Sepideh Safari

Sepideh Safari received the MSc degree in computer engineering from [Sharif University of Technology](#), Tehran, Iran, in 2016. She received her Ph.D. degree under the supervision of Dr. Hessabi in computer engineering from the Sharif University of Technology in 2021. She was a visiting researcher in the [Chair for Embedded Systems (CES)](#), [Karlsruhe Institute of Technology (KIT)](#), Karlsruhe, Germany, from 2019 to 2021. She is now the postdoctoral researcher at the [Institute of Research for Fundamental Sciences (IPM)](#), Tehran, Iran, from January 2021-Present. Her research interests include scheduling of real-time systems, low-power/energy design of embedded and cyber-physical systems, fault-tolerant mixed-criticality systems, scheduling algorithms, and distributed multicore systems with a focus on dependability/reliability. She is the associate editor of Elsevier Microprocessors and Microsystems (MICPRO) journal from May 2022-present. She was a technical program committee (TPC) member of the Euromicro Conference on Digital System Design (DSD), 2022, and 2023. She has served as a reviewer in several international journals and conferences such as IEEE Transaction on Industrial Informatics (TII), IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD), IEEE Transactions on Sustainable Computing (TSUSC), IEEE Transactions on Very Large Scale Integration (VLSI) Systems, Elsevier Microprocessors and Microsystems (MICPRO), Journal of Systems Architecture (JSA), and the CSI Symposium on Real-Time and Embedded Systems and Technologies (RTEST).

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Experiences
- **Postdoctoral Fellow**, [Postdoctoral at Institute for Research in Fundamental Sciences (IPM)](#), Tehran, Iran, Jan. 2021-present.
- **Visiting Researcher**, [The Chair for Embedded Systems](#), [Karlsruhe Institute of Technology](#), Karlsruhe, Germany, Oct. 2019- Apr. 2021.

Education
- **September 2019 – April 2021**
  - **Visiting Researcher**
  - [The Chair for Embedded Systems](#), [Karlsruhe Institute of Technology](#), Karlsruhe, Germany.
  - **Research Title**: Resource Management in Embedded Systems
  - **Advisor:** [Prof. Jörg Henkel](#)

- **September 2016 - September 2021**
  - **Ph.D. in Computer Engineering**
  - Department of Computer Engineering, Sharif University of Technology, Tehran, Iran.
  - **Dissertation**: Joint energy and reliability management in mixed-criticality systems
  - **Advisor: Dr. Shaahin Hessabi**
  - **GPA= 19.92 (out of 20)**

- **2014 - 2016**
  - **M.Sc. in Computer Engineering (Computer System Architecture)**
  - Department of Computer Engineering, Sharif University of Technology, Tehran, Iran.
  - **Advisor:** Dr. Alireza Ejlali
  - **GPA= 19.83 (out of 20)**

- **2010 - 2014**
  - **B.Sc. in Computer Engineering (Computer System Architecture)**
  - Engineering Department, Shahed University, Tehran, Iran.
  - **Advisor:** Dr. Naser Mohammadzadeh
  - **GPA= 17.56 (out of 20)**

Research Interests
- **Cyber Physical Systems**
- **Embedded System Design**
- **Fault-Tolerant System Design**
- **Low-Power System Design**
- **Network on Chip & System on Chip**

Publications
Journal Papers

1. Mohsen. Ansari, **Sepideh. Safari**, Nezam. Rohbani, Alireza. Ejlali and Bashir. M. Al-Hashimi, "Power-Efficient and Aging-Aware Primary/Backup Technique for Heterogeneous Embedded Systems," in *IEEE Transactions on Sustainable Computing (TSUSC)*, 2023, doi: 10.1109/TSUSC.2023.3282164.

2. **Sepideh Safari**, Mohsen Ansari, Heba Khdr, Pourya Gohari-Nazari, Sina Yari-Karin, Amir Yeganeh-Khaksar, Shaahin Hessabi, Alireza Ejlali, and Jörg Henkel, "A Survey of Fault-Tolerance Techniques for Embedded Systems from the Perspective of Power, Energy, and Thermal Issues," *IEEE Access*, vol. 10, pp. 12229-12251, 2022, doi: 10.1109/ACCESS.2022.3144217.

