

IEEE REAL-TIME SYSTEMS SYMPOSIUM

RTSS 2012 DECEMBER 4-7, SAN JUAN, PUERTO RICO



Venue

San Juan
Marriott Resort
1309 Ashford Avenue
San Juan, 00907
Puerto Rico



Clima

(San Juan, December)

Air temperature:

22°C to 28°C

(72° to 84°F)

Humidity: 80%

Rainfall: substantial

Sea temperature:

27°C (80°F)



Newsletter 1

October 2012

Welcome to RTSS 2012, the 33rd IEEE Real-Time Systems Symposium, the premier conference in the area of real-time systems, presenting innovations in the field with respect to theory and practice. RTSS provides a forum for the presentation of high-quality, original research covering all aspects of real-time systems design, analysis, implementation, evaluation, and experiences.

This year, between the 4th and the 7th of December, RTSS 2012 will bring you to San Juan, in Puerto Rico, to offer you a diversified program and a venue to meet the real-time systems community.

In this newsletter, we bring you some highlights of the technical program. Beyond ten sessions with 35 cutting edge presentations, we will also have two invited speakers, namely this year keynote speaker Edward Lee (University of California at Berkeley, USA), with a talk entitled *Time for High-Confidence Distributed Embedded Systems* and the recipient of the 2011 IEEE TC-RTS Outstanding Technical Achievement and Leadership Award, Wei Zhao (University of Macao, China), with a talk entitled *Internet-of-Things: What and How*.

We are also pleased to offer a rich set of satellite events with 5 workshops on cutting edge topics, plus the RTSS@work demos session and the traditional RTSS Work-in-Progress session.

For you that work in real-time systems, this is an event that you cannot miss. You are still in time to register and join us.

We look forward to meeting you in San Juan!

Luis Almeida
General Chair, RTSS 2012

Chenyang Lu
Program Chair, RTSS 2012

Important dates:

Early registration: until the 3rd of November

Hotel reservation at group rate: until the 17th of November

Satellite workshops: 4th of December

Symposium: 5th to 7th of December

More information available on our webpage:

<http://www.rtss.org/>

RTSS 2012 – Program

(5th to 7th of December)

Satellite Events

(4th of December)

CRTS 2012

5th Workshop on
Compositional Theory
and Technology for Real-
Time Embedded
Systems

AVIPCS 2012

3rd Workshop on Analytic
Virtual Integration of
Cyber-Physical Systems
Workshop

WCTT 2012

2nd International
Workshop on Worst-case
Traversal Time

REACTION 2012

1st Workshop on Real-
Time and Distributed
Computing in Emerging
Applications

PETARS 2012

1st Workshop on Power,
Energy, and
Temperature Aware
Real-time Systems

Special Sessions

RTSS@Work

(4th December)
2nd Open Demo Session
of Real-Time Systems

RTSS2012 WiP

(5th December)
Work-in-Progress
session

For details on the
respective programs
consult our webpage
<http://www.rtss.org>

Day 1

8:25-9 Welcome and Award Speech

WELCOME

Luis Almeida (University of Porto) and Chenyang Lu (Washington University)

AWARD SPEECH: INTERNET OF THINGS — WHAT AND HOW

Wei Zhao (University of Macau)

9-10 Session 1 Beyond Processors

INVESTIGATION OF SCRATCHPAD MEMORY FOR PREEMPTIVE
MULTITASKING

Jack Whitham, Sebastian Altmeyer, Robert Davis, Neil Audsley and Claire Maiza

CURBING AGGREGATE MEMBER FLOW BURSTINESS TO BOUND END-TO-
END DELAY IN NETWORKS OF TDMA CROSSBAR REAL-TIME SWITCHES

Qixin Wang, Yufei Wang, Rong Zheng and Xue Liu

10-10:30 Break

10:30-12:30 Session 2 Real-Time Scheduling

CONTROLLING PREEMPTION FOR BETTER SCHEDULABILITY IN MULTI-
CORE SYSTEMS

Jinkyu Lee and Kang G. Shin

OPTIMAL FIXED PRIORITY SCHEDULING WITH DEFERRED PRE-EMPTION

Robert Davis and Marko Bertogna

EXTENDING TASK-LEVEL TO JOB-LEVEL FIXED PRIORITY ASSIGNMENT AND
SCHEDULABILITY ANALYSIS USING PSEUDO-DEADLINES

Hoon Sung Chwa, Hyoungbu Back, Sanjian Chen, Jinkyu Lee, Arvind Easwaran,
Insik Shin and Insup Lee

