RTAS 2023 Program

@CPS-IoT Week 2023

May 9-12, 2023
San Antonio, Texas, USA

Day 1, May 10, 2023 - Program of RTAS 2023

8:45am-9:00am, Opening Remarks

9:00am-10:00am, Keynote Talk 1: Convergence Between Model- and Data- driven Design for Cyber-Physical Systems, Janos Sztipanovits, Vanderbilt University, USA

10:00am-10:30am, Coffee Break

10:30am-12pm, Session 1: Average-case and probabilistic behavior
 Session Chair: Abusayeed Saifullah

- **Average Task Execution Time Minimization under (m,k) Soft Error Constraint**, Junjie Shi, Niklas Ueter, Jian-Jia Chen and Kuan-Hsun Chen
- **Continuous-Emission Markov Models for Real-Time Applications: Bounding Deadline Miss Probabilities**, Anna Friebe, Filip Markovic, Alessandro V. Papadopoulos and Thomas Nolte
- **Minimizing Probabilistic End-to-end Latencies of Autonomous Driving Systems,** Taeho Han and Kanghee Kim

12:00pm-1:30pm, Lunch and Social

1:30pm-3pm, Session 2: Partitioning and composition
 Session Chair: Bryan Ward

- **Shedding Light on Static Partitioning Hypervisors for Arm-based Mixed-Criticality Systems,** José Martins and Sandro Pinto
- **Hardware Compute Partitioning on NVIDIA GPUs,** Joshua Bakita and Jim Anderson
- **Compositional Mixed-Criticality Systems with Multiple Executions and Resource-Budgets Model,** Abdullah Al Arafat, Sudharsan Vaidhun, Liangkai Liu, Kecheng Yang and Zhishan Guo

3:00pm-3:30pm, Coffee Break

3:30pm-5:30pm, Poster/DEMO Session (Brief Presentation)
 Session Chair: Sibin Mohan

- **Work in Progress: Response Time Analysis of Real-Time Quantum Computing Systems**, Albert M. K. Cheng
- **Towards a statistical worst-case energy consumption model**, Marwan El Khazen, Slim Ben Amor, Kossivi Kougblenou, Liliana Cucu-Grosjean and Adriana Gogonel
- **Work In Progress: A New Task Model for Real-Time DNNs over GPU**, Mourad Dridi, Yasmina Abdeddaim and Chiara Daini
- **Work in Progress: Real-time Transformer Inference on Edge AI Accelerators**, Brendan Reidy, Mohammadreza Mohammadi, Mohammed Elbtity, Heath Smith and Ramtin Zand

- **Work-in-Progress: Securing Safety-Critical Control Tasks with Attack-aware Multi-Rate Scheduling**, Arkaprava Sain, Suraj Singh, Sunandan Adhikary, Ipsita Koley and Soumyajit Dey
- **Work in Progress: Schedulability Analysis of CAN and CAN FD Authentication**, Omolade Ikumapayi, Habeeb Olufowobi, Jeremy Daily, Tingting Hu, Ivan Cibrario Bertolotti and Gedare Bloom
- **Work-in-Progress: Deadline-Aware Named Data Networking for Time-Sensitive IoT Applications**, Afia Anjum, Sena Hounsinou and Habeeb Olufowobi
- **Demo: Simulation and Security Toolbox for Cyber-Physical Systems**, Lin Zhang, Mengyu Liu and Fanxin Kong

Day 2, May 11, 2023 - Program of RTAS 2023

8:45am-9:00am, Announcements

9:00am-10:00am, Keynote Talk 2: Towards Ambient Intelligence for Healthcare: A CPS Perspective, John A. Stankovic, University of Virginia, USA

10:00am-10:30am, Coffee Break

10:30am-12pm, Session 3: ROS 2
 Session Chair: Renato Mancuso

- **Real-Time Performance Analysis of Processing Systems on ROS2 Executors,** Yue Tang, Nan Guan, Xu Jiang, Xiantong Luo and Wang Yi
- **ROSGM: A Real-Time GPU Management Framework with Plug-In Policies for ROS 2,** Ruoxiang Li, Tao Hu, Xu Jiang, Laiwen Li, Wenxuan Xing, Qingxu Deng and Nan Guan
- **Timing Analysis and Priority-driven Enhancements of ROS 2 Multi-threaded Executors,** Hoora Sobhani, Hyunjong Choi and Hyoseung Kim

