

Navid Khoshavi Najafabadi

Computer Architecture Lab,
University of Central Florida
32816, Orlando, FL

Email Navid.khoshavi@knights.ucf.edu
Phone 407 437 0317

I. Research Interest

- Minimizing the Energy of Data Movement using Emerging Device Technologies
- Emerging Device utilization in Memory Hierarchy for Performance and Power Improvement
- Online Error Detection and Recovery in Multicore Processors
- Fault-tolerant Computer Architectures and Benchmarking
- Energy-efficient and High Performance Technologies in Circuits/Architecture-level

II. Education

- **University of Central Florida (UCF)** Orlando, FL
 Ph.D. Computer Engineering, Fall 2013-present
 Advisor: [Prof. Ronald F. DeMara](#) **GPA:** 4/4

- **Amirkabir University of Technology (Tehran Polytechnic)** Tehran, Iran
 M.Sc. Computer Engineering, 2009-2012
 Thesis: Present and Evaluate a Technique for Control-flow Error Recovery **GPA:** 17.84/20
 in Multicore Processors
 Advisor: [Prof. Hamid Reza Zarandi](#)

II. Work Experience

- UCF College of Engineering, Evaluation and Proficiency Tutor/Proctor/Coordinator (May 2015-Present)
- UCF ECE Department, Graduate Research Assistantship (Jan 2015- May 2015)
- UCF ECE Department, Graduate Teaching Assistantship (Jan 2014- Dec 2014)
 - Computer Organization & Design
- Graduate Teaching Assistantship, Sepahan Higher Education Institute (Sep 2008- May 2009)
 - Object Oriented Programming
 - Expert Systems
 - Internet Engineering

III. Presentations and Seminars

- Invited Presentation, NSF MIST I/UCRC Center Meeting, University of Florida, Orlando, FL, USA, 13 May, 2015.
- Organization member of Multi-functional Integrated System Technology (MIST) Center meeting, May 2015.
- Paper presentation, Reliability and Maintainability Symposium, Palm Harbor, FL, USA, 26 Jan - 29 Jan 2015.
- Organization member of Reliability and Maintainability Symposium, January 2015.
- Invited Presentation, NSF MIST I/UCRC Center Meeting, University of Florida, Gainesville, FL, USA, 12 Dec, 2014.
- Organization member of International Conference on Evolutionary Computation, December 2014.

IV. Relevant Course Work * top performing student

- Multicore Programming (COP 6616)*
- Distributed Systems
- Performance Models of Computer and Networks (CDA 6530)*
- CMOS Analog and Digital Circuit design (EEE 5378)*
- FPGA Design (EEL 5722C)*
- Current Topics in Parallel Processing (ECM 6308)*
- Advanced Computer Architecture

- Advanced Computer Networks
- Test and Testability Design
- Fault-Tolerant System Design*
- Full-Custom VLSI Design (EEE5390)*

V. Selected Projects

- Fall 2016, The Study of Transient Faults Propagation in Multithread Applications using LLFI (Advisor: Prfo. D. Dechev)
- Spring 2015, Research Project: Leveraging the Potential of STT-RAM-Based Hybrid Cache to Mitigate Core-memory Speed Gap (Advisor: Prof. Ronald F. DeMara)
- Fall 2013-Fall 2014, Research Project: Design and implementation an innovative architectural approach to mitigate BTI using HSPICE (Advisor: Prof. Ronald F. DeMara)
- Spring 2014, Full Custom VLSI Design, Design and implementation linear-feedback shift register (LFSR) using Cadence (Advisor: Prof. Yier Jin)
- Fall 2013, Field-Programmable Gate Array (FPGA), Design and implementation of a simple RISC CPU with Verilog (Advisor: Prof. Mingjie Lin)
- Summer 2010, Advanced Topic in Reliable System Design: Implementing and simulating two software-based control-flow error correction methods through considering the control and data flow graphs. (Advisor: Prof. H. R. Zarandi)
- Summer 2010, Test and Testability: Implementation of a D-Algorithm program for Automatic test pattern Generation with C++ (Advisor: Prof. S. Pourmozaffari).

