

# 2023 IEEE Microelectronics Design and Test Symposium

**May 8 through May 10, 2023, at the Desmond Crowne Plaza located in Albany, New York**

The 32nd IEEE Microelectronics Design & Test Symposium (MDTS, formerly known as NATW) provides an annual world forum for academia and industry. University faculty, student researchers, and industry engineers discuss latest advances in microelectronics, share their visions in modern microelectronic technologies, and foster academy-industry collaboration. The three-day symposium features keynote, invited talks, and tutorial on the theme of Artificial Intelligence, Machine Learning, and Deep Learning: Tactical and Strategic Impacts to Microelectronics Design and Test, and a panel discussion “Make No Mistake, AI” on how we use Machine Learning and Artificial Intelligence Results.

MDTS 2023 is sponsored by IEEE Schenectady Section and IEEE Region 1, and is supported by Advantest Corporation, AdamsIP, Cadence Design Systems, Green Mountain Semiconductor, onsemi, the SWTest Conference, and IBM Corporation.

<b>Monday, May 8</b>	
11:00 am – 8:00 pm Registration: Fort Orange Walkway A	
12:00 pm – 1:00 pm Lunch: Fort Orange Courtyard	
1:00 pm – 6:00 pm MDTS Sessions: Shaker Room	
1:00 pm – 1:10 pm <b>Welcome Address: Kelly Ockunzzi General Chair</b>	
<b>Invited Speaker</b>	
1:10 pm – 1:15 pm Invited Speaker Introduction: Tian Xia	
1:15 pm – 2:15 pm Qiaoyan Yu, Professor, Department of Electrical and Computer Engineering, Univ. of NH Title <b><i>“Hardware Security in The Era of Machine Learning”</i></b>	
<b>Keynote</b>	
2:15 pm – 2:20 pm Keynote Introduction: Uma Srinivasan	
2:20 pm – 3:20 pm Christian Jacobi, IBM Fellow, System Architecture & Design, System Z Systems Title <b><i>“IBM Telum: real-time AI for enterprise applications”</i></b>	
3:20 pm – 3:30 pm Break: Fort Orange Walkway B	
<b>Tutorial</b>	
3:30 pm – 3:35 pm Tutorialist Introduction: Brion Keller	
3:35 pm – 4:35 pm Rob Aitken, Distinguished Architect, Office of Technology Strategy at Synopsys Title <b><i>“Implications of AI on Microelectronics Design and Test”</i></b>	
<b>Invited Speaker</b>	
4:35 pm – 4:40 pm Invited Speaker Introduction: Kevin Gorman	
4:40 pm – 5:25 pm Shawn Fetterolf, Director of Federal Strategy at Intel Federal Title <b><i>“AI/ML Innovation and Impacts on Chip Design”</i></b>	
6:00 pm – 7:30 pm Opening Reception Dinner Buffet: 5 Fort Orange	
7:30 pm – 9:00 pm 5 Fort Orange <b>“Panel: “Make No Mistake, AI” Discussions on How We Use Machine Learning and Artificial Intelligence Results</b>	
Panel Chair: Malinky Ghosh Panel Moderator: Eugene Atwood	
<b>Panelists</b>	
Christian Jacobi	IBM Fellow, System Architecture & Design, System Z Systems
Mark Kuemerle	VP of Technology for the Marvell Compute and Custom Business
Shawn Fetterolf	Director of Federal Strategy at Intel Federal

# 2023 IEEE Microelectronics Design and Test Symposium

## Tuesday, May 9

7:00 am – 6:00 pm Registration: Fort Orange Walkway A

7:00 am – 8:30 am Breakfast: Shaker Room

8:30 am – 6:00 pm MDTS Sessions: Shaker Room

8:30 am – 8:35 am **Welcome: Kelly Ockunzzi General Chair**

8:35 am – 8:45 am **Program Introduction: Uma Srinivasan Program Chair**

### Invited Speaker

8:45 am – 8:50 am Invited Speaker Introduction: Kevin Gorman

8:50 am – 9:35 am Mark Kuemerle, VP of Technology for the Marvell Compute and Custom Business  
Title *“Machine learning madness: achieving performance in an era of reduced scaling and extraordinary costs.”*

### Student Paper Session 1

Session Chair: Krishna Chakravadhanula

9:35 am – 10:00 am Paper 1.1 A M Mahmud Chowdhury, Clarkson Univ.

