

# RTAS 2022 Program

(All times are based on Milan, Italy local time: CEST)

## Day 1: Wednesday, May 4, 2022

**12:30pm - 12:45pm CPS-IoT Week Opening**

**12:45pm - 1:45pm Keynote (Kalle Johansson)**

**1:45pm - 2:00pm Break & Social**

**2:00pm - 2:15pm RTAS Opening Remarks**

**2:15pm - 3:15pm Session 1 Cyber-Physical Systems**

Chair: Qi Zhu

- Guaranteeing Safety Despite Physical Errors in Cyber-Physical Systems  
*Jongwoo Han, Seonghyeon Park, Haejoo Jeon, Chang-Gun Lee*
- Deadline-Miss-Adaptive Controller Implementation for Real-Time Control Systems  
*Nils Vreman, Claudio Mandrioli, Anton Cervin*

**3:15pm - 3:30pm Break & Social**

**3:30pm - 4:30pm Session 2 Fault-Tolerance**

Chair: Sathish Gopalakrishnan

- A Mixed-Criticality Approach to Fault Tolerance: Integrating Schedulability and Failure Requirements  
*Federico Reghenzani, Zhishan Guo, Luca Santinelli, William Fornaciari*
- Compiler-Directed High-Performance Intermittent Computation with Power Failure Immunity  
*Jongouk Choi, Larry Kittinger, Qingrui Liu, Changhee Jung*

**4:30pm - 4:45pm Break & Social**

**4:45pm - 5:45pm Session 3 Systems and Applications I**

Chair: Abusayeed Saifullah

- Jumpstart: Fast Critical Service Resumption for a Partitioning Hypervisor in Embedded Systems  
*Ahmad Golchin, Richard West*
- FlyOS: Integrated Modular Avionics for Autonomous Multicopters  
**Outstanding Paper Award**  
*Anam Farrukh, Richard West*

**5:45pm - 6:00pm Break & Social**

**6:00pm - 7:00pm Session 4 RTOS**

Chair: Alessandro Biondi

- SBIs: Application Access to Safe, Baremetal Interrupt Latencies  
*Runyu Pan, Gabriel Parmer*
- The Thundering Herd: Amplifying Kernel Interference to Attack Response Times  
*Samuel Mergendahl, Samuel Jero, Bryan Ward, Juliana Furgala, Gabriel Parmer, Richard Skowrya*

## Day 2: Thursday, May 5, 2022

**9:15am - 10:15am Keynote (Luca Benini)**

**10:15am - 10:30am Break & Social**

**10:30am - 11:30am Session 5 Timing Analysis I**

Chair: Daniel Casini

- Response Time Analysis for Hybrid Task Sets under Fixed Priority Scheduling  
*Quan Zhou, Jihua Huang, Jianjun Li, Zhi Li*
- Partial-Order Reduction for Schedule-Abstraction-based Response-Time Analyses of Non-Preemptive Tasks

**Outstanding Paper Award**

*Sayra Ranjha, Geoffrey Nelissen, Mitra Nasri*

**11:30am - 11:45am Break & Social**

**11:45am - 12:45pm Session 6 Systems and Applications II**

Chair: Francisco Cazorla

- Memory Utilization-Based Dynamic Bandwidth Regulation for Temporal Isolation in Multi-Cores  
*Ahsan Saeed, Dasari Dakshina Narahari, Dirk Ziegenbein, Varun Rajasekaran, Falk Rehm, Michael Pressler, Arne Hamann, Daniel Mueller-Gritschneider, Andreas Gerstlauer, Ulf Schlichtmann*
- FA2: Fast, Accurate Autoscaling for Serving Deep Learning Inference with SLA Guarantees

*Kamran Razavi, Manisha Luthra, Boris Koldehofe, Max Mühlhäuser, Lin Wang*

**12:45pm - 1:00pm Break & Social**

**1:00pm - 2:00pm Session 7 Real-time AI**

Chair: Monowar Hasan

- DNN-SAM: Split-and-Merge DNN Execution for Real-Time Object Detection  
*Woosung Kang, Siwoo Chung, Jeremy Yuhyun Kim, Youngmoon Lee, Kilho Lee, Jinkyu Lee, Kang G. Shin, Hoon Sung Chwa*
- Self-Cueing Real-Time Attention Scheduling in Criticality-Aware Visual Machine Perception

**Outstanding Paper Award**

*Shengzhong Liu, Xinzhe Fu, Maggie Wigness, Philip David, Shuochao Yao, Lui Sha, Tarek Abdelzaher*

**2:00pm - 2:15pm Break & Social**

**2:15pm - 3:15pm Brief Presentation**

Chair: Angeliki Kritikakou, Alessandro Papadopoulos

- BIP, WiP, Demo

**3:15pm - 3:45pm TCRTS/RTAS Awards**

- RTAS'22 Best/Outstanding paper awards
- RTAS Influential Paper Award

## Day 3: Friday, May 6, 2022

### 11:45am - 12:45pm Session 8 Mixed-Criticality

Chair: Liliana Cucu-Grosjean

- Analysis-Runtime Co-design for Adaptive Mixed Criticality Scheduling  
*Iain Bate, Alan Burns, Robert Davis*
- MSRP-FT: Reliable Resource Sharing on Multiprocessor Mixed-Criticality Systems  
*Nan Chen, Shuai Zhao, Ian Gray, Alan Burns, Siyuan Ji, Wanli Chang*

### 12:45pm - 1:00pm Break & Social

### 1:00pm - 2:00pm Session 9 Timing Analysis II

Chair: Mitra Nasri

- End-to-End Analysis of Event Chains under the QNX Adaptive Partitioning Scheduler  
*Dakshina Dasari, Matthias Becker, Daniel Casini, Tobias Blass*
- WeaklyHard.jl: Scalable Analysis of Weakly-Hard Constraints  
*Nils Vreman, Richard Pates, Martina Maggio*

### 2:00pm - 2:15pm Break & Social

### 2:15pm - 3:15pm Session 10 Security and Networking

Chair: Bryan Ward

- PAC-PL: Enabling Control-Flow Integrity with Pointer Authentication in FPGA SoC Platforms  
*Gabriele Serra, Pietro Fara, Giorgiomaria Cicero, Francesco Restuccia, Alessandro Biondi*
- RT-WiFi on Software-Defined Radio: Design and Implementation  
*Zelin Yun, Peng Wu, Shengli Zhou, Aloysius K. Mok, Mark Nixon, Song Han*

### 3:15pm - 3:30pm Break & Social

### 3:30pm - 4:30pm Session 11 Scheduling and Verification

Chair: Wanli Chang

- Minimizing DAG Utilization by Exploiting SMT  
*Sims Hill Osborne, Joshua Bakita, Jingyuan Chen, Tyler Yandrofski, James Anderson*
- A Formal Correctness Proof for an EDF Scheduler Implementation  
*Florian Vanhems, Vlad Rusu, David Nowak, Gilles Grimaud*

### 4:30pm - 4:45pm Break & Social

### 4:45pm - 5:45pm Keynote (Rich West)

### 5:45pm - 6:00pm CPS-IoT Week Closing