3. Mohsen Ansari, **Sepideh Safari**, Heba Khdr, Pourya Gohari-Nazari, Jörg Henkel, Alireza Ejlali, and Shaahin Hessabi, "Power-Aware Checkpointing for Multicore Embedded Systems," *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, 2022, doi: 10.1109/TPDS.2022.3188568.

4. **Sepideh Safari**, Heba Khdr, Pourya Gohari-Nazari, Mohsen Ansari, Shaahin Hessabi, and Jörg Henkel, "TherMa-MiCs: Thermal-Aware Scheduling for Fault-Tolerant Mixed-Criticality Systems," in *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, vol. 33, no. 7, pp. 1678-1694, 01 July 2022, doi: 10.1109/TPDS.2021.3123544.

5. Mohsen Ansari, **Sepideh Safari**, Sina Yari-Karin, Pourya Gohari-Nazari, Heba Khdr, Muhammad Shafique, Jorg Henkel, Alireza Ejlali, "Thermal-Aware Standby-Sparing Technique on Heterogeneous Real-Time Embedded Systems," in *IEEE Transactions on Emerging Topics in Computing (TETC)*, 2021, doi: 10.1109/TETC.2021.3120084.

6. Hoora Sobhani, **Sepideh Safari**, Javad Saber-Latibari, and Shaahin Hessabi, "REALISM: Reliability-Aware Energy Management in Multi-Level Mixed-Criticality Systems with Service Level Degradation," *in Journal of Systems Architecture (JSA)*, 2021.

7. Amin Naghavi, **Sepideh Safari**, and Shaahin Hessabi, "Tolerating Permanent Faults with Low-Energy Overhead in Multicore Mixed-Criticality Systems," *in IEEE Transactions on Emerging Topics in Computing (TETC)*, vol. 10, no. 2, pp. 985-996, 01 April-June 2022, doi: 10.1109/TETC.2021.3059724.

8. Amir Yeganeh-Khaksar, Mohsen Ansari, **Sepideh Safari**, Sina Yari-Karin, and Alireza Ejlali, "Ring-DVFS: Reliability-Aware Reinforcement Learning-Based DVFS for Real-Time Embedded Systems," *IEEE Embedded Systems Letters*, vol. 13, no. 3, pp. 146-149, 2021, doi: 10.1109/LES.2020.3033187.

9. Mohsen Ansari, Mohammad Salehi, **Sepideh Safari**, Alireza Ejlali, and Muhammad Shafique, "Peak-Power-Aware Primary-Backup Technique for Efficient Fault-Tolerance in Multicore Embedded Systems," *IEEE Access*, vol. 8, pp. 142843-142857, 2020, doi: 10.1109/ACCESS.2020.3013721.

10. **Sepideh Safari**, Shaahin Hessabi, and Ghazal Ershadi, "LESS-MICS: A Low Energy Standby-Sparing Scheme for Mixed-Criticality Systems," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)*, vol. 39, no. 12, pp. 4601-4610, Dec. 2020, doi: 10.1109/TCAD.2020.2977063.

11. Mohsen Ansari, Amir Yeganeh-Khaksar, **Sepideh Safari**, and Alireza Ejlali, "Peak-Power-Aware Energy Management for Periodic Real-Time Applications," *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD)*, vol. 39, no. 4, pp. 779-788, April 2020, doi: 10.1109/TCAD.2019.2901244.

12. **Sepideh Safari**, Mohsen Ansari, Ghazal Ershadi, and Shaahin Hessabi, "On the Scheduling of Energy-Aware Fault-Tolerant Mixed-Criticality Multicore Systems with Service Guarantee Exploration," *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, vol. 30, no. 10, pp. 2338-2354, 2019, doi: 10.1109/TPDS.2019.2907846.

13. Mohsen Ansari, **Sepideh Safari**, Amir Yeganeh-Khaksar, Mohammad Salehi, and Alireza Ejlali, "Peak Power Management to Meet Thermal Design Power in Fault-Tolerant Embedded Systems," *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, vol. 30, no. 1, pp. 161-173, 1 Jan. 2019, doi 10.1109/TPDS.2018.2858816.

