

# IEEE RTCSA / NVMSA 2023 Program

Updated on August 23, 2023

		Room302	Room301
30-Aug	9:00-10:30	Opening and Keynote	
	10:30-11:00	Break	
	11:00-12:30	Session 1: Best Paper Candidates	NVMSA 1: Solid-State Drive
	12:30-13:30	Lunch Break	
	13:30-15:00	Session 2: Real-Time Systems 1	NVMSA 2: Security and Isolation (14:00-15:00)
	15:00-15:30	Break	
	15:30-17:00	Session 3: Embedded Systems 1	NVMSA 3: Invited Talk (15:20-17:00)
	17:30-19:30	Welcome Reception & Poster Presentations (@Room201)	
31-Aug	9:30-10:30	NVMSA Keynote	
	10:30-11:00	Break	
	11:00-12:30	Session 4: IoT, CPS, and Emerging Applications 1	NVMSA 4: Machine Learning in Memory
	12:30-14:00	Lunch Break	
	14:00-15:00	Sponsor Talk	
	15:00-15:30	Break	
	15:30-17:00	Session 5A: Real-Time Systems 2	Session 5B: Embedded Systems 2
	18:00-21:00	Banquet (Crowne Plaza - ANA Niigata, 15 min walk from TOKI MESSE)	
1-Sep	9:00-10:30	Session 6: Real-Time Systems 3	NVMSA 6: Tool and System Software (9:30-10:30)
	10:30-11:00	Break	
	11:00-12:15	Session 7A: IoT, CPS, and Emerging Applications 2 (11:00-12:00)	Session 7B: Short Presentations
	12:15-12:30	Closing	

# August 30 (Wed)

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**August 30 (Wed) 9:00 - 10:30, Room 302**

## Opening and RTCSA Keynote

Chair: Hiroshi Yamada (Tokyo University of Agriculture and Technology)

- Personalized Predictions of Clinical Outcomes and Treatment Response with Wearables and Machine Learning  
Chenyang Lu (AIM Institute, Washington University in St. Louis)

**August 30 (Wed) 11:00 - 12:30, Room 302**

## Session 1: Best Paper Candidates

Chairs: Nan Guan (City University of Hong Kong) and Hiroyuki Tomiyama (Ritsumeikan University)

- Timing Analysis of Embedded Software Updates  
Ahmed El Yaacoub (Uppsala University), Luca Mottola (Politecnico di Milano & Uppsala University), Thimo Voigt (Uppsala University & RISE), Philipp Rümmer (University of Regensburg & Uppsala University)
- PELSI: Power-Efficient Layer-Switched Inference  
Ehsan Aghapour (University of Amsterdam), Dolly Sapra (University of Amsterdam), Andy D. Pimentel (University of Amsterdam), Anuj Pathania (University of Amsterdam)
- Self-supervised multi-LiDAR object view generation using single LiDAR  
Yi-Hung Kuo (National Taiwan University, Taiwan), Chi-Sheng Shih (National Taiwan University, Taiwan), Hsiang-Jui Lin (National Taiwan University, Taiwan), Shih-Hao Hung (National Taiwan University, Taiwan; Mohamed bin Zayed University of Artificial Intelligence, Abu Dhabi)

**August 30 (Wed) 11:00 - 12:30, Room 301**

## Session 1: Solid-State Drive

Chair: Daichi Fujiki (Keio University)

- Read Disturb and Reliability: The Complete Story for 3D CT NAND Flash (Best paper)  
Tianyu Ren, Qiao Li, Min Ye and Chun Jason Xue.
- Retention Leveling: Leverage Retention Refreshing and Wear Leveling Techniques to Enhance Flash Reliability with the Awareness of Temperature  
Wei-Chen Wang, Chien-Chung Ho, Yuan-Hao Chang, Tei-Wei Kuo and Yu-Ming Chang
- Efficient Read Disturb Management Schemes in Resource-constrained Flash Memory Controller  
Ikjoon Son and Jin-Soo Kim

**August 30 (Wed) 13:30 - 15:00, Room 302**

## Session 2: Real-Time Systems 1

Chair: Pablo Gutiérrez Peón (TTTech Auto AG)

