

Majid Ahadi

mad6@gatech.edu Atlanta, GA, Tel: 9702156144, (Available for summer internship)

Education:

- **Georgia Institute of Technology** PhD Degree, Electrical Engineering 2016 – 2020, GPA: 3.66
- **Colorado State University** Master's Degree, Electrical Engineering 2014 – 2016, GPA: 3.72
- **K.N.Toosi University of Technology** Bachelor's Degree, Electrical Engineering 2009- 2013, GPA: 3.6

Skills:

- **Software:** C/ C++, Python, MATLAB, JavaScript, Amazon Web Services, Microsoft Azure, VHDL, CUDA, OpenMP, Visualization, Linux.
- **Machine Learning:** Supervised/ unsupervised learning, Neural Networks, Online learning, Multi-armed Bandits, Bayesian optimization, etc.
- **Hardware:** Digital and analog circuit design, VLSI, Packaging, Signal processing, Signal and power integrity, Electromagnetics, Microwave circuits, RF circuits, Computer architecture, FPGA, Microprocessors, PCB design.
- **Simulation:** Device and circuit modeling, High speed simulation, Statistical analysis, ADS, Cadence, HSPICE, HFSS, etc.

Work Experiences:

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| • Research Assistance | Georgia Institute of Technology | 2017 - present |
| • Member | NSF Center for Advanced Electronics
through Machine Learning (CAEML) | 2016 - 2018 |
| • Software Engineering Intern | Cadence Design Systems | 2017 (3 months) |
| • Teacher Assistance | Georgia Institute of Technology | 2016 |
| • Electrical Engineering Intern | Ansys, Inc. | 2015 (7 months) |
| • Research Assistant | Colorado State University | 2014- 2016 |
| • Electrical Engineer | Kianic Company | 2013 |
| • Electrical Intern | ICAS laboratory | 2012 |
| • Teacher Assistant | K.N.Toosi University | 2011- 2012 |
| • Voluntary: Cultural mentor | Colorado State University | 2015 |

Awards:

- 1st place Cadence Design Systems Hackathon (Chelmsford, MA), 2018
- Best Presentation Award in the Academic Track, CDNLIVE Cadence User Conference 2018
- Best poster award in EPEPS IEEE Conference, 2014
- 1st place, AVR microprocessors programming grand prize competition, 2009

List of Publications:

Conference Papers:

- M. Ahadi, M. Kabir , et al., “Non-Intrusive Pseudo Spectral Approach for Stochastic Macromodeling of EM Systems using Deterministic Full-wave Solvers”, *IEEE Conference on Electrical Performance of Electronic Packaging and Systems*, October 2014
- A. K. Prasad, M. Ahadi, S. Roy “Polynomial Chaos Based Variability Analysis of Power Distribution Networks Using a 3D Topology of Multiconductor Transmission Lines”, *IEEE Conference on Electrical Performance of Electronic Packaging and Systems*, October 2014
- M. Ahadi, M. Vempa, S. Roy “Efficient Multidimensional Statistical Modeling of High Speed Interconnects in SPICE via Stochastic Collocation using Stroud Cubature”, *IEEE International Symposium on Electromagnetic Compatibility*, March 2015 (Invited paper to special session)
- M. Ahadi, M.Kabir, S. Roy, R. Khazaka “Fast Multidimensional Statistical Analysis of Microwave Networks via Stroud Cubature Approach”, *IEEE MTT-S International Conference on Numerical Electromagnetic and Multiphysics Modeling and Optimization*, August 2015
- A. K. Prasad, M. Ahadi, B. S. Thakur, S. Roy “Accurate Polynomial Chaos Expansion for Variability Analysis using Optimal Design of Experiments”, *IEEE MTT-S International Conference on Numerical Electromagnetic and Multiphysics Modeling and Optimization*, August 2015