14. **Sepideh Safari**, Mohsen Ansari, Mohammad Salehi, and Alireza Ejlali, "Energy-Budget-Aware Reliability Management in Multi-Core Embedded Systems with Hybrid Energy Source," *The CSI Journal on Computer Science and Engineering (JCSE)*, vol. 15, no. 2, pp. 31-43, 2018.

15. Mohsen Ansari, **Sepideh Safari**, Farimah R.Poursafaei, Mohammad Salehi, and Alireza Ejlali, "AdDQ: Low-Energy Hardware Replication for Real-Time Systems through Adaptive Dual Queue Scheduling," *The CSI Journal on Computer Science and Engineering (JCSE)*, vol. 15, no. 1, pp. 31-38, 2017.

Conference Papers

1. Mohsen Ansari, **Sepideh Safari**, Amir Yeganeh-Khaksar, Roozbeh Siyadatzadeh, Pourya Gohari-Nazari, Heba Khdr, Muhammad Shafique, Jorg Henkel, and Alireza Ejlali, "ATLAS: Aging-Aware Task Replication for Multicore Safety-Critical Systems," 2023 *IEEE 29th Real-Time and Embedded Technology and Applications Symposium (RTAS)*, San Antonio, TX, USA, 2023, pp. 223-234, doi: 10.1109/RTAS58335.2023.00025.

2. Farimah R. Poursafaei, **Sepideh Safari**, Mohsen Ansari, Amir Yeganeh-Khaksar, Mohammad Salehi, and Alireza Ejlali, "Energy- and Reliability-Aware Task Replication in Safety-Critical Embedded Systems," *Proc. of the 4th Int'l of the CSI Symposium on Real-Time and Embedded Systems and Technologies (RTEST)*, 2022.

3. Hoora Sobhani, **Sepideh Safari**, and Shaahin Hessabi, "Energy- and Reliability-Aware Preference-Oriented Task Mapping and Scheduling in Multicore Mixed-Criticality Embedded Systems," *Proc. of the 24th International Computer Conference, Computer Society of Iran*, Tehran, Iran, 2019 (in Persian).

4. Zahra Shirmohammadi, Mohsen Ansari, Sanaz Kazemi, **Sepideh Safari**, and Seyed-Ghasem Miremadi, "PAM: a Packet Manipulation Mechanism for Mitigating the Crosstalk Faults in NoCs," *Proc. of the 13th IEEE Int'l Conference on Dependable, Autonomic and secure computing (DASC)*, Liverpool, England, October, 2015.

5. Farimah R.Poursafaei, **Sepideh Safari**, Mohsen Ansari, Mohammad Salehi, and Alireza Ejlali, "Offline Replication and Online Energy Management for Hard Real-Time Multicore Systems," *Proc. of the 1th Int'l of the CSI Symposium on Real-Time and Embedded Systems and Technologies (RTEST)*, Tehran, Iran, October, 2015.

6. **Sepideh Safari**, Mohsen Ansari, Zahra Shirmohammadi, and Seyed-Ghasem Miremadi, "The effects of Error Correction and Detection Codes on The Reliability Improvement of NoCs against Crosstalk Faults," *Proc. of the 7th Int'l Conference on Information and Knowledge Technology*, Urmia, Iran, May, 2015 (in Persian).

Honors and Awards

- Received the Dr. Chamran award (Postdoctoral position) from national elites' foundation of Iran, 2021.
- Elected as a national talent, Iran, 2016-present.
- Elected as the premier teacher assistant at Sharif University of Technology, 2017.
- Admitted to the Ph.D. program at Sharif University of Technology as an Exceptional Talented Student, 2016.
- Ranked 2nd among graduated Ph.D. students at Sharif University of Technology, 2021.
- Ranked 1st out of 1000 graduated Master's students at Sharif University of Technology, 2016.
- Ranked 1st among 42 graduated Master's students in computer architecture, computer engineering department, Sharif University of Technology, 2016.
- Admitted as an Exceptional Talented Student at Sharif University of Technology for M.Sc programs, 2014.
- Ranked 2nd among 37 graduated Bachelor's students in computer engineering, computer engineering department, Shahed University, 2014.

