Hossein Karimiyan Alidash

Electrical & Computer Department,
University of Kashan,
Kashan

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Education:

Post-Doc Research Fellowship, Polytechnic of Turin
Research Area: "**Process Variation and NBTI Aging Sensor Circuit Design**"
Polytechnic of Turin, Italy.

Ph. D. in Electrical Engineering,
Research Area: "**Low-Power Digital Design - State Retention Clocked Storage Elements**"
Isfahan University of Technology, Isfahan, Iran.

M.Sc. in Electronics Engineering
Isfahan University of Technology, Isfahan, Iran.
M.Sc. Thesis title: "***Application of Fuzzy Controller on DC-DC Converters***"

B.Sc. in Electronics Engineering,
Urmia University, Urmia, Iran.

Research Interests:

- Low-Power Digital Design
- Hardware Description/Verification Language: Verilog / System Verilog
- Implementation of Digital Signal Processing Blocks on FPGA
- Low-Voltage High-Current Power Supply Circuit
- Data Converter Design, ADC, DAC, and TDC
- ASIC Prototyping on Programmable Logic Device
- IP Design and Verification
- High Speed Digital PCB Design
- High Speed Computer Networking

Publication: **Journal Papers:**

1) Arjmandian, Mehnoush, Hossein Karamitaheri, and Hossein Karimiyan Alidash. "Zigzag graphene nanoribbon antidot lattice for local interconnect applications: a precise computational method." *Journal of Computational Electronics* (2022): 1-11.
2) Ghadiyani, Amir, and Hossein Karimiyan Alidash. "New Approach for Designing and Optimally Selecting the Parameters of Graphene nano-ribbon Transistors in the Presence of Process Variation." *ECS Journal of Solid State Science and Technology* 9, no. 12 (2020): 121012.
3) Kashani, Sayed Ali Seif, Hossein Karimiyan Alidash, and Hadi Shirvani Filabadi. "All-Graphene Nano-Ribbon FET Based Complete FPGA Design." *ECS Journal of Solid State Science and Technology* 9, no. 3 (2020): 031004.
4) Filabadi, Hadi Shirvani, and Hossein Karimiyan Alidash. "Graphene nanoribbon field-effect transistors-based digital general-purpose input/output block." *ECS Journal of Solid State Science and Technology* 9, no. 6 (2020): 061002.
5) M. Pakdel and H. Karimiyan Alidash, "Optimal fast digital error correction method of pipelined analog to digital converter with DLMS algorithm" Accepted for Soft Computing Journal, University of Kashan.
6) S. A. Seif Kashani, H. Karimiyan Alidash and S. Miryala, "Schottky-barrier graphene nanoribbon field-effect transistors-based field-programmable gate array's configurable logic block and routing switch," in *IET Circuits, Devices & Systems*, vol. 11, no. 6, pp. 549-558, 11 2017.
7) Kashani, Sayed Ali Seif; Alidash, Hossein Karimiyan; Miryala, Sandeep; "Design and Characterization of Graphene Nano-Ribbon Based D-Flip-Flop" Journal of Nanoelectronics and Optoelectronics, Volume 12, Number 6, June 2017, pp. 580-591(12)
8) Abbas Mahbod, Hossein Karimiyan, "Ultralow power, high fill factor smart complementary metal oxide semiconductor image sensor with motion detection capability," J. Electron. Imaging. 25(6) 063006 (23 November 2016)
9) H. K. Alidash, A. Calimera, A. Macii, E. Macii and M. Poncino, "On-chip process variation-tracking through an all-digital monitoring architecture," in *IET Circuits, Devices & Systems*, vol. 6, no. 5, pp. 366-373, Sept. 2012.
10) A. Mahbod, H. Karimiyan, "Power reduction, high fill factor smart in smart image sensor design with motion detection capability," J. Machine Vision and Image Processing, Vol. 2, pp. 19—34, 2016.
11) A. Saadatzade and H. Karimiyan, "Soft error resilient static latch with low delay and low power consumption" Soft Computing Journal, University of Kashan, Vol. 6, pp. 30—41.

