

Soheil Salehi

Curriculum Vitae

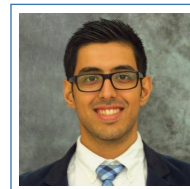
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Education

2014 – Present **Ph.D. Student**, *Computer Engineering*, EECS Department, University of Central Florida, Orlando, FL, GPA: 3.91.

2014 – 2016 **M.S.**, *Computer Engineering*, EECS Department, University of Central Florida, Orlando, FL.

2011 – 2014 **B.S. (Visiting Student)**, *Computer Engineering*, ECE Department, University of Tehran, Iran.

2009 – 2011 **B.S.**, *Computer Engineering*, ECE Department, Isfahan University of Technology, Iran.

M.S. Thesis

2016 **Thesis Title**: "*Towards Energy-Efficient and Reliable Computing: From Highly-Scaled CMOS Devices to Resistive Memories*".

B.S. Project

2014 **Project Title**: "*Design and implementation of an Autonomous Embedded System for Vehicles utilizing Wireless Sensor Networks*".

Research Experiences

2014 - Present **Graduate Research Assistant**, "COMPUTER ARCHITECTURE LAB.", Electrical Engineering and Computer Science Department, University of Central Florida, Orlando, Florida.

- Research Interests: Reconfigurable and Adaptive Computer Architectures, Spintronic-Based Computing Architectures, Low Power and Reliability-Aware VLSI circuits, Deep Sub-micron Technology Challenges, Evolvable Hardware, Intelligent Systems, IoT Devices and Applications.

2013-2014 **Undergraduate Research Assistant**, "ADVANCED ROBOTICS AND INTELLIGENT SYSTEMS LAB.", Electrical and Computer Engineering Department, University of Tehran, Tehran.

- Conducted Research on Rehabilitation Robotics: Hardware Design and implementation of Intelligent Robots for Early Detection and Treatment of Autism in Autistic Children.

Journal Publications

Technical Papers

- **S. Salehi**, N. Khoshavi, R. Zand, and R. F. DeMara, "SELF-ORGANIZED SUB-BANK SHE-MRAM-BASED LLC: AN ENERGY-EFFICIENT AND VARIATION-IMMUNE READ AND WRITE ARCHITECTURE," submitted to *The VLSI Integration Journal* (INVITED), 2017.
- **S. Salehi**, N. Khoshavi, and R. F. DeMara, "LEVERAGING PROCESS VARIABILITY FOR NON-VOLATILE CACHE RESILIENCE AND YIELD," submitted to *IEEE Transactions on Emerging Topics in Computing*, 2017.
- **S. Salehi**, D. Fan, and R. F. DeMara, "SURVEY OF STT-MRAM CELL DESIGN STRATEGIES: TAXONOMY AND SENSE AMPLIFIER TRADEOFFS FOR RESILIENCY," *ACM Journal on Emerging Technologies in Computing Systems*, vol. 13, no. 3, pp. 1-16, 2017.
- R. Zand, A. Roohi, **S. Salehi**, and R. F. DeMara, "SCALABLE ADAPTIVE SPINTRONIC RECONFIGURABLE LOGIC USING AREA-MATCHED MTJ DESIGN," *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 63, no. 7, pp. 678-682, 2016.

Educational Papers

- B. Chen, R. F. DeMara, **S. Salehi**, and R. Hartshorne, "ELEVATING LEARNER ENGAGEMENT AND OUTCOMES USING IN-SITU ONLINE FORMATIVE ASSESSMENT IN THE ENGINEERING LABORATORY: A VIABLE ALTERNATIVE TO WEEKLY LAB REPORTS," *IEEE Transactions on Education*, 2017.