VI. Publications

Technical Journals

- [1] **N. Khoshavi**, H. R. Zarandi, M. Maghsoudloo, "Two Control-flow Error Recovery Methods for Multithreaded Programs Running on Multi-core Processors", *Facta Universitatis, Series: Electronics and Energetics*, vol. 28, no. 3, pp. 309-323, 2015.
- [2] A. Roohi, R. F. DeMara, **N. Khoshavi**, "Design and Evaluation of an Ultra-Area-Efficient Fault-Tolerant QCA Full Adder," *Elsevier Journal of Microelectronics*, 2015.
- [3] M. Maghsoudloo, H. R. Zarandi, **N. Khoshavi**, "On-line Control-flow Error Detection and Correction based on Monitoring Both Data-flow and Control-flow Graphs," *The CSI Journal on Computer Science and Engineering*, vol. 10, no. 2 & 4 (b), pp. 10-19, 2012.
- [4] M. Maghsoudloo, H. R. Zarandi, **N. Khoshavi** "An Efficient Adaptive Software-Implemented Technique to Detect Control-Flow Errors in Multi-Core Architectures," *Elsevier Journal of Microelectronics Reliability*, vol. 52, Issue 11, pp. 2812-2828, 2012.

Technical Conferences

- [1] R. Ashraf, **N. Khoshavi**, A. Alzahrani, R. F. DeMara, S. Kiammehr and M. Tahoori, "Area-Energy Tradeoffs of Logic Wear-Leveling for BTI-induced Aging," *ACM International Conference on Computing Frontiers*, 2016, in-press.
- [2] X. Chen, **N. Khoshavi**, J. Zhou, D. Huang, R. F. DeMara, J. Wang, W. Wen and Y. Chen, "AOS: Adaptive Overwrite Scheme for Energy-Efficient MLC STT-RAM Cache," *53rd Design Automation Conference*, 2016, in-press.
- [3] X. Chen, **N. Khoshavi**, R. F. DeMara, J. Wang, W. Wen and Y. Chen, "A Selective Overwrite Scheme Mitigate Write Disturbance for Energy Efficient MLC STT-RAM," *Presented at the 2016 Non-Volatile Memories Workshop, March 06-08, 2016, San Diego, CA, USA*.
- [4] **N. Khoshavi**, X. Chen, J. Wang and R. F. DeMara, "Bit-Upset Vulnerability Factor for eDRAM Last Level Cache Immunity Analysis," *Proceedings of 17th International Symposium on Quality Electronic Design (ISQED 2016), Santa Clara, CA, USA, March 15 - 16, 2016*.
- [5] A. Roohi, R. F. DeMara, and **N. Khoshavi**, "Dual Computational Layer Based Logic Design for QCA Circuits" *presentation at DAC Work-in-Progress (WIP)*, 2015.

- [6] R. Ashraf, A. Al-Zahrani, **N. Khoshavi**, R. Zand, S. Salehi, A. Roohi, R. F. DeMara and M. Lin “Reactive Rejuvenation of CMOS Logic Paths using Self-Activating Voltage Domains,” *IEEE International Symposium on Circuits and Systems (ISCAS’15)*, pp. 2944 – 2947, 2015.
- [7] K. Zhang, **N. Khoshavi**, J. M. Alghazo, and R. F. DeMara, “Organic Embedded Architecture for Sustainable FPGA Soft-Core Processors,” *61st Reliability and Maintainability Symposium (RAMS’15)*, 2015.
- [8] **N. Khoshavi**, R. A. Ashraf, and R. F. DeMara, “Applicability of Power-Gating Strategies for Aging Mitigation of CMOS Logic Paths,” *IEEE 57th International Midwest Symposium on Circuits and Systems (MWSCAS’14)*, 2014.
- [9] **N. Khoshavi**, H. R. Zarandi, M. Maghsoudloo, “Two Control-flow Error Recovery Methods for Multithreaded Programs Running on Multi-core Processors,” *28th International Conference on Microelectronics (MIEL’12)*, Serbia, 2012.
- [10] **N. Khoshavi**, H. R. Zarandi, M. Maghsoudloo, "Control-Flow Error Recovery Using Commodity Multi-core Architecture Features," *17th IEEE International On-Line Testing Symposium (IOLTS’11)*, pp. 190-191, 2011.
- [11] M. Maghsoudloo, H. R. Zarandi, S. Pourmzaffari, **N. Khoshavi**, "Soft Error Detection Technique in Multi-threaded Architectures Using Control-flow Monitoring," *14th EUROMICRO Conference on Digital System Design Architecture, Methods and Tools (DSD’11)*, pp. 789-792, 2011.
- [12] **N. Khoshavi**, H. R. Zarandi, M. Maghsoudloo, “Control-Flow Error Detection Using Combining Basic and Program-Level Checking in Commodity Multi-core Architectures,” *6th IEEE Symposium on Industrial Embedded Systems (SIES’11)*, pp. 103-106, 2011.
- [13] M. Maghsoudloo, H. R. Zarandi, **N. Khoshavi**, “Low-Cost Software-Implemented Error Detection Technique,” *3rd International Symposium on Electronic System Design (ISED’11)*, India, 2011.
- [14] H. R. Zarandi, M. Maghsoudloo, **N. Khoshavi**, “Two Efficient Software Techniques to Detect and Correct Control-flow Errors,” *16th IEEE Pacific Rim International Symposium on Dependable Computing (PRDC’10)*, pp. 141-148, 2010.
- [15] M. Maghsoudloo, **N. Khoshavi**, H. R. Zarandi, “CCDA: Correcting Control-flow and Data Errors Automatically,” *15th International Symposium on Computer Architecture and Digital Systems (CADS’10)*, pp. 105-110, 2010.