Conference Papers

1) Z. Khojasteh, and Hossein Karimiyan, "Design and optimization of aging and process variation sensor", 24th National computer conference, Tehran, 2018.
2) A. Ghomi and Hossein Karimiyan, "Smart image sensor design for hardware processing window implementation targeted for IOT application", 24th National computer conference, Tehran, 2018.
3) Hossein Karimiyan,"Design, analysis, and testing of interface board for navigation system with self-test capability" International navigation conference, Tehran, 2016.
4) Abbas Mahbod, Hossein Karimiyan, " A Low Power, High Fill Factor Smart CMOS Image Sensor for Internet-of-Things Based Systems" 10th Conference on Machine Vision and Image Processing, Isfahan University of Technology, 2017.
5) A. S. Kashani, and H. Karimiyan, "Design and characterization of all-graphene logical configurable block for FPGA application" 21st National computer conference, Tehran, 2016.
6) A. Mahbod, H. Karimiyan, "A High Fill Factor, Power-Gated Smart Image Sensor with a Novel Efficient Simulation Methodology" 4th International conference on Applied Research in Computer Eng, and Processing, 2016.
7) A. Mahbod, H. Karimiyan, "Power reduction in Smart Image Sensor with detect and track capability" 9th Machine vision and image processing, 2015.
8) A. Saadatzade and H. Karimiyan, "Soft error resilient static latch with low delay and low power consumption" 20th National computer conference, Mashhad, 2014.
9) H. Karimiyan, "Design, analysis, and test of central processing board with high reliability", 2nd International avionic conference, 2013.
10) A. Saadatzade and H. Karimiyan, "Reliability analysis of aero-space systems against sub-atomic particle hit", 2nd International avionic conference, 2013.
11) Alidash, H. Karimiyan, Andrea Calimera, Alberto Macii, Enrico Macii, and Massimo Poncino. "On-Chip NBTI and PBTI Tracking through an All-Digital Aging Monitor Architecture." In *International Workshop on Power and Timing Modeling, Optimization and Simulation*, pp. 155-165. Springer, Berlin, Heidelberg, 2012.

Teaching Experiences:

- System Digital 2, University of Kashan
- Data Converter, University of Kashan
- VLSI Design, University of Kashan
- Advanced Digital Design, University of Kashan
- Digital Design, University of Kashan
- Computer Architecture, University of Kashan
- Microprocessor System Design, University of Kashan
- Electronic-I, University of Kashan
- Electronic-II, University of Kashan
- Electronic-III, University of Kashan
- Solid State Pulse Techniques, University of Kashan

Supervised Thesis

- Design and analysis of a smart image sensor with online windowing and extraction of key image information
- Design of voltage to time converter suitable for time to digital converters
- Optimizing Fractals Key Generation Using DSP48 Blocks on FPGA Architecture
- Design of storage element suitable for time-to-digital converters
- Design of Soft Error Resilient Sequential Elements in Digital Circuits
- Digital Error Correction for Pipeline Analog to Digital Converter
- Design and Optimization of Sampling Circuit in Low-Voltage Data Conversion Systems
- Design & Optimization of APS Cell in Low Power, Low Voltage Image Sensors
- Design and Optimization of Graphene based Scannable D-Flip-Flop
- Design of Vernier Time to Digital Converter With Tunable Resolution
- Implementation & Optimization of CORDIC Algorithm Using DSP48 Hardware Multiplier Block
- Design and Optimization of All Digital Process Variation and Aging Measurement Sensor
- Design and Simulation of Image Sensor Based on 2D Material and Comparison with the improved Geometry Detector
- Design and Optimization of I/O Block Based on Graphene Nano-Ribbon FETs (GNRFETs)
- Design of readout circuit for smart image sensor with the aim of hardware-level implementation of image processing filters
- Design and Simulation of Latch Circuit with Soft Error Tolerance and Low Power
- Design of smart sensor with digital on-chip processing capability of image processing filters

Projects

- Smart Image Sensor Design for IOT Application
- Cosmic Ray and Neutron Hit Effect on Electronics Integrated Circuit and Hardening Methods
- Study, design, and fabrication of SBC
- Study, design, and fabrication of Interface
- Design, implantation and test of submergible robotic system