Professional Service

- Associate Editor of Microprocessors and Microsystems (MICPRO), Elsevier, May 2022-present.
- Digital System Design Conference (DSD 2022), Conference TPC Member.
- IEEE Transaction on Industrial Informatics (TII), Reviewer.
- IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, Reviewer.
- IEEE Transactions on Sustainable Computing (TSUSC), Reviewer.
- IEEE Transactions on Very Large Scale Integration (VLSI) Systems, Reviewer.
- The CSI Symposium on Real-Time and Embedded Systems and Technologies (RTEST), Reviewer.
- Microprocessors and Microsystems (MICPRO), Elsevier, Reviewer.
- Journal of Systems Architecture (JSA), Elsevier, Reviewer.

Students under my guidance

1. **Hoora Sobhani**, "Energy-Aware Task Mapping and Scheduling in Multicore Mixed-Criticality Embedded Systems," *Sharif University of Technology,* MSc Thesis, 2017-2019.
2. **Amin Naghavi**, "Reliability-Aware Energy Management for Mixed-Criticality Systems on Multicores," *Sharif University of Technology,* MSc Thesis, 2018-2020.
3. **Amirhasan Safizadeh**, "Energy-Aware Fault-Tolerant Mapping of Mixed-Criticality Tasks on Heterogeneous Multicore Systems," *Sharif University of Technology,* MSc Thesis, 2018-2020.
4. **Pourya Gohari-Nazari**, "Thermal Management in Fault-Tolerant Mixed-Criticality Multicore Systems," *Sharif University of Technology,* MSc Thesis, 2019-2021.
5. **Mohammad Hossein Taghavinia,** "Energy Management in Fault-Tolerant Mixed-Criticality Systems using Machine Learning," *Sharif University of Technology,* MSc Thesis, 2020-Present.
6. **Shayan Shokri**, "Energy-Aware Checkpointing in Mixed-Criticality Multi-Core Systems," *Sharif University of Technology,* MSc Thesis, 2021-Present.
7. **Mehrab Toghani,** "Energy- and Reliability-Aware Active Strategies for Mixed-Criticality Cyber-Physical Systems," *Sharif University of Technology,* MSc Thesis, 2022-Present.
8. **Sareh Maleki,** "Shared resource management of mixed-criticality multi-core systems," *Sharif University of Technology,* MSc Thesis, 2022-Present.
9. **Sahar Jafari,** *Sharif University of Technology,* MSc Thesis, 2023-Present.

10. **Ghazzal Ershadi,** *Sharif University of Technology,* BSc Thesis, 2019.
11. **Fatemeh Shokuhinia,** *Sharif University of Technology,* BSc Thesis, 2019.
12. **Ali Eslaminejad,** *Sharif University of Technology,* BSc Thesis, 2023.
13. **Hamed Rashidpour,** *Sharif University of Technology,* BSc Thesis, 2019.
14. **Mohammad Navid Tarighat,** *Sharif University of Technology,* BSc Thesis, 2023.
15. **Sajad Paksima,** *Sharif University of Technology,* BSc Thesis, 2023.

Teaching Experience

Graduate
- Teaching Assistant, System on Chip (Graduate), Sharif University of Technology, Department of Computer Engineering, Fall 2016 and Spring 2018, Dr. Shaahin Hessabi.
- Teaching Assistant, Testability (Graduate), Sharif University of Technology, Department of Computer Engineering, Spring 2016 and Fall 2017, Dr. Shaahin Hessabi.
- Teaching Assistant, Low Power System Design (Graduate), Sharif University of Technology, Department of Computer Engineering, Fall 2015 and Fall 2017, Dr. Alireza Ejlali.
- Teaching Assistant, Advanced VLSI Design (Graduate), Sharif University of Technology, Department of Computer Engineering, Spring 2017, Dr. Shaahin Hessabi.
- Teaching Assistant, Embedded System Design (Graduate), Sharif University of Technology, Department of Computer Engineering, Spring 2017, Dr. Alireza Ejlali.