VII. Educational Publications

- [1] R. F. DeMara, **N. Khoshavi**, S. Pyle, J. Edison, R. Hartshorne, B. Chen, M. Georgiopoulos, “Redesigning Computer Engineering Gateway Courses Using a Novel Remediation Hierarchy,” in *Proceedings of American Association for Engineering Education National Conference (ASEE-16)*, New Orleans, LA, USA, June 26 – 29, 2016.
- [2] R. F. DeMara, S. Salehi, **N. Khoshavi**, R. Hartshorne, B. Chen, “Strengthening STEM Laboratory Assessment Using Student-Narrative Portfolios Interwoven with Online Evaluation,” in *Proceedings of ASEE Southeast Section Conference*, Alabama, USA, 2016.

VIII. Professional Service

- Sub-reviewer for IEEE Computer Society Annual Symposium on VLSI (ISVLSI-2016)
- Reviewer for American Society for Engineering Education, 2015.
- Reviewer for IEEE Transactions on Computers, 2015.
- Reviewer for Journal of Circuits, Systems and Computers (World Scientific), 2012-2013.

IX. Computer Environment Familiarities

- Programming Languages
C/C++, Java, Python, 80x 86 and MIPS Assemblies
- Hardware Description Languages
Verilog
- Operating System
Linux/Unix, Windows
- CAD Tools

- Xilinx ISE, Cadence, HSPICE
- Full Computer Simulation Tools
MARSSX86, M5
- Memory Modeling Tool
NVSim, CACTI, DRAMSim2
- Fault Injection and Program Monitoring Tools
LLFI, GDB

X. Honors

- 2015 Iranian-American Community Center Scholarship for the 2015-2016 academic year.
 - This Scholarship is offered for 3 undergraduate and graduate students from Iranian descent that are enrolled full-time at a nationally accredited Florida college or university.
- 2015 David T. & Jane M. Donaldson Memorial Scholarship for the 2015-2016 academic year.
 - This Scholarship is offered for 4 graduate students from the UCF College of Engineering and Computer Science each year.
- 2015 SRE Hans Reiche Scholarship.
 - This Scholarship is offered for one College Student to attend RAMS conference each year.
- Ranked 174th among more than 13,000 participants in the Iranian nationwide university entrance exam for graduate studies in Computer engineering, 2009.
- Ranked 3rd among B.Sc. students of Computer Engineering, Sepahan Isfahan Higher Education Institute, Sepahanshahr, Iran, 2009.

XI. References

Prof. Ronald F. DeMara (My Advisor)	Professor of Computer Engineering University of Central Florida	ronald.demara@ucf.edu
Prof. J. S. Yuan	Professor of Computer Engineering University of Central Florida	yuanj@eecs.ucf.edu
Prof. Hamid R. Zarandi	Assistant Professor of Computer Engineering Amirkabir University of Technology	h_zarandi@aut.ac.ir