In The Name of God, the Most High

Zahra Shirmohammadi
Ph. D.
Assistant Profossor
Computer Eng. Department, Shahid Rajaee Teacher Training University
Tehran, Lavizan
Contact: 09120934093
Shirmohammadi@sru.ac.ir
https://www.sru.ac.ir/shirmohammadi/

EDUCATION and Positions:

- **Assistant Prof, 2017-now**
- **Hardware Department Head, 2021-now**
- **Post Doc,** IPM, 2017-2018
- **Visiting Ph.D. Student:** Bologna University, Italy, 2016
- **Ph.D:** Sharif University of Technology (Computer Engineering) February 2011-March 2017. **GPA: 18.25/20**
  - **Dissertation Topic:** Crosstalk Fault Treatment in NoCs Using Data Manipulation
  - **Under Supervision of**: Prof. Seyed Ghassem Miremadi, Department of Computer Engineering Sharif University of Technology
- **Master of Science**, Sharif University of Technology: (Computer Engineering) September 2008-November 2010. **GPA: 17.34/20**
  - **Thesis Topic:** Reliability Improvement in Network-on-Chip Based on Switch Reconfiguration
  - **Under Supervision of**: Prof. Seyed Ghassem Miremadi, Department of Computer Engineering Sharif University of Technology

Interested research topics:

- Energy and Reliability Improvement in IOT
- Low Power Coding in WSN and WBAN
- Reliable and Energy Efficient Codings in Chips
- Sampling Methods for Energy Reduction of WSN and WBAN
- Compresstion Methods for Energy Reduction of WSN and WBAN
- Thermal routings Mechanisms in 3D NoCs

RESEARCH EXPERIENCES:

- **Visiting Ph. D Student**, DEIS-ARCES–University of Bologna, September 2016-March 2017.
- **Graduate Research Assistantship** with Prof. Seyed Ghassem Miremadi, Dependable Systems Laboratory (DSL), Department of Computing Engineering, Sharif University of Technology, 2009-Now