Undergraduate
- Lecturer, Real-Time Systems (Undergraduate), Sharif University of Technology, Spring 2023.
- Teacher, Real-Time Systems (Undergraduate), Sharif University of Technology, Fall 2023.
- Teaching Assistant, Digital System Design (Undergraduate), Sharif University of Technology, Department of Computer Engineering, Fall 2015 and Fall 2018, Dr. Alireza Ejlali.
- Teaching Assistant, Numerical Methods (Undergraduate), Sharif University of Technology, Department of Computer Engineering, Fall 2018 and Fall 2019, Dr. Mohsen Ansari.
- Teaching Assistant, Advanced Logic Design (Undergraduate), Sharif University of Technology, Department of Computer Engineering, Spring 2018, Dr. Shaahin Hessabi.
- Teaching Assistant, Logic Design (Undergraduate), Sharif University of Technology, Department of Computer Engineering, Fall 2017 and Spring 2017, Dr. Shaahin Hessabi.
- Teaching Assistant, VLSI Design (Undergraduate), Sharif University of Technology, Department of Computer Engineering, Fall 2016 and Spring 2019, Dr. Shaahin Hessabi.
- Teaching Assistant, Digital System Design (Undergraduate), Sharif University of Technology, Department of Computer Engineering, Spring 2015, Dr. Naser Mohammadzadeh.

Lab Instructor
- Lab Instructor, Digital Design Lab, Sharif University of Technology, Department of Computer Engineering, Spring 2018.
- Lab Instructor, Logic Design Lab, Sharif University of Technology, Department of Computer Engineering, Spring 2019 and Summer 2019.
- Lab Instructor, Digital System Design Lab, Sharif University of Technology, Department of Computer Engineering, Summer 2018.
- Lab Instructor, Computer Architecture Lab, Sharif University of Technology, Department of Computer Engineering, Spring 2019.

Skills

- **Programming Languages:** C, C++ and Matlab
- **HDL:** Verilog, VHDL
- **Design, Synthesis and Simulation Tools:** Xilinx ISE, Quartus II, Synopsys Design Compiler, SOC Encounter, HSIM, IC Encounter, Hspice, Modelsim, Booksim
- **Operating Systems:** Windows, macOS and Linux

Selected Courses

- Graduate Course, Spring 2017 Wireless Networking (20/20) (Dr. Ali Mohammad Afshin Hemmatyar) (Ranked 1st)
- Graduate Course, Spring 2017 Computer Network Management (20/20) (Dr. Kambiz Mizanian) (Ranked 1st)
- Graduate Course, Fall 2016 On-Chip Communication (20/20) (Dr. Somayyeh Koohi) (Ranked 1st)
- Graduate Course, Fall 2016 Hardware Security & Trust (20/20) (Dr. Siavash Bayat-Sarmadi) (Ranked 1st)
- Graduate Course, Fall 2016 Interconnection Networks (19.6/20) (Prof. Hamid Sarbazi-Azad) (Ranked 2nd)
- Graduate Course, Fall 2015 Advanced VLSI (20/20) (Dr. Shaahin Hessabi) (Ranked 1st)
- Graduate Course, Spring 2015 Embedded System Design (20/20) (Dr. Alireza Ejlali) (Ranked 1st)
- Graduate Course, Spring 2015 System on Chip Design (20/20) (Dr. Shaahin Hessabi) (Ranked 1st)
- Graduate Course, Spring 2015 Advanced Topics in Dependable Computing Systems (20/20) (Prof. Seyed-Ghassem Miremadi) (Ranked 1st)
- Graduate Course, Fall 2014 Low Power System Design (20/20) (Dr. Alireza Ejlali) (Ranked 1st)
- Graduate Course, Fall 2014 Fault-Tolerant System Design (19.9/20) (Prof. Seyed-Ghassem Miremadi) (Ranked 3rd)
- Graduate Course, Fall 2014 Testability (18.5/20) (Dr. Shaahin Hessabi) (Ranked 5th)
- Undergraduate Course, Spring 2014 Digital Design by VHDL (Dr. Naser Mohammadzadeh) (19.13/20) (Ranked 2nd)
- Undergraduate Course, Fall 2013 Operating System (20/20) (Dr. Amin Mahabadi) (Ranked 1st)
- Undergraduate Course, Spring 2013 VLSI Design (19.6/20) (Dr. Naser Mohammadzadeh) (Ranked 1st)
- Undergraduate Course, Fall 2012 Computer Architecture (19.1/20) (Dr. Mohsen Nikray) (Ranked 3rd)
- Undergraduate Course, Fall 2012 Advanced Logic Circuits (20/20) (Dr. Naser Mohammadzadeh) (Ranked 1st)