- M. Ahadi, A. K. Prasad, S. Roy “Hyperbolic Polynomial Chaos Expansion (HPCE) and its Application to Statistical Analysis of Nonlinear Circuits,” *IEEE International Conference on Signal and Power Integrity*, 2016
- M. Ahadi, J. Hejase, W. Becker, M. Swaminathan “Development of Polynomial Chaos based Surrogate Models for Channel Simulation”, *IEEE Conference on Electromagnetic Compatibility, Signal & Power Integrity EMC+SIPI*, July 2018
- M. Ahadi, H. Yu, J. Hejase, W. Becker, M. Swaminathan, “Polynomial Chaos modeling for jitter estimation in high-speed links”, International Test Conference, October 2018
- M. Ahadi, J. Hejase, W. Becker, M. Swaminathan “Jitter and Eye Estimation in SerDes Channels using Modified Polynomial Chaos Surrogate Models”, *IEEE Conference on Electrical Performance of Electronic Packaging and Systems*, October 2018
- M. Ahadi, A. Varma, K. Keshavan, M. Swaminathan, “Design Space Exploration with Polynomial Chaos Surrogate Models for Analyzing Large System Designs”, *DesignCon 2019*, Jan. 2019
- M. Ahadi, J. Hejase, W. Becker, M. Swaminathan, “Eye Diagram and Jitter Estimation in SerDes Designs using Surrogate Models Generated with the Polynomial Chaos Theory”, *DesignCon 2019*, Jan. 2019

Journal Papers

- M. Ahadi, S. Roy, “Sparse Linear Regression (SPLINER) Approach for Efficient Multidimensional Uncertainty Quantification of High-Speed Circuits”, *IEEE transactions on Computer-Aided Design of Integrated Circuits and Systems*, 2015
- A.K.Prasad, M. Ahadi, S.Roy, “Multidimensional Uncertainty Quantification of Microwave/RF Networks using Linear Regression and Optimal Design of Experiments”, *IEEE Transactions on Microwave Theory and Techniques*, 2016
- M. Ahadi, J. Hejase, W. Becker, M. Swaminathan, “Methods for Jitter and Eye Diagram Estimation in High-Speed Serial Channels Using Polynomial Chaos Surrogate Models”, under review at *IEEE ACCESS*, Submitted in March 2019

Selected Projects:

- 2017 - present: Quick analysis of SERDES channels using ML and numerical algorithms: Prediction of eye-diagram characteristics (Jitter, BER, etc.) for SERDES channels by generating surrogate models using polynomial chaos theory and ML.
- 2018: Design space exploration: An efficient method was developed for design space exploration and sensitivity analysis of a DDR4 topology using Polynomial Chaos theory during internship at Cadence.
- 2016: Capacitor optimization for power delivery networks: Using the genetic algorithm to place decoupling capacitors in printed circuit boards.
- 2015: Quality Assurance of Nexxim: Writing MATLAB scripts for daily accuracy check of ANSYS circuit solver (Nexxim) by comparing daily results with a predetermined baseline during internship at ANSYS.
- 2014- 2016: Stochastic Analysis of High Speed Circuits: Developing numerical approaches to achieve speedup in stochastic analysis and simulation of high speed circuits.
- 2013: Intelligent Audio System for smart homes: Industrial project, designing a convenient audio system to provide special functions in a smart home.
- 2012-2013: Spinal cord stimulation: Prototyping an implantable device, which can do electrical neural stimulation in order to do pain relief.
- 2012: Designing an AVR Microcontroller by VHDL: Design and simulation of ATmega32 on Spartan3 FPGA, including Memories, Registers, I/O Ports, USART and Timer.
- 2010-2013: An Application of DC-DC Converters to soccer player robots: A boost DC-DC converter which can charge a solenoid and move a shaft to kick the ball in soccer player robots.
- 2009-2013: Small Size Soccer Robotic league: One of the Robocup leagues, design and build of autonomous agents which are able to play soccer without human control using motion planning and AI.
- 2009: Snake game on analog oscilloscope: Building a snake game in three levels on XY mode of oscilloscope which could be controlled by an external hardware.
- 2008: Assistant robot for paraplegics: A mobile robot which could be controlled by visual head movements commands for paraplegic patients, using image processing and wireless communication.