- Hardware Acceleration with Zero-Copy Memory Management for Heterogeneous Computing  
Oren Bell (Washington University at St Louis, USA), Chris Gill (Washington University at St Louis, USA), Xuan Zhang (Washington University at St Louis, USA)
- BandWatch: A System-Wide Memory Bandwidth Regulation System for Heterogeneous Multicore  
Eric Seals (University of Kansas), Michael Bechtel (University of Kansas), Heechul Yun (University of Kansas)
- IRQ Coloring and the Subtle Art of Mitigating Interrupt-generated Interference  
Diogo Costa (Universidade do Minho, Portugal), Luca Cuomo (Huawei Pisa Research Center, Italy), Daniel Oliveira (Universidade do Minho, Portugal), Ida Maria Savino (Huawei Pisa Research Center, Italy), Bruno Morelli (Huawei Pisa Research Center, Italy), José Martins (Universidade do Minho, Portugal), Alessandro Biasci (Huawei Pisa Research Center, Italy), Sandro Pinto (Universidade do Minho, Portugal)

**August 30 (Wed) 14:00 - 15:00, Room 301**

## Session 2: Security and Isolation

Chair: Takaaki Fukai (AIST)

- FSD: File-related Secure Deletion to Prolong the Lifetime of Solid-State Drives  
Shih-Chun Chou, Yi-Shen Chen, Ping-Xiang Chen, Yuan-Hao Chang, Ming-Chang Yang, Tei-Wei Kuo, Yu-Fang Chen and Yu-Ming Chang
- Achieving Performance Isolation in Docker Environments with ZNS SSDs  
Yejin Han, Myunghoon Oh, Seehwan Yoo, Jaedong Lee, Bryan S. Kim and Jongmoo Choi

**August 30 (Wed) 15:30 - 17:00, Room 302**

## Session 3: Embedded Systems 1

Chair: Shuo-Han Chen (National Taipei University of Technology)

- Memory-Aware DVFS Governing Policy for Improved Energy-Saving in the Linux Kernel  
Philkyue Shin (Seoul National University, Republic of Korea), Dahun Kim (Seoul National University, Republic of Korea)

- Korea), Seongsoo Hong (Seoul National University, Republic of Korea)
- TEEVseL4: Trusted Execution Environment for Virtualized seL4-based Systems  
Borna Blazevic (Technical University of Munich), Michael Peter (NIO GmbH), Mohammad Hamad (Technical University of Munich), Sebastian Steinhorst (Technical University of Munich)
- Improving Read Performance for LDPC-Based SSDs with Adaptive Bit Labeling on Vth States  
Jia-Xin Hou (National Yang Ming Chiao Tung University, Taiwan), Li-Pin Chang (National Yang Ming Chiao Tung University, Taiwan)

### August 30 (Wed) 15:20 - 17:00, Room 301

#### Session 3: Invited talk

Chair: Ryuichi Sakamoto (Tokyo Institute of Technology)

- 15:20-15:50 TBA
- 15:50-16:30 Compute Express Link(CXL), the next generation interconnect -- Overview and the status of Linux – Yasunori Gotou (Fujitsu)
- 16:30-17:00 Computation-in-Memory Architecture for AI Accelerator  
Ken Takeuchi (The University of Tokyo)