Conference Publications

Technical Papers

- **S. Salehi**, and R. F. DeMara, "PROCESS VARIATION IMMUNE AND ENERGY AWARE SENSE AMPLIFIERS FOR RESISTIVE NON-VOLATILE MEMORIES," in Proceedings of *IEEE International Symposium on Circuits and Systems (ISCAS)*, Baltimore, Maryland, May 28-31, 2017.
- N. Khoshavi, **S. Salehi**, and R. F. DeMara, "VARIATION-IMMUNE RESISTIVE NON-VOLATILE MEMORY USING SELF-ORGANIZED SUB-BANK CIRCUIT DESIGNS," in Proceedings of *International Symposium on Quality Electronic Design (ISQED)*, Santa Clara, California, March 13-15, 2017. (Best Paper of the Session, Best Paper Award Nominee - top 10%)
- **S. Salehi**, and R. F. DeMara, "ENERGY AND AREA ANALYSIS OF A FLOATING-POINT UNIT IN 15NM CMOS PROCESS TECHNOLOGY," in *SoutheastCon 2015*, pp. 1-5, Fort Lauderdale, FL, USA, April 9-12, 2015.
- R. A. Ashraf, A. Al-Zahrani, N. Khoshavi, R. Zand, **S. Salehi**, A. Roohi, M. Lin, and R. F. DeMara, "REACTIVE REJUVENATION OF CMOS LOGIC PATHS USING SELF-ACTIVATING VOLTAGE DOMAINS," in Proceedings of *IEEE International Symposium on Circuits and Systems (ISCAS)*, pp. 2944-2947, Lisbon, Portugal, May 24-27, 2015.
- P. Soleiman, **S. Salehi**, M. Mahmoudi, M. Ghavami, H. Moradi, and H. Pouretemad, "ROBOPARROT: A ROBOTIC PLATFORM FOR HUMAN ROBOT INTERACTION, CASE OF AUTISTIC CHILDREN," in Proceedings of *Second RSI/ISM International Conference on Robotics and Mechatronics (ICRoM)*, pages 711-716, Tehran, Iran, October 15-17, 2014.

Educational Papers

- R. F. DeMara, **S. Salehi**, B. Chen, and R. Hartshorne, "GLASS: GROUP LEARNING AT SIGNIFICANT SCALE VIA WIFI-ENABLED LEARNER DESIGN TEAMS IN AN ECE FLIPPED CLASSROOM," in Proceedings of *ASEE National Annual Conference*, Columbus, Ohio, June 25-28, 2017.
- R. F. DeMara, **S. Salehi**, and S. Muttineni "EXAM PREPARATION THROUGH DIRECTED VIDEO BLOGGING AND ELECTRONICALLY-MEDIATED REALTIME CLASSROOM INTERACTION," in Proceedings of *ASEE SouthEastern Section Annual Conference*, March 13-15, 2016.
- R. F. DeMara, **S. Salehi**, N. Khoshavi, R. Hartshorne, and B. Chen, "STRENGTHENING STEM LABORATORY ASSESSMENT USING STUDENT-NARRATIVE PORTFOLIOS INTERWOVEN WITH ONLINE EVALUATION," in Proceedings of *American Society for Engineering Education Southeast Section Conference (ASEE-SE 16)*, Tuscaloosa, AL, USA, March 13-15, 2016.

Presentation/Participation in Conferences

- Presentation at IEEE ISCAS, Baltimore, MD, May 28-31, 2017.
- Presentation at ASEE National, Columbus, OH, June 25-28, 2017.
- Presentation at ASEE Southeastern, Tuscaloosa, AL, March 13-15, 2016.
- Presentation at IEEE SoutheastCon, Fort Lauderdale, FL, April 9-12, 2015.
- Participation in IEEE ISSCI, Orlando, FL, December 9-12, 2014.
- Invited Seminar Talk on the subject of Distributed Computing in the 2nd Models of Computation and Computational Models Seminar held by ACM Student Chapter, University of Tehran, Iran, 2012.

Teaching Experiences

- Training Course (Trainee) **Preparing Tomorrow's Faculty**, May 2015-August 2015, University of Central Florida.
- Creating and organizing course content and related documents
 - Writing a teaching philosophy statement
 - Identifying and discuss relevant issues in teaching and learning
 - Managing students' behavior through effective policies and expectations
 - Evaluating students' strengths related to teaching and learning
 - Constructing a teaching portfolio