A GENERALIZED PARALLEL TASK MODEL FOR RECURRENT REAL-TIME
PROCESSES

Sanjoy Baruah, Vincenzo Bonifaci, Alberto Marchetti-Spaccamela, Leen Stougie
and Andreas Wiese

12:30-1:30 Lunch

1:30-3:30 Session 3 Wireless Sensor Networks: Applications

DISTRIBUTED SENSING FOR HIGH QUALITY STRUCTURAL HEALTH
MONITORING USING WIRELESS SENSOR NETWORKS

Xuefeng Liu, Jiannong Cao, Wen-zhan Song and Shaojie Tang

PCRUISE: REDUCING CRUISING MILES FOR TAXICAB NETWORKS

Desheng Zhang and Tian He

RADIOSENSE: EXPLOITING WIRELESS COMMUNICATION PATTERNS FOR
BODY SENSOR NETWORK ACTIVITY RECOGNITION

Xin Qi, Gang Zhou, Yantao Li and Ge Peng

RASS: A PORTABLE REAL-TIME AUTOMATIC SLEEP SCORING SYSTEM

Jin Zhang, Dawei Chen, Jianhui Zhao, Mincong He, Yuanpeng Wang and Qian
Zhang

3:30-4 Break

4-6 Work-in-Progress Session

6-8 Work-in-Progress Posters and Welcome Reception

Day 2

8:30-10 Keynote

TIME FOR HIGH-CONFIDENCE DISTRIBUTED EMBEDDED SYSTEMS
Edward A. Lee (University of California Berkeley)

10-10:30 Break

10:30-12:30 Session 4 Resource Management

A PTAS FOR ASSIGNING SPORADIC TASKS ON TWO-TYPE HETEROGENEOUS MULTIPROCESSORS
Gurulingesh Raravi and Vincent Nélis

EFFICIENT ADMISSION CONTROL FOR ENFORCING ARBITRARY REAL-TIME DEMAND-CURVE INTERFACES
Farhana Dewan and Nathan Fisher

STATIC APPROXIMATION ALGORITHMS FOR REGULARITY-BASED RESOURCE PARTITIONING
Yu Li and Albert M. K. Cheng

QUANTIFYING THE EFFECT OF RARE TIMING EVENTS WITH SETTLING-TIME AND OVERSHOOT
Pratyush Kumar and Lothar Thiele

12:30-2 Lunch

2-3:30 Session 5 Cyber-Physical Systems: Technology

QOS-BASED RESOURCE ALLOCATION FOR NEXT-GENERATION SPACECRAFT NETWORKS
Arvind Kandhalu and Ragnathan (Raj) Rajkumar

STATIC AND DYNAMIC ANALYSIS OF TIMED DISTRIBUTED TRACES
Parasara Sridhar Duggirala, Taylor T Johnson, Adam Zimmerman and Sayan Mitra

TAYLOR MODEL FLOWPIPE CONSTRUCTION FOR NON-LINEAR HYBRID SYSTEMS
Xin Chen, Erika Abraham and Sriram Sankaranarayanan

3:30-4 Break

4-5:30 Session 6 Cyber-Physical Systems: Applications

GREEN SCHEDULING FOR ENERGY-EFFICIENT OPERATION OF MULTIPLE CHILLER PLANTS
Madhur Behl, Truong Nghiem and Rahul Mangharam

SPATIOTEMPORAL AQUATIC FIELD RECONSTRUCTION USING ROBOTIC SENSOR SWARM
Yu Wang, Rui Tan, Guoliang Xing, Xiaobo Tan, Jianxun Wang and Ruogu Zhou