12:00pm-1:30pm, Lunch and Social

1:30pm-3pm, Session 4: Optimization and trade-off
 Session Chair: Gedare Bloom

- **A General and Scalable Method for Optimizing Real-Time Systems with Continuous Variables,** Sen Wang, Ryan K. Williams and Haibo Zeng
- **ISC-FLAT: On the Conflict Between Control Flow Attestation and Real-Time Operations,** Antonio Joia Neto and Ivan de Oliveira Nunes
- **Best Reviewer award presentation and discussion**

3:00pm-3:30pm, Coffee Break

3:30pm-5:30pm, Session 5: Scheduling
 Session Chair: Sathish Gopalakrishnan

- **Schedulability Analysis of Non-preemptive Sporadic Gang Tasks on Hardware Accelerators,** Binqi Sun, Tomasz Kloda, Jiyang Chen, Cen Lu and Marco Caccamo
- **Scheduling Periodic Segmented Self-Suspending Tasks without Timing Anomalies,** Ching-Chi Lin, Mario Günzel, Junjie Shi, Tristan Taylan Seidl, Kuan-Hsun Chen and Jian-Jia Chen
- **Precise Response Time Analysis for Multiple DAG Tasks with Intra-task Priority Assignment,** Nan Chen, Shuai Zhao, Ian Gray, Alan Burns, Siyuan Ji and Wanli Chang
- **Real-Time Scheduling of Autonomous Driving System with Guaranteed Timing Correctness,** Jinghao Sun, Kailu Duan, Xisheng Li, Nan Guan, Zhishan Guo, Qingxu Deng and Guozhen Tan

6pm/6:30pm - 9pm/9:30pm, Banquet(offsite)

8:45am-9:00am, Announcements

9:00am-10:00am, Keynote Talk 3: Efficiently Enabling Rich and Trustworthy Inferences at the Extreme Edge, Mani Srivastava, University of California, Los Angeles, USA

10:00am-10:30am, Coffee Break

10:30am-12pm, Session 6: Safety and Security
 Session Chair: Daniel Casini

- **Cache Bank-Aware Denial-of-Service Attacks on Multicore ARM Processors,** Michael Bechtel and Heechul Yun
- **Real-Time Data-Predictive Attack-Recovery for Complex Cyber-Physical Systems,** Lin Zhang, Kaustubh Sridhar, Mengyu Liu, Pengyuan Lu, Xin Chen, Fanxin Kong, Oleg Sokolsky and Insup Lee
- **ATLAS: Aging-Aware Task Replication for Multicore Safety-Critical Systems,** Mohsen Ansari, Sepideh Safari, Amir Yeganeh-Khaksar, Roozbeh Syiadatzadeh, Pourya Gohari-Nazari, Heba Khdr, Muhammad Shafique, Jörg Henkel and Alireza Ejlali

12:00pm-1:30pm, Lunch and Social

1:30pm-3pm, Session 7: Memory and Middleware
 Session Chair: Kuan-Hsun Chen

- **MemPol: Policing Core Memory Bandwidth from Outside of the Cores,** Alexander Zuepke, Andrea Bastoni, Weifan Chen, Marco Caccamo and Renato Mancuso
- **ZeroCost-LLC: Shared LLCs at No Cost to WCL,** Zhuanhao Wu, Anirudh Kaushik and Hiren Patel
- **MultiSSE: Static Syscall Elision and Specialization for Event-Triggered Multi-Core RTOS,** Gerion Entrup, Björn Fiedler, Daniel Lohmann

3:00pm-3:30pm, Coffee Break

3:30pm-5:30pm, Session 8: Networks and Communication
 Session Chair: Fanxin Kong

- **G(IP)2C: Temporally Isolated Multiprocessor Real-Time IPC with Server-to-Server Invocations, Cédric** Courtaud and Björn Brandenburg
- **On the QNX IPC: Assessing Predictability for Local and Distributed Real-Time Systems,** Matthias Becker, Dakshina Dasari and Daniel Casini
- **Efficient and Accurate Handling of Periodic Flows in Time-Sensitive Networks,** Seyed Mohammadhossein Tabatabaee, Marc Boyer, Jean-Yves Le Boudec, Jörn Migge

- **Virtualized DDS Communication for Multi-Domain Systems: Architecture and Performance Evaluation of Design Alternatives,** Andrea Stevanato, Alessandro Biondi, Alessandro Biasci and Bruno Morelli