### August 30 (Wed) 17:30-19:30, Room 201

#### Poster Presentations

- Parameter Optimization for EDF-Like Scheduling of Self-Suspending Tasks  
Mario Günzel (TU Dortmund University), Jian-Jia Chen (TU Dortmund University)
- Response-time Analysis of Fault-Tolerant Hard Real-Time Systems under Global Scheduling  
Pourya Gohari (Eindhoven University of Technology (TU/e), The Netherlands), Jeroen Voeten (Eindhoven University of Technology (TU/e), The Netherlands), Mitra Nasri (Eindhoven University of Technology (TU/e), The Netherlands)
- Investigating Requirements and Expectations of Wearable Telexistence Robotic Systems  
Abdullah Iskandar (Waseda University, Japan), Mohammed Al-Sada (Qatar University, Qatar), Osama Halabi (Qatar University, Qatar), Tatsuo Nakajima (Waseda University, Japan)
- Designing a 3D Human Pose Estimation-based VR Tennis Training System  
Yuichiro Hiramoto (Waseda University, Japan), Mohammed Al-Sada (Qatar University, Qatar), Tatsuo Nakajima (Waseda University, Japan)
- Visualization System Using Virtual Reality for Work Improvement in Small and Medium Manufacturing Industries  
Shogo Ogihara (Toyama Prefectural University, Japan), Tetsuro Kato (IoTry, Inc., Japan), Takafumi Kawasaki (Toyama Prefectural University, Japan), Yuki Okura (Toyama Prefectural University, Japan), Takeshi Iwamoto (Toyama Prefectural University, Japan)
- A Robot Arm-based Haptic Feedback System for Augmented Reality Applications  
Daichi Watanabe (Waseda University, Japan), Mohammed Al-Sada (Qatar University, Qatar), Kodai Fuchino (Waseda University, Japan), Tatsuo Nakajima (Waseda University, Japan)
- Make PLOR Real-time and Fairly Decentralized  
Tung Nguyen (Keio University, Japan), Hideyuki Kawashima (Keio University, Japan)
- T2Remoter: a Remote Table Tennis Coaching System Combining VR and Robotics  
Kodai Fuchino (Waseda University, Japan), Mohammed Al-Sada (Qatar University, Qatar), Tatsuo Nakajima (Waseda University, Japan)
- Extending ROS Transform Library for Massive Autonomous Robots  
Yushi Ogiwara (Keio University), Hideyuki Kawashima (Keio University)
- Analyzing Digital Services across the Compute Continuum using iFogSim  
Saeedeh Baneshi (University of Amsterdam, The Netherlands), Ana Lucia Varbanescu (University of Amsterdam, The Netherlands), Anuj Pathania (University of Amsterdam, The Netherlands), Benny Akesson (University of Amsterdam; TNO-ESI, The Netherlands), Andy Pimentel (University of Amsterdam, The Netherlands)
- ILP based Mapping for Elastic CGRAs  
Makoto Saito (The University of Tokyo, Japan), Takuya Kojima (The University of Tokyo, Japan), Hideki Takase (The University of Tokyo, Japan), Hiroshi Nakamura (The University of Tokyo, Japan)

### August 30 (Wed) 17:30-19:30, Room 201

#### Poster Presentations

- Modelling ferroelectric hysteresis of HZO capacitor with Jiles-Atherton model for non-volatile memory applications  
Ella Paasio, Heorhii Bohuslavskyi and Sayani Majumdar
- Investigating the polarity dependence of MLC operation in conventional mushroom PCM cells  
Aakash Yadav, Dong-Hyeok Lim and Hongsik Jeong
- Improving Compaction in LSM Trees through ZNS Simple Copy  
Chihyun Lee, Sangeun Chae, Sungho Moon, Kyeungpyo Kim, Sungsoon Park and Beomseok Nam
- Addressing the Space Overhead of Vector Quotient Filter  
Chaeyoung Hwang, Yongjin Kim, Junhan Lee and Youjip Won

# August 31 (Thu)

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**August 31 (Thu) 9:30 - 10:30, Room 302**

## NVMSA 2023 Keynote

Chair: Takatsugu Ono (Kyushu University)

- New Horizon in Persistent Memory Research  
Prof. Yan Solihin (University of Central Florida)

**August 31 (Thu) 11:00 - 12:30, Room 302**

## Session 4: IoT, CPS, and Emerging Applications 1

Chair: Tadaaki Tanimoto (Sony Semiconductor Solutions)

- Shared Dictionary Compression for Efficient Mobile Software Distribution  
Jinheng Li (City University of Hong Kong, China), Qiao Li (Xiamen University, China), Qingan Li (Wuhan University, China), Chun Jason Xue (City University of Hong Kong, China)
- A Comparison of Transformer and AR-SI Oracle For Control-CPS Software Fault Localization  
Shiyu Zhang (The Hong Kong Polytechnic University, China), Wenxia Liu (Nanjing University, China), Qixin Wang (The Hong Kong Polytechnic University, China), Lei Bu (Nanjing University, China), Yu Pei (The Hong Kong Polytechnic University, China)
- Accelerating Scan Transaction with Node Locking  
Kodai Doki (Keio University), Takashi Hoshino (Cybozu Labs, Inc.), Hideyuki Kawashima (Keio University)

**August 31 (Thu) 11:00 - 12:30, Room 301**

## Session 4: Machine Learning in Memory

Chair: Shuo-Han Chen (National Yang Ming Chiao Tung University)