- Course **Computer Organization and Design**, *Fall 2014 through Summer 2017*, University of Central Florida.
- Content Development
 - Worked closely with two faculty members in order to develop Syllabus, Projects, Lab assignments, Quizzes, Exams, and Course Contents in an innovative electronically-delivered format for about 100 students per semester
 - Developing a new method for lab assignments and lab assessments using Xilinx Basys2 FPGA boards
 - Designing and Preparing the course web page and online evaluation
- Lab Instructor **Computer Organization and Design**, *Fall 2014 through Summer 2017*, University of Central Florida.
 - Teaching weekly labs to about 100 students per semester; including grading of assignments
 - Designing and Preparing Projects, Lab Assignments and Lab Assessments
 - Using Mars Assembler and Xilinx ISE software and C/C++ and Verilog/VHDL Languages
 - Preparing Demos of different part of a Processor's RTL and Schematic design using Synopsys: Design Compiler
- Tutor **Electronics I**, *Spring and Fall 2013, Spring 2014*, University of Tehran.
 - Tutoring about 100 students per semester and solving their problems and answering to their questions during weekly sessions; including grading of assignments
 - Designing and Preparing Projects and Assignments
- Tutor **Theory of Formal Languages and Automata**, *Fall 2013, Spring 2014*, University of Tehran.
 - Tutoring about 75 students per semester and solving their problems and answering to their questions during weekly sessions; including grading of assignments
 - Designing and Preparing Projects and Assignments
- Tutor **Micro-Processors Interfacing (Interfacing Circuit Design)**, *Spring 2013, Spring 2014*, University of Tehran.
 - Tutoring about 75 students per semester and solving their problems and answering to their questions during weekly sessions; including grading of assignments
 - Designing and Preparing Projects and Assignments
 - Using AVR Studio and CodeVision AVR softwares and C and AVR assembly Languages
- Tutor **Micro-Processors**, *Fall 2013*, University of Tehran.
 - Tutoring about 75 students and solving their problems and answering to their questions during weekly sessions; including grading of assignments
 - Designing and Preparing Projects and Assignments
- Lab Instructor **Advanced Programming and Laboratory**, *Spring 2011*, Isfahan University of Technology.
 - Teaching Course Materials
 - Teaching weekly labs to about 100 students; including grading of assignments
 - Designing and Preparing Projects, Lab Assignments and Lab Assessments
 - Using Visual Studio and Qt Softwares and C/C++ Languages

Honors and Awards

- Invited to serve as the Graduate Student at Large to the Activity and Service Fee (A&SF) Budget Committee of the University of Central Florida, Fall 2016-Present.
- President of STUDENTS LAUREATES OF STEM TEACHING AND LEARNING (SLSTL) Registered Student Organization, Summer 2016-Present.
- Established STUDENTS LAUREATES OF STEM TEACHING AND LEARNING (SLSTL) as a Registered Student Organization, Summer 2016.
- Invited to serve as the Student Representative to the Teaching Incentive Program (TIP) Faculty Award Committee of the College of Engineering and Computer Science (CECS), Spring 2016-Present.
- Won the Award for Excellence by a Graduate Teaching Assistant in College of Graduate Studies of University of Central Florida Which was Ranked Largest Public University Campus by Enrollment During the 2015-2016 Academic Year, Spring 2016.
- Won the Award for Excellence by a Graduate Teaching Assistant in College of Engineering and Computer Science of University of Central Florida, Spring 2016.
- Won the Award for Excellence by a Graduate Teaching Assistant in Department of Electrical and Computer Engineering of University of Central Florida, Spring 2016.
- Elected to be the Chairman of Conference Registration and Travel (CRT) Committee at the Student Government Association Senate of University of Central Florida, Spring 2016-Fall 2016.
- Elected to be a Member of Conference Registration and Travel (CRT) Committee at the Student Government Association Senate of University of Central Florida, Fall 2016-Fall 2016.

- Elected to be a Senator at Student Government Association Senate of University of Central Florida, Fall 2015-Fall 2016.
- Worked closely with my advisor in order to prepare technical and educational proposals since Fall 2014.
- Refereed Paper for the IEEE Transactions on Circuits and Systems II: Express Briefs (TCAS-II), 2016.
- Refereed Paper for the IEEE Transactions on Nanotechnology (TNANO), 2016.
- Refereed Paper for the IEEE Computer Society Annual Symposium on VLSI (ISVLSI), 2015, 2016, and 2017.
- Refereed Paper for the IEEE Transactions on Computers (TC), 2015.
- IEEE Student Member, Since Spring 2015.
- Volunteering for IEEE International Symposium Series on Computational Intelligence, Orlando, FL, Fall 2014.
- Received a certificate of appreciation in recognition of completion of "Preparing Tomorrow's Faculty" Course, Summer 2015.
- Received a certificate of appreciation in recognition of contributions to the seminar of "Models of Computation and Computational Models", Fall 2012.
- Ranked among top 1.0% of approximately 300,000 participants in the nationwide university entrance exam in the field of Mathematics and Physics for BSc degree.
- Ranked among top 0.5% of approximately 110,000 participants in the nationwide university entrance exam in the field of Foreign Languages for BSc degree.