Title *“A Machine Learning Approach for Person Authentication from EEG Signals”*

10:00 am – 10:10 am Break: Fort Orange Walkway B

10:10 am – 10:35 am Paper 1.2 Yan Zhang, Univ. of Vermont

Title *“A Supervised Deep Learning Method for Designing A Series-Fed Microstrip Array Antenna”*

10:35 am – 11:00 am Paper 1.3 Brandon Ung, Univ. of Minnesota Twin Cities

Title *“Regression Models to Predict Memory Usage of High-Cost Analysis Jobs”*

11:00 am – 11:25 am Paper 1.4 Maximilian Liehr, SUNY Polytechnic Institute

Title *“Analog NVM Synapse for Hardware-Aware Neural Network Training Optimization on 65nm CMOS TaOx ReRAM Devices”*

11:25 am – 11:50 am Paper 1.5 Eric Hunt-Schroeder, Univ. of Vermont

Title *“Reconfigurable Self-Destructing Pre-Amplifier Physical Unclonable Function”*

11:50 am – 1:00 pm Lunch: Fort Orange Courtyard

### Keynote

1:00 pm – 1:05 pm Keynote Introduction: Andrew Laidler

1:05 pm – 2:05 pm Azalia Mirhoseini, Member of Technical Staff at Anthropic and Assistant Professor at Stanford  
Title *“Pushing the Limits of Scaling Laws in the Age of Large Language Models”*

### Student Paper Session 2

Session Chair: Andrew Laidler

2:05 pm – 2:30 pm Paper 2.1 Rajas Mathkari, SUNY Polytechnic Institute

Title *“Effects of Processing Variables on Tantalum Oxide Resistive Random Access Memory (ReRAM) Performance”*

2:30 pm – 2:55 pm Paper 2.2 Zachery Woods, SUNY Polytechnic Institute

Title *“Flow-Based Computing of NOR Logic Using ReRAM Devices”*

2:55 pm – 3:20 pm Paper 2.3 Jeelka Solanki, SUNY Polytechnic Institute

Title *“Effect of Resistance variability in Vector Matrix Multiplication operations of 1T1R ReRAM crossbar arrays using an Embedded test platform ”*

3:20 pm – 3:35 pm Break: Fort Orange Walkway B

### Invited Speakers

3:35 pm – 3:40 pm Invited Speaker Introduction: Ryan Patterson

3:40 pm – 4:25 pm Reza Zadeh, Adjunct Professor at Stanford University and CEO of Matroid

Title *“Attacking Computer Vision”*

4:25 pm – 4:30 pm Invited Speaker Introduction: Krishna Chakravadhanula

4:30 pm – 5:15 pm Rob Knoth, Group Director in Cadence's Digital & Signoff Group

Title *“Delivering on the Promise of AI/ML SoC Design”*

6:00 pm – 8:00 pm Banquet Dinner and Recognition Event, including Best Student Paper Award: Shaker Room

## 2023 IEEE Microelectronics Design and Test Symposium

<b>Wednesday, May 10</b>
7:00 am – 11:00 am Registration: Fort Orange Walkway B
7:00 am – 8:30 am Breakfast: Shaker Room
8:30 am – 12:00 pm MDTS Sessions: Shaker Room
8:55 am – 9:00 am <b>Welcome: Kelly Ockunzzi General Chair</b>
<b>Paper Session 3</b>
Session Chair: Tian Xia
9:00 am – 9:15 am Paper 3.1 Mr. Supriyo Karmakar, Assistant Professor, Electrical and Computer Engineering Technology, SUNY-Farmingdale State College (Lightning Talk) Title <b><i>“RF Wireless Chatting”</i></b>
9:15 am – 9:40 am Paper 3.2 Sean Furman, Associate Scientist/Engineer at ANDRO Computational Solutions, LLC, Rome, NY Title <b><i>“A Subject-Independent Machine Learning Model to Recognize Hand Gestures from Surface Electromyography Signals”</i></b>
9:40 am – 9:55 am Paper 3.3 Mr. Supriyo Karmakar, Assistant Professor, Electrical and Computer Engineering Technology, SUNY-Farmingdale State College (Lightning Talk) Title <b><i>“Autonomous Object Tracking Drone”</i></b>
9:55 am – 10:05 am Break: Fort Orange Walkway B
<b>Paper Session 4</b>
Session Chair: Eric Hunt-Schroeder
10:05 am – 10:30 am Paper 4.1 Benjamin Taubner, Research Technician, Colleges of Nanoscale Science and Engineering SUNY Polytechnic Title <b><i>“Application of machine learning methods for the diagnosis of Lyme disease with a fluorescent plasmonic biosensor”</i></b>
10:30 am – 10:55 am Paper 4.2 Umer Hassan, Assistant Professor of Electrical and Computer Engineering (ECE) and Global Health Institute, Rutgers University Title <b><i>“Time-Frequency Deep Learning Classification Model for Differentiating Metal Oxide Coated Particles For Bioelectronic Applications”</i></b>
10:55 am – 11:20 am Paper 4.3 Mr. Supriyo Karmakar, Assistant Professor, Electrical and Computer Engineering Technology, SUNY-Farmingdale State College Title <b><i>“Application of Artificial Intelligence (AI) in Yield Analysis and Fault Isolation in Semiconductor Processing”</i></b>
11:20 am – 11:45 am Paper 4.4 Xiaozhe Fan, Senior Test Development Engineer, GlobalFoundries Title <b><i>“A Real Time FPGA-based IQ Imbalance Measurement and Calibration System for High Volume Production Testing”</i></b>
11:45 am – 12:00 pm <b>Closing Remarks: Andrew Laidler Vice General Chair</b>
12:00 pm – 1:00 pm Lunch: Fort Orange Courtyard

Please complete our survey online:

[Microelectronic Design and Test Symposium 2023 Survey](#)