A HIGH-FIDELITY TEMPERATURE DISTRIBUTION FORECASTING SYSTEM FOR DATA CENTERS
Jinzhu Chen, Rui Tan, Yu Wang, Guoliang Xing, Xiaorui Wang, Xiaodong Wang, Bill Punch and Dirk Colbry

5:30-6 TC Meeting

8-10 Banquet

Day 3

8:30-10 Session 7 Systems

SAFER: SYSTEM-LEVEL ARCHITECTURE FOR FAILURE EVASION IN REAL-TIME APPLICATIONS
Junsung Kim, Gaurav Bhatia and Ragnathan (Raj) Rajkumar

SLOTH ON TIME: EFFICIENT HARDWARE-BASED SCHEDULING FOR TIME-TRIGGERED RTOS
Wanja Hofer, Daniel Danner, Rainer Müller, Fabian Scheler, Wolfgang Schröder-Preikschat and Daniel Lohmann

INCREASING MEMORY UTILIZATION WITH TRANSIENT MEMORY SCHEDULING
Gabriel Parmer, Qi Wang, Jiguo Song, Guru Venkataramani and Andrew Sweeney

10-10:30 Break

10:30-12:30 Session 8 Design and Verification

QUANTITATIVE VERIFICATION OF IMPLANTABLE CARDIAC PACEMAKERS
Taolue Chen, Marco Diciolla, Marta Kwiatkowska and Alexandru Mereacre

A MODEL OF PARALLEL DETERMINISTIC REAL-TIME COMPUTATION

Matthieu Lemerre and Emmanuel Ohayon

DESIGNING HIGH-QUALITY EMBEDDED CONTROL SYSTEMS WITH GUARANTEED STABILITY

Amir Aminifar, Soheil Samii, Petru Eles, Zebo Peng and Anton Cervin

MONITORING ARBITRARY ACTIVATION PATTERNS IN REAL-TIME SYSTEMS

Moritz Neukirchner, Tobias Michaels, Philip Axer, Sophie Quinton and Rolf Ernst

12:30-1:30 Lunch

1:30-3:30 Session 9 Wireless Sensor Network: Protocols

ON THE DELAY PERFORMANCE ANALYSIS IN A LARGE-SCALE WIRELESS SENSOR NETWORK

Jiliang Wang, Wei Dong, Zhichao Cao and Yunhao Liu

JAG: RELIABLE AND PREDICTABLE WIRELESS AGREEMENT UNDER EXTERNAL RADIO INTERFERENCE

Carlo Alberto Boano, Marco Antonio Zuniga, Kay Roemer and Thiemo Voigt

QUALITY OF INFORMATION BASED DATA SELECTION AND TRANSMISSION IN WIRELESS SENSOR NETWORKS

Lu Su, Shaohan Hu, Shen Li, Feng Liang, Jing Gao, Tarek Abdelzaher and Jiawei Han

IT IS NOT JUST A MATTER OF TIME: OSCILLATION-FREE EMERGENCY NAVIGATION WITH SENSOR NETWORKS

Lin Wang, Yuan He, Yunhao Liu, Wenyuan Liu, Jiliang Wang and Nan Jing

3:30-4 Break

4-6 Session 10 Real-Time Performance Analysis

A STATISTICAL RESPONSE-TIME ANALYSIS OF REAL-TIME EMBEDDED SYSTEMS

Yue Lu, Thomas Nolte, Iain Bate and Liliana Cucu-Grosjean

AN ILP-BASED WORST-CASE PERFORMANCE ANALYSIS TECHNIQUE FOR DISTRIBUTED REAL-TIME EMBEDDED SYSTEMS

Jinwoo Kim, Hyunok Oh, Hyojin Ha, Shin-haeng Kang, Junchul Choi and Soonhoi Ha

AN O(M) ANALYSIS TECHNIQUE FOR SUPPORTING REAL-TIME SELF-SUSPENDING TASK SYSTEMS

Cong Liu and James Anderson

REDUCING THE SIZE OF THE CONSTRAINT MODEL IN IMPLICIT PATH ENUMERATION USING SUPER BLOCKS

Adam Betts

6-6:10 Closing Remarks