- Exploring Bit-Level Sparsity for Partial Sum Quantization in Computing-In-Memory Accelerator  
Jinyu Bai, Sifan Sun and Wang Kang
- ES-MPQ: Evolutionary Search enabled Mixed Precision Quantization Framework for Computing-In-Memory  
Sifan Sun, Jinming Ge, Jinyu Bai and Wang Kang
- An In-Memory-Computing STT-MRAM Macro with Analog ReLU and Pooling Layers for Ultra-High Efficient Neural Network  
Linjun Jiang, Sifan Sun, Jinming Ge, He Zhang and Wang Kang

**August 31 (Thu) 14:00 - 15:00, Room 302**

## Sponsor Talk

Chair: Hiroshi Yamada (Tokyo University of Agriculture and Technology)

- The Future of Computing - bits/neurons/qubits –  
Shintaro Yamamichi (IBM Research Semiconductors, IBM Japan Ltd.)

**August 31 (Thu) 15:30 - 17:00, Room 302**

## Session 5A: Real-Time Systems 2

Chair: Mario Guenzel (TU Dortmund)

- LAG-based Analysis for Preemptive Global Scheduling with Dynamic Cache Allocation  
Yuhan Lin (Northeastern University, China), Jinghao Sun (Dalian University of Technology, China), Qingxu Deng (Northeastern University, China), Meiling Han (Nanjing University of Posts and Telecommunications, China), Shumo Wang (Northeastern University, China)
- Reducing Response-Time Bounds via Global Fixed Preemption Point EDF-like Scheduling  
Joseph Goh (University of North Carolina at Chapel Hill, USA), James H. Anderson (University of North Carolina at Chapel Hill, USA)
- Dynamic Deterministic Quality of Service Model with Behavior-Adaptive Latency Bounds  
Robin Laidig (University of Stuttgart, Germany), Frank Dürr (University of Stuttgart, Germany), Kurt Rothermel (University of Stuttgart, Germany), Stefan Wildhagen (University of Stuttgart, Germany), Frank Allgöwer (University of Stuttgart, Germany)

**August 31 (Thu) 15:30 - 17:00, Room 301**

## Session 5B: Embedded Systems 2

Chair: Li-Pin Chang (National Yang Ming Chiao Tung University)

- RDMA-Based Deterministic Communication Architecture for Autonomous Driving  
Hazem Abaza (Huawei Munich Research Center; Technische Universität Dortmund, Germany), Abhinaba Habishyashi (Technische Universität Dresden, Germany), Debayan Roy (Technische Universität Dortmund, Germany), Andrea Bastoni (Technische Universität München, Germany), Zain A. H. Hammadeh (German Aerospace Center, Germany), Shiqing Fan (Technische Universität Dortmund, Germany), Selma Saidi (Huawei Munich Research Center, Germany), Sergey Tverdyshev (Technische Universität Dortmund, Germany)

- Machine Learning Techniques for Understanding and Predicting Memory Interference in CPU-GPU Embedded Systems  
Alessio Masola (University of Modena and Reggio Emilia, Italy), Nicola Capodieci (University of Modena and Reggio Emilia, Italy), Benjamin Rouxel (University of Modena and Reggio Emilia, Italy), Giorgia Franchini (University of Modena and Reggio Emilia, Italy), Roberto Cavicchioli (University of Modena and Reggio Emilia, Italy)
- Traffic Injection Regulation Protocol based on free-time slots requests  
Yilian Ribot González (CISTER Research Centre, ISEP, IPP, Portugal), Geoffrey Nelissen (Eindhoven University of Technology, The Netherlands), Eduardo Tovar (CISTER Research Centre, ISEP, IPP, Portugal)

## September 1 (Fri)

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### September 1 (Fri) 9:00 - 10:30, Room 302

#### Session 6: Real-Time Systems 3

Chair: Diogo Costa (Universidade do Minho)

- Time-Sensitive Networking's Scheduled Traffic Implementation on IEEE 802.11 COTS Devices  
Pablo Gutiérrez Peón (TTTech Computertechnik AG, Austria; Mälardalen University, Sweden), Paraskevas Karachatzis (TTTech Computertechnik AG, Austria), Wilfried Steiner (TTTech Computertechnik AG, Austria), Elisabeth Uhlemann (Mälardalen University, Sweden)
- Advanced Modeling and Analysis of Individual and Combined TSN Shapers in OMNeT++  
Rubi Debnath (Technical University of Munich, Germany), Philipp Hortig (Technical University of Munich, Germany), Luxi Zhao (Beihang University, China), Sebastian Steinhorst (Technical University of Munich, Germany)
- DDS Implementations as Real-Time Middleware - A Systematic Evaluation  
Vincent Bode (Technical University of Munich, Germany), Carsten Trinitis (Technical University of Munich, Germany), Martin Schulz (Technical University of Munich, Germany), David Buettner (Siemens AG, Germany), Tobias Preclik (Siemens AG, Germany)