PUBLICATIONS

Journals

1. **Shirmohammadi, Z**., Miremadi, S. G., "On Designing an Efficient Numerical-based Forbidden Pattern Free Crosstalk Avoidance Codec for Reliable Data Transfer of NoCs," in *journal of Microelectronics Reliability, vol. 43, pp. 304-313, 2016.*
2. **Shirmohammadi, Z**., Miremadi, S. G., "An Efficient Numerical-Based Crosstalk Avoidance Codec Design for NoCs," *in Journal of Microprocessor and Microsystems*, *vol. 50, pp. pp. 127-13, 2017*.
3. Rohbani, N., **Shirmohammadi,** Z., Miremadi, S. G., "LAXY: A Location-Based Aging-Resilient Xy-Yx Routing Algorithm for Network on Chip," *in IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, vol. 36, no. 10, pp. 1725-1738, 2017*
4. **Shirmohammadi, Z**., Mahdavi, "An Efficient and Low Power One-Lambda Crosstalk Avoidance Code Design for Network on Chips," *in Journal of Microprocessor and Microsystems*, *vol. 78, pp. 110-117, 2019.*
5. **Shirmohammadi, Z.,** "OP-Fibo: An Efficient Forbidden Pattern Free CAC Design" *in* Journal of Integration, the VLSI Journal, *vol. 63, pp. 304-313,* 2019.
6. **Shirmohammadi,** Z., Ershadi*., "*AM3D: an Accurate Crosstalk Modeling to Predict Channel delay in 3D ICS," *in journal of Microelectronics Reliability, vol. 102, pp. 117-127, 2019.*
7. Mirbaha, E, **Shirmohammadi, Z.,** Rohbani, N "Increasing WSN Reliability by Increasing Transmission and Reducing Power Consumption" in *Journal of* Computer Science, 2020.
8. **Shirmohammadi, Z**., "A Mechanism to Tackle with Crosstalk Fault Effects," *in Journal of Electrical Engineering (TJEE*), 2020.
9. **Shirmohammadi, Z**., Asadinia,M. On-Fly-TOD: an Efficient Mechanism for Crosstalk Fault Reduction in WNoCs, *in* Journal of Supercomputing, 2020.
10. **Shirmohammadi, Z**., Khorrami, M, Omannda, ,M ST-CAC: a Low-cost Crosstalk Avoidance Coding Mechanism based on Three-valued Numerical System, *in* Journal of Supercomputing, 2021.
11. **Shirmohammadi, Z**., Farmani, Zamani Sabzi. H, , Priority Filt: A Way to Increase Network Reliability on Chip against Soft Error by Considering Multiple Bit Upset, in Computational Intelligence in Electrical Engineering 2021
12. **Shirmohammadi, Z**., Farmani, Reduce Disturbance Code: Reducing Energy Consumption in a 3D ICs by Applying Error Detecting and Correcting, in Electronics Industry 12 (2), 71-83, 2021
13. **Shirmohammadi, Z**., Farmani, Zamani Sabzi. H, ForSts: Tacit Collusion in the Repeated Non-Cooperative Games Using Forwarding N-Steps Reinforcement Learning Algorithm, in Computational Intelligence in Electrical Engineering 2021
14. Taali, M., **Shirmohammadi, Z**., A Numeral System Based Framework for Improved One-Lambda Crosstalk Avoidance Code Using Recursive Symmetry Formula, in Journal of Electronic Testing 37 (3), 2021.
15. **Shirmohammadi, Z**.,, MJ Mahmoudi, M Rostamnejad, Int-TAR: An Intelligent Thermal-Aware Packet Routing Algorithm for 3D NoCs, in J. Electr. Comput. Eng. Innovations, 10(1): 47-56, 2022.
16. **Safari, M, Shirmohammadi, Z**. Rohbani, N, Farbeh, . , LETHOR: a thermal-aware proactive routing algorithm for 3D NoCs with less entrance to hot regions, , *in* Journal of Supercomputing, 2022.
17. Mohammad Mirtaba, Mohammad Jeddi, Amirhossein Nikoofard**, Zahra Shirmohammadi,** Design and implementation of a low-complexity flight controller for a quadrotor UAV' in International Journal of Dynamics and Control, 2022.
18. Zahra Shirmohammadi, Yassin Allivand, Fereshteh Mozaffari, Ahmad Patooghy, Mona Jallal, Sanaz Kazemi, 'ReNo: novel switch architecture for reliability improvement of NoC,' in Journal of Supercomputing, 2022.
19. Zahra Shirmohammadi, Mojtaba Farmani, Mina Mohseni and Nezam Rohbani, 'A Cluster-Based Energy-Aware Routing Algorithm for Wireless Sensor Networks,' in Ad Hoc and Sensor Wireless Networks, 2022
20. Masoumeh Taali, Zahra Shirmohammadi, Mir sayed shah Danish, Mahdi Khosravy JCI-CAC: An Efficient Crosstalk Avoidance Code Considering Joint Capacitive and Inductive Effects, in IEEE Access, 2022
21. Zahra Shirmohammadi, Masoumeh Taali, Baseem Khan, Mahdi Khosravy UP-Down OLC: New One-Lambda Crosstalk Avoidance Code Design based on 5-Wire Model, in IEEE Access, 2022
22. Razieh Mohammmadi, Zahra Shirmohammadi, DRDC: Deep reinforcement learning based duty cycle for energy harvesting body sensor node, in Energy Reports 9 (0), 1707-1719.

