Dr. Mousam Hossain

EMPLOYMENT & CONTACT

Assistant Professor, *Southern Illinois University Edwardsville (SIUE)*
Dept. of Electrical and Computer Engineering, Engineering Building, Room 3078, Edwardsville, IL, USA
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EDUCATION

Ph.D., Computer Engineering   **Aug 2019- Jul 2024**
GPA- 4.0/4.0
University of Central Florida, Orlando, FL, USA
Advisors: Dr. Ronald F. DeMara
Dissertation: *Adaptive Beyond Von-Neumann Computing Devices and Architectures for Edge Computing Applications.*

M.S., Electrical and Computer Engineering   **Aug 2017- Jul 2019**
GPA- 4.0/4.0
North Dakota State University, Fargo, ND, USA
Advisors: Dr. Sudarshan K. Srinivasan and Dr. Scott C. Smith
Thesis: *Formal Verification Methodology for Asynchronous Sleep Convention Logic (SCL) Circuits based on Equivalence Verification.*

B.Tech. Electronics and Communication Engineering | GPA- 8.99/10   **Aug 2009- June 2013**
GPA- **8.95/10**
Inst. Of Engineering & Management (IEM), West Bengal University of Technology (WBUT),
Kolkata, WB, India. Advisor: Dr. Malay Ganguly (Professor, H.O.D, ECE Dept.)
Project: *Optimization of the performance of Microstrip Patch Antenna using Particle Swarm Optimization Algorithm /IE3D*

RESEARCH PUBLICATIONS

JOURNAL ARTICLES

1. **M. Hossain**, A. Tatulian, S. Sheikhfaal, H. R. Thummala and R. F. DeMara, "Scalable Reasoning and Sensing Using Processing-In-Memory with Hybrid Spin/CMOS-Based Analog/Digital Blocks," in *IEEE Transactions on Emerging Topics in Computing*, 2022. **(Impact Factor: 6.59)**

2. M. Liu, P. Borulkar, **M. Hossain**, R. F. Demara and Y. Bai, "Spin-Orbit Torque Neuromorphic Fabrics for Low-Leakage Reconfigurable In-Memory Computation," in *IEEE Transactions on Electron Devices*, vol. 69, no. 4, pp. 1727-1735, April 202. **(Impact Factor: 3.22)**

3. M. A. Chowdhury, **M. Hossain,** C. Mastrangelo, R. F. DeMara, S. Salehi, "S-Tune: SOT-MTJ manufacturing parameters tuning for securing the next generation of computing," in *Frontier Electronics*, section- Integrated Circuits and VLSI, vol. 5, 2024.

PEER-REVIEWED CONFERENCE ARTICLES

4. **M. Hossain**, M. Chowdhury, R. F. DeMara and S. Salehi, "Sensitivity Analysis of SOT-MTJs to Manufacturing Process Variation: A Hardware Security Perspective", in IEEE ISQED, 2024, San Francisco, California, USA**.**

5. R. C Yarnell, **M. Hossain**, R. Graterol, A. Pindoria, S. Ghimire, M. A. Chowdhury, S. Salehi, Y. Bai, and R. F DeMara, "Educational Tool-spaces for Convolutional Neural Network FPGA Design Space Exploration Using High-Level Synthesis," in ACM GLSVLSI '24, New York, NY, USA, 343–346.

6. **M. Hossain**, A. Tatulian, H. R. Thummala, R. F. DeMara and S. Salehi, "Energy-/Area-Efficient Spintronic ANN-based Digit Recognition via Progressive Modular Redundancy", in IEEE ISCAS, May 21-25, 2023, Monterey, California, USA.
7. R. Yarnell, **M. Hossain**, R. F. DeMara, "Image Quantization Tradeoffs in a YOLO-based FPGA Accelerator Framework", in IEEE ISQED, California, USA, 2023, doi: 10.1109/ISQED57927.2023.10129324.
8. **M. Hossain,** S. Salehi, D. Mulvaney, and R.F. DeMara, "Embedded STT-MRAM Energy Analysis for Intermittent Applications using Mean Standby Duration", in IEE ICECS)\, 2021, pp. 1-6.
9. M. Liu, K. Han, S. Luo, M. Pan, **M. Hossain**, et. al., "An efficient Video Prediction Recurrent Neural Network using Focal Loss and Decomposed Tensor Train for Imbalance Dataset," inACM GLSVLSI, 2021, Association for Computing Machinery, New York, NY, USA, 391–396. https://doi.org/10.1145/3453688.3461748.
10. D. Crumley, **M. Hossain**, et. al., "Rehosting YOLOv2 Framework for Reconfigurable Fabric-based Acceleration", in proc. IEEE SoutheastCon., Mar. 2022 Mobile, AL, USA, 2022, pp. 445- 446.
11. **M. Hossain,** A. A. Sakib, S. K. Srinivasan and S. C. Smith, "An Equivalence Verification Methodology for Asynchronous Sleep Convention Logic Circuits," in proc. IEEE ISCAS, Sapporo, Japan, 2019, pp. 1-5.

EDUCATIONAL PUBLICATION

12. R. F. DeMara, S. Silvermann, M. Reddy-Vangala, and **M. Hossain**, "Imparting Future Workforce Skills using Virtualized Active Learning: A Case Study in an Engineering Core Course," *FOIS*, Orlando, FL, USA, March 3, 2020.

HONORS AND AWARDS

1. **URCA** Award recipient Spring '25**, SIUE.**
2. **GTA Excellence Award:2024,** School of Graduate Studies, UCF, worth **$1,000**.
3. **Best GTA Award:2024, Dept. of CECS, UCF,** worth **$500.**
4. **Provost GTA Award:2023** at ECE department**,** at University of Central Florida (UCF).
5. **Evaluation and Proficiency Center Best Tutor Award,** UCF, Fall 2019.
6. **Phi-kappa-Phi Honor society - Love of Learning Award,** worth **$1,000.**
7. **Design Automation Conference (DAC) Young Fellows,** 2021, including travel grant worth **$700**.
8. **Best Research Video Award** at DAC Young Fellows 2021 worth $100.
9. **Danny Craig Scholarship** at UCF for community involvement with prize money of **$1,000**, 2021.
10. **IEEE Circuits and Systems (CAS)** Student Travel Award worth **$1,500.**
11. **UCF Presentation Fellowship,** 2023, worth **$500**.

PROFESSIONAL AFFILIATIONS & EXTERNAL SERVICES

1. **Technical Reviewer |** IEEE Access, IEEE ISCAS.

2. **President**, **Student Laureates of STEM Teaching and Learning** (SLSTL) Registered Student Organization at the University of Central Florida from Fall 2020- Fall 2022.
3. **Vice-President, Computer Hardware Innovation and Design Association** (CHIDA) Registered Student Organization at the University of Central Florida from Spring 2021- Present.
4. **Phi-kappa-Phi Honor society,** since Aug 2021.
5. **Tau Beta Pi,** FL-Delta chapter, since Fall 2020.
6. **IEEE- Eta Kappa Nu**: Electrical and Computer Engineering Honor Society, since Fall 2017.