### September 1 (Fri) 9:30 - 10:30, Room 301

#### Session 6: Tool and System software

Chair: Yuan He (Keio University)

- Rapid NVM Simulation and Analysis on Single Bit Granularity Featuring Gem5 and NVMain  
Nils Hölscher, Minh Duy Truong, Christian Hakert, Tristan Seidl, Kuan-Hsun Chen and Jian-Jia Chen
- Optimizing the Incremental Update Mechanism of Mobile Systems by Inlaying File Indexes on Flash  
Ruiqing Lei, Xianzhang Chen, Duo Liu, Chunlin Song, Yujuan Tan and Ao Ren

### September 1 (Fri) 11:00 - 12:00, Room 302

#### Session 7A: IoT, CPS, and Emerging Applications 2

Chair: Seongsoo Hong (Seoul National University)

- Safety-Aware Implementation of Control Tasks via Scheduling with Period Boosting and Compressing  
Shengjie Xu (The University of North Carolina at Chapel Hill, USA), Bineet Ghosh (The University of North Carolina at Chapel Hill, USA), Clara Hobbs (The University of North Carolina at Chapel Hill, USA), P.S. Thiagarajan (The University of North Carolina at Chapel Hill, USA; Chennai Mathematical Institute, India), Prachi Joshi (General Motors, USA), Samarjit Chakraborty (The University of North Carolina at Chapel Hill, USA)
- Timing-Aware ROS2 Architecture and System Optimization  
Harun Teper (TU Dortmund University, Germany), Tobias Betz (TU Munich, Germany), Georg von der Brüggen (TU Dortmund University, Germany), Kuan-Hsun Chen (University of Twente, The Netherlands), Johannes Betz (TU Munich, Germany), Jian-Jia Chen (TU Dortmund University, Germany)

### September 1 (Fri) 11:00 - 12:15, Room 301

#### Session 7B: Short Presentations

Chair: Toshiaki Aoki (Japan Advanced Institute of Science and Technology)

- An Integrated Real-Time and Security Scheduling Framework for CPS  
Kriti Kansal (Virginia Tech), Thidapat Chantem (Virginia Tech), Nathan Fisher (Wayne State University), Sanjoy Baruah (Washington University in St. Louis)
- Efficient Response Time Bound for Typed DAG Tasks  
Qingqiang He (The Hong Kong Polytechnic University, China), Yongzheng Sun (The Hong Kong Polytechnic University, China), Mingsong Lv (The Hong Kong Polytechnic University, China), Weichen Liu (Nanyang Technological University, Singapore)
- Parameterized Workload Adaptation for Fork-Join Tasks with Dynamic Workloads and Deadlines  
Marion Sudvarg (Washington University in St. Louis), Jeremy Buhler (Washington University in St. Louis), Roger D. Chamberlain (Washington University in St. Louis), Chris Gill (Washington University in St. Louis), Jim Buckley (Washington University in St. Louis), Wenlei Chen (University of Minnesota)
- Improved Bus Contention Analysis for 3-Phase Tasks  
Jatin Arora (CISTER, ISEP, Portugal), Syed Aftab Rashid (CISTER, ISEP; VORTEX CoLab, Portugal), Geoffrey Nelissen (Eindhoven University of Technology, The Netherlands), Cláudio Maia (CISTER, ISEP, Portugal), Eduardo Tovar (CISTER, ISEP, Portugal)

- Accelerating The Permute And N-gram Operations For Hyperdimensional Learning in Embedded Systems  
Pere Vergés (University of California), Igor Nunes (University of California), Mike Heddes (University of California), Tony Givargis (University of California), Alexandru Nicolau (University of California)

September 1 (Fri) 12:15 - 12:30, Room 302

Closing

## Wi-Fi

SSID : TOKI\_Premium\_WiFi

PASS : 20thanniv

## BANQUET

DATE : August 31.

TIME : 18:00-21:00

VENUE: ANA Crowne Plaza Hotel Niigata

5Chome-11-20 Bandai, Niigata-shi, Niigata 950-8531