Conferences

1. M. HajilooVakil, M. Javad Khani and **Z. Shirmohammadi,** "An Efficient Compression Method to Improve Energy Consumption in WBANs," *2021 7th International Conference on Web Research (ICWR)*, 2021, pp. 301-305, doi: 10.1109/ICWR51868.2021.9443125.
2. Zamani, H. , **Z. Shirmohammadi** and A. Jahanshahi, "Deflection-Aware Routing Algorithm in Network on Chip against Soft Errors and Crosstalk Faults," *2021 IEEE International Conference on Networking, Architecture and Storage (NAS)*, 2021, pp. 1-6,
3. Farmani, M, Nazeri, S**, Shirmohammadi, Z.**, "Mutated Fibonacci Coding Mechanism: Providing a Method to Increase Reliability in 3D Chip Networks,*" in Proceedings of 29th Conference on Electrical Engineering (ICEE 2021),* pp. 293-297, pp. 24-3, Iran, May 2021
4. **Shirmohammadi, Z.**,Taali, M., Zamani, H, "InduM: An Accurate Probability Inductance-based Model to Predict Delay in Chips,*"in Proceedings of 9th IEEE International Conference on Computer and Knowledge Engineering, (ICCKE'19),* pp. 293-297, pp. 24-30 Mashhad, Iran, October 2019.
5. **Shirmohammadi, Z.**,"An Efficient Floating Crosstalk Avoidance," *in Proceedings of Annual International CSI Computer Conference (CSICC'19),* pp. 24-30, Tehran, Iran, March 2019.
6. **H. Osooli, A. H. Nikoofard,"** Game Theory for Eye Robot Movement: Approach and Hardware Implementation,**"** *in Proceedings of the IEEE Iranian Conference on Computer Engineering (ICCE'19),* Yazd, Iran, May 2019.
7. M. Safari, **Z. Shirmohammadi**, N. Rohbani, and H. Farbeh **"**Floating XY-YX: An Efficient Thermal Management Routing Algorithm for 3D NoCs**,"** *in Proceedings of the IEEE International Conference on Dependable, Autonomic and Secure Computing (DASC'18),* Athens, Greece, August 2018.
8. **Shirmohammadi, Z.**," DR: Overhead Efficient RLC Crosstalk Avoidance Code*" in Proceedings of 8th IEEE International Conference on Computer and Knowledge Engineering, (ICCKE'18),* pp. 293-297, pp. 24-30 Mashhad, Iran, October 2018.
9. **Shirmohammadi, Z.**,"An Efficient Crosstalk Avoidance Code Considering Inductance Effects," *in Proceedings of Annual International CSI Computer Conference (CSICC'18),* pp. 24-30, Tehran, Iran, March2018.
10. **Shirmohammadi, Z,** Zamani, H., Miremadi, S. G., "3D-DyCAC: Dynamic Numerical-based Crosstalk Avoidance Mechanism for Reducing Crosstalk Faults in NoCs," *in Proceedings of IEEE International High Level Design Validation and Test Workshop (HLDVT '17),* pp. 87-90, Santa Cruz, CA, USA, October, 2017.
11. **Shirmohammadi, Z,** Miremadi, S. G., "SDT-free:An Efficient Crosstalk Avoidance Coding Mechanism Considering Inductance Effects "*in Proceedings of 7th IEEE International Conference on Computer and Knowledge Engineering, (ICCKE'17),* pp. 293-297, pp. 24-30 Mashhad, Iran, October 2017.
12. Safari, M., **Shirmohammadi, Z.**, Miremadi, "Increasing the Reliability of 3D-NoCs by Reducing Hot Reigns," to appear in *Proceedings of the International Conference on Computer Engineering, Computer Science and Information Technology (ICCE'17),* Hamadan, Iran, July 2017.
13. Tanhaee, E., **Shirmohammadi, Z.**, Miremadi, "A Mechanism for Reliability Improvement of Wireless NoCs," to appear in *Proceedings of the International Conference on Computer Engineering, Computer Science and Information Technology (ICCE'17),* Hamadan, Iran, July 2017.
14. **Shirmohammadi, Z.**, Miremadi, S. G., "An Efficient FOC Crosstalk Avoidance Code for Reliable Data Transfer of NoCs," *in Proceedings of Annual International CSI Computer Conference (CSICC'17),* pp. 33-39, Tehran, Iran, March, 2017.
15. **Shirmohammadi, Z.,** Miremadi, S. G., "3D-DPS: An Efficient 3D-CAC for Reliable Data Transfer in 3D ICs" in *Proceedings of the IEEE International European Dependable Computing Conference (EDCC'16),* pp. 409-413, Sweden, September 2016.
16. **Shirmohammadi, Z.,** Miremadi, S. G., Allivand, Y., Mozafari , F, "OmPe-Fibo: An Efficient Forbidden Pattern Free CAC Design for NoCs," in *Proceedings of the IEEE International Conference on Dependable, Autonomic and Secure Computing (DASC'16),* pp. 409-413, Auckland, New Zealand, August 2016.
17. **Shirmohammadi, Z.,** Mahdavi, Z, Miremadi, S. G., "ACM: Accurate Crosstalk Modeling to Predict Channel Delay in Network-on-Chips," in *Proceedings of the IEEE International Symposium on On-Line Testing and Robust System Design (IOLTS'16),* pp. 7-8, Catalonia, Spain, July 2016.
18. **Shirmohammadi, Z.**, Rohbani, N., Miremadi, S. G., "On The Effects of Aging on the Reliable routing in NoCs, "
19. in *Proceedings of the International Conference on Applications of intelligence systems in Electrical Engineering, Computer and Infor*mation *Technology, (ELECOM'16),* Tabriz , Iran, March 2016.
20. **Shirmohammadi, Z.**, Miremadi, S. G., "Inspecting the Fault Tolerance Routings in 3D-NoC," in *Proceedings of the International Conference on Applications of intelligence systems in Electrical Engineering, Computer and Information Technology, (ELECOM'16), pp. 30-36*, Tabriz , Iran, March 2016.
21. **Shirmohammadi, Z.**, Miremadi, S. G., "Inspecting the Fault Tolerance Routings in 3D-NoC" in *Proceedings of the International Conference on Computer and Knowledge Engineering, (ICCKE'16), pp. 51-58,* Hamadan, Iran, September 2016.
22. **Shirmohammadi, Z.**, Rohbani, N., Miremadi, S. G.,"Mitigating Crosstalk Effect by Considering Coefficient