Technical and Language Skills

- 6 Years **"TannerEDA: L-Edit, S-Edit", "H-SPICE"**.
- 4 Years **"Visual Studio", "Altium Designer", "P-SPICE", "MultiSim", "ATMEL Studio", "CodeVision AVR", "Proteus", "Xilinx: ISE", "Quartus", "ModelSim"**.
- 2 Years **"Cadence: Virtouso, SoC Encounter", "Design Compiler", "Qt Creator", "MATLAB"**.

Programming Languages

- 4 Years **C, C++, Verilog, VHDL, Assembly**.

Languages

English (Fluent), Farsi/Persian (Native).

Internships

- Summer 2012 **Summer Intern**, IRANIAN EMBEDDED SYSTEMS CO., Tehran.
 - Study of TEXAS INSTRUMENTS WIRELESS SENSOR NETWORKS
 - Design and implementation of an Application Specific Wireless Sensor Network using TEXAS INSTRUMENTS CC2431 SoC
 - Design and implementation of a Graphical User Interface (GUI) for the designed device
 - Design and implementation of an interfacing board for XILINX VIRTEX5 FPGA board
 - Design and implementation of an interfacing board for XILINX SPARTAN3 FPGA board
 - Design and implementation of an Educational General Purpose Board (GPB) for the University of Tehran's Computer Workshop
 - Design and implementation of a Graphical User Interface (GUI) for the designed board

Industrial Experiences

- 2010 – 2013 **Technician**, PERSIAN TRONIX CO., Tehran.
Advanced Laptop Repairing and Troubleshooting (Both Hardware and Software)
- 2010 – 2014 **PCB Designer**.
Designing different types of Printed Circuit Boards (PCB) for different functionality and uses as a part-time job at the University of Tehran

Selected Academic Projects

Emerging Computing Devices

- Variation Immune and Energy Efficient Sense Amplifier Designs for Resistive Non-Volatile Memories.
- Layout Design of a Reconfigurable Spintronic-Based Look-Up Table.
- Analysis of Thermal Noise Effect on STT-MRAM Switching Characteristics
- Survey of Reliable Self-Referencing Designs for STT-RAM Cells
- Energy and Area Analysis of a Floating-Point Unit in 15nm CMOS Process Technology

Embedded Systems and Computer Architecture

- Pipeline, Single-cycle, and Multi-cycle implementation of MIPS processor using Verilog.
- Connecting personal computer to ATMEL AVR micro-controller board in order to control the temperature of a house using different options of micro-controller's interfaces.
- Design and implementation of an intelligent electronic door-lock system with a touch interface using ATMEL AVR micro-controllers.

VLSI Design

- Layout design and Tape-out of a 8x16 Reconfigurable Linear Feedback Shift Register (LFSR).
- Layout design of a Reconfigurable Spintronic-Based Look-Up Table.
- Familiarity with approximate computing circuits and Watermarking by virtue of study of the concepts of low-power and ultra-low-power design and finding the minimum energy point in the sub-threshold supply voltage region in 45nm technology.
- Layout design and simulation of a MIPS processor in 90nm technology using Design-Compiler, HSPICE, and SoC-Encounter.
- Monte Carlo Simulation of a Ripple Carry Adder using HSPICE.
- Simulating dynamic CMOS design of a circuit using HSPICE and ModelSim and extracting its Timing parameters and PVT corners with HSPICE through accurate simulation and back annotating them into more complex circuits in Verilog.
- Layout design of a 2 input XOR gate and a Carry Generator Circuit in 90nm technology using L-Edit and simulating it in HSPICE.
- Layout design of a Carry Generator circuit in 90nm technology using L-Edit and simulating it in HSPICE.
- Layout design and simulation of a 2-bit Equality Comparator Circuit in 90nm technology using L-Edit and HSpice.
- Layout design and simulation of a Simple Chip using S-Edit, L-Edit and HSPICE

Graduate Courses

- EEL5722: FPGA Design
- EEE5378: CMOS Analog and Digital Circuit Design
- ECM6308: Current Topics in Parallel Processing
- EEE6338: Advanced Topics in Microelectronics
- EEE5356: Fabrication of Solid State Devices
- EEL6938: Special Topics: Emerging Device Architecture
- EEE5390. Full-Custom VLSI Design
- EEL6364: Neuromorphic Computing Circuits
- EEL6938: Special Topics: Modeling and Analysis of Networked Cyber-Physical Systems