applications”, *Circuits, Systems, and Signal Processing*, 39, 6247–6275, 2020, <https://doi.org/10.1007/s00034-020-01459-x>.
- [33] Ayoub Sadeghi, Nabiollah Shiri, Mahmood Rafiee, Parisa Rahimi, “A low-power pseudo-dynamic full adder cell for image addition”, *Computers & Electrical Engineering*, Volume 87, 2020, <https://doi.org/10.1016/j.compeleceng.2020.106787>.

- [34] Nabiollah Shiri, Hadi Veladi, Hanieh Niroomand-Oscuii, “A New Rotational Stepwise Mechanical Energy Harvester for Biomedical Implants”, *Sensors and Materials* Volume 30, Number 6 (2), pp, 1319-13-32, June 2018, <https://doi.org/10.18494/SAM.2018.1740>.
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Conference Papers

- [1] Ayoub Sadeghi, Nabiollah Shiri, “An Ultra Efficient and Reliable TG-PTL Based Full Adder Cell”, The 5th International Conference on the New Horizons in the Electrical Engineering, Computer and Mechanical. Tehran, Iran, May 2020.
- [2] Ayoub Sadeghi, Nabiollah Shiri, “Tolerance Binary Comparator with Ultra-Power Saving Capability Based on Transmission Gate (TG) Technique”, 4th International Conference on Electrical Engineering, Computer Science and Information Technology, Hamadan, Iran, February 2020.
- [3] Ayoub Sadeghi, Nabiollah Shiri, “Small Area GDI Based Single Bit Magnitude Comparator with Low Power and High Speed”, 4th Conference on Electrical Engineering, Mechanical Engineering, Computer Science and Engineering, Delhi, India, January 2020.
- [4] Yaser Nemati, Nabiollah Shiri, Faramarz Samsami, “Three Different Structures for 4-Bit Digital Comparator”, 17th Iranian Student Conference on Electrical Engineering, ISCEE 2014, Kish Island, Iran, December 2014.
- [5] Nabiollah Shiri, Mazdak Rad Malekshahi, Hadi Veladi “Fault Tolerant Micromirror Actuated By a Set of ANN Controlled Microelectrode Array”, ACTUATOR, Bremen, Germany, June 2012.
- [6] Nabiollah Shiri, Javad Frounchi, Kuresh Ghanbari, “A new 8-Transistors Floating Full-Adder Circuit”, 20th Iranian Conference on Electrical Engineering (ICEE2012), May 2012.
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Supervision Experience

Ph.D. Supervisor: 7 Students, IAU, Shiraz Branch, Shiraz, Iran	2018-Present
M.Sc. Supervisor: 40 Students, IAU, Shiraz Branch, Shiraz, Iran	2018-Present
B.Sc. Supervisor: 70 Students, IAU, Shiraz Branch, Shiraz, Iran	2010-Present

Presentations

Oral

- A new 8-Transistors Floating Full-Adder Circuit, 20th Iranian Conference on Electrical Engineering, ICEE2012.
- Modelling of Pain Cell Transmitter Using MATLAB, IACEE2014.

Poster

- Three Different Structures for 4-Bit Digital Comparator, IACEE2014.
-

Skills and Qualifications

Software Skills: HSPICE (Professional), Cadence (Professional), L-Edit (Professional), ADS (Professional), COMSOL Multiphysics (Professional), Electric VLSI (Professional), ISE Design Suite - Xilinx (Professional), MATLAB (Professional), OrCAD (Professional), Proteus (Professional), Altium Designer (Professional), ANSYS (Professional), CorelDRAW (Professional), Word (Professional), Visio (Professional), Excel (Professional), C++

Language Skills: **Persian:** Native, **English:** Advanced, **German:** Intermediate

References

- Prof. Hadi Veladi**, Ph.D. Supervisor, Associate Professor of Electrical Engineering,
University of Tabriz, email: veladi@tabrizu.ac.ir, Phone: +98 914 317 0905
- Prof. Hanieh Niroomand-Oscuii**, Ph.D. Advisor, Professor of Biomedical Engineering, Sahand
University of Technology, niroomand@sut.ac.ir, Phone: +98 914 410 8640
- Prof. Javad Frounchi**, M.Sc. Supervisor, Professor of Electrical Engineering,
University of Tabriz, email: jfrounchi@tabrizu.ac.ir, Phone: +98 914 415 9112
- Prof. Rahim Ghayour**, Coworker, Professor of Electronics Engineering,
Shiraz University, email: rghayour@shirazu.ac.ir, Phone: +98 917 7055393
- Dr. Farshad Pesaran**, Coworker, Assistant Professor of Electronics Engineering,
Islamic Azad University, Shiraz Branch, farshad.pesaran@iau.ac.ir,
Phone: +98 917 7115781
- Dr. Amir Hossein Gheisari**, Coworker, Assistant Professor of Electronics Engineering,
Islamic Azad University, Shiraz Branch, amir.gheisari@iau.ac.ir,
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