of Tracks Inductance," in *Proceedings of the International Conference on Recent Innovations in Electrical & Computer Engineering, , pp. 43-53*, Tehran, Iran, September 2016

23. Nazari, R., Rohbani, N., Farbeh, H., **Shirmohammadi, Z.,** and Miremadi, S.G., "A2CM2: Aging-Aware Cache Memory Management Technique", in *Proceedings of the CSI Symposium on Real-Time and Embedded Systems and Technologies (RTEST'15)*, pp. 1-8*, Tehran, Iran, October 2015*.
24. **Shirmohammadi, Z.,** Ansari, M., Kazemian Abhari, S., Safari, S., Miremadi, S. G., "PAM: a Packet Manipulation Mechanism for Mitigating the Crosstalk Faults in NoCs," in *Proceedings of The IEEE International Conference on Dependable, Autonomic and Secure Computing (DASC-2015),* pp. 1895-1902, England, UK, October 2015.
25. Mirosanlou, R., Taram, M. K., **Shirmohammadi, Z.,** and Miremadi, S.G., "3DCAM: a Low Overhead Crosstalk Avoidance Mechanism for TSV-based 3D ICs," in *proceedings of IEEE International Conference on Computer Design (ICCD'15),* pp. 711-717, New York City, USA, October 2015.
26. **Shirmohammadi, Z.,** Miremadi, S. G., "Addressing NoC Reliability Through an Efficient Fibonacci-Based Crosstalk Avoidance Codec Design," in *Proceedings of The International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP 2015), pp. 756-770, China, November 18-20, 2015,*.
27. **Shirmohammadi, Z.,** Miremadi, S. G., "S2AP: An Efficient Numerical-based Crosstalk Avoidance Code For Reliable Data Transfer of NoCs," in *Proceedings of the International Symposium on Reconfigurable Communication-centric Systems-on-Chip (ReCoSoC '15),* pp.1-6, Bremen, Germany, July 2015.
28. Hezaveh, M. **Shirmohammadi, Z**., Rohbani, N., Miremadi, S. G. "A Fault-Tolerant and Energy-Aware Mechanism for Cluster-based Routing Algorithm of WSNs", in *Proceedings of the IFIP/IEEE Symposium on Integrated Network and Service Management (IM '15),* pp.11-15, Ottawa, Canada, May 2015
29. Ebrahimi, Z., **Shirmohammadi, Z.**, Miremadi, S. G., "Inspecting The Scalability of Optical-NoCs in The Present of Crosstalk Faults," in *Proceedings of Iranian Student Conference on Electrical Engineering (ISCEE '15*), pp. 55-62, Mashhad, Iran, November 2015.
30. Mahdavi, Z., **Shirmohammadi, Z.**, Miremadi, S. G., "Increasing the Reliability of NoCs Using Crosstalk Classification Mechanisms," in *Proceedings of Iranian Student Conference on Electrical Engineering (ISCEE '15),* pp. 12-19*,* Mashhad, Iran, November 2015.
31. Mahdavi, Z., **Shirmohammadi, Z.**, Miremadi, S. G., "An Efficient Tri-Value Crosstalk Avoidance Code for Reliable Data Transfer of NoCs, " in *Proceedings of Annual International CSI Computer Conference (CSICC'16),* pp. 22-29*,* Tehran, Iran, January 2016.
32. Safari, S., Ansari, M. , **Shirmohammadi, Z.,** S., Miremadi, S. G., "On The Effects of Error Correction and Detection Codes on The Reliability Improvement of NoCs against Crosstalk Faults," In *Proceedings of the International Conference on Computer and Knowledge Engineering, (ICCKE'15), pp.18-24,* Urmia, Iran, October 2015.
33. **Shirmohammadi, Z.,** Miremadi, S. G., "Crosstalk Avoidance Coding for Reliable Data Transmission of Network on Chips," in *Proceedings of the International Symposium on System-on-Chip 2013 (SoC'13)*, pp. 1-4, Tampere, Finland, October 2013
34. **Shirmohammadi, Z**., Miremadi, S. G., "Using Binary-Reflected Gray Coding for Crosstalk Mitigation of Network on Chip," *in Proceedings of the CSI International Symposium on Computer Architecture & Digital Systems (CADS'13),* pp. 81-86, Tehran, Iran, October 2013
35. **Shirmohammadi, Z**., Jalal, M., Patooghy, A., Miremadi, S. G., "A Reconfigurable Switch Architecture to Enhance Reliability of Network-on-Chips," *in Proceedings of the International Conference on Real-Time and Embedded Systems (RTES'10)*, pp. 35-41, Singapore, November 2010.
36. Jalal, M., **Shirmohammadi, Z**., Patooghy, A., Miremadi, S. G., "Evaluation of Application Mapping for Network-on-Chips," *in Proceedings of the International Conference on Real-Time and Embedded Systems (RTES'10),* pp. 42-59, Singapore, November 2010.

STUDENTS:

- **M.Sc. Students:**
  - Mohammadjavad Khani, Department of Computer Engineering, Shahid Rajaee University
  - Masoumeh Taali, Department of Computer Engineering, Shahid Rajaee University
  - Maedeh Khalifavi, , Department of Computer Engineering, Shahid Rajaee University , Department of Computer Engineering, Shahid Rajaee University
  - Mojtaba Ahmadi, , Department of Computer Engineering, Shahid Rajaee University
  - **Hadi Zamani:** DSL Member, Department of Computer Engineering, Sharif University of Technology, Tehran, Iran.

- **Reza Mirosanlu:** DSL Member, Department of Computer Engineering, Sharif University of Technology, Tehran, Iran.
- **Zeynab Mahdavi:** DSL Member, Department of Computer Engineering, Sharif University of Technology, Tehran, Iran.
- **Maryam Hezaveh:** DSL Member, Department of Computer Engineering, Sharif University of Technology, Tehran, Iran.
- **Maede Safari:** DSL Member, Department of Computer Engineering, Sharif University of Technology, Tehran, Iran.
- **Zahra Ebrahimi:** Department of Computer Engineering, Sharif University of Technology, Tehran, Iran.

HONORS AND AWARDS:

- Ranked first in total GPA among Central Tehran Branch University Computer Engineering, B.Sc. class of 2008
- Member of young club of researchers

PROFESSIONAL SKILLS:

- Programming Languages: Java, C++, C, Pascal
- Web Design Languages: HTML5, CSS3, Java Script, J query
- Assembly Languages for Microprocessors: MIPS, 8085, 8086, AVR
- Hardware Design Language: Verilog, Implementing with FGPAs
- CAD tools: Quartus, Proteus, Hspice, Pspice, Modelsim, Altium Designer

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LANGUAGESKILLS:

- Persian: Native
- English : Fluent (Attending Advanced Level Classes in Iran Language Institute (ILI)English Classes)
- Azari: Fluent
- GRE
- IELTS=6.5
- Tolimo=620

PROJECTS:

- Design and implementationof hardware systems by Verilog HDL and FPGAs
- Design and implementation of automatic Traffic Light system using 8085 microprocessor and its simulators
- Design an improving calculator using MIPS microprocessors assembly language

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MEMBERSHIPS:

- IEEE Student Member
- Computer Society of Iran Student Member
- Member of Linux User Group (LUG)
- Member of Young Club of Researchers

WORKSHOPS:

- "How to publish a scientific journal article?" conducted by Springer at Sharif university, November 2011.
- "Workshop on thinking in GPU"conducted by School of Computer Science, IPM, July 2011.
- "Workshop on cloud computing" conducted by School of Computer Science, IPM, March 2011.

- “Knowledge and teaching skills” January 2015.