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Systems and Applications

RTCSA 2015
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19 – 21 August

Sponsored By:
IEEE Computer Society
IEEE Computer Society, Technical Committee on Real-Time Systems
IEEE Hong Kong Section Computer Chapter
Department of Computer Science, Hong Kong Baptist University

RTCSA 2015 Program

Level 2, Academic and Administration Building, Baptist University Road Campus
Hong Kong Baptist University

Aug. 19 (WED)	AAB201	AAB203	AAB204
08:30-09:30	Registration		
09:30-10:30	Keynote Speaker1 (AAB201)		
10:30-11:00	Coffee Break		
11:00-12:30	RTCSA Session 1	CPSNA Session 1	NVMSA Session 1
12:30-14:30	Lunch		
14:30-16:00	RTCSA Session 2	CPSNA Session 2	NVMSA Session 2
16:00-16:30	Coffee Break		
16:30-18:00	RTCSA Session 3	CPSNA Session 3	NVMSA Session 3
18:30-20:00	Reception (Light Refreshments)		

Aug. 20 (THU)	AAB201	AAB203	AAB204
08:30-09:30	Registration		
09:30-10:30	Keynote Speaker2 (AAB201)		
10:30-11:00	Coffee Break		
11:00-12:30	RTCSA Session 4	CPSNA Session 4	NVMSA Session 4
12:30-14:30	Lunch		
14:30-16:30	RTCSA Session 5	CPSNA Session 5	NVMSA Poster Session (AAB205)
16:30-18:00	Local Tour		
18:30-20:00	Banquet		

Aug. 21 (FRI)	AAB201	AAB203	AAB204
08:30-09:30	Registration		
09:30-10:30	Keynote Speaker3 (AAB201)		
10:30-11:00	Coffee Break		
11:00-12:30	RTCSA Session 6	CPSNA Session 6	NVMSA Session 5
12:30-14:30	Lunch		
14:30-16:00	RTCSA Session 7	CPSNA Session 7	NVMSA Session 6
16:00-16:30	Coffee Break		
16:30-18:00	RTCSA Session 8		RTCSA Session 9
18:30-20:00	SC, OC & PC Dinner Meeting (Invitation Only)		

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香港浸會大學 HONG KONG BAPTIST UNIVERSITY 普適計算研究中心 Research Centre for Ubiquitous Computing

WEDNESDAY, AUGUST 19th	
09:30-10:30	Keynote Speaker1 (AAB201)
09:30-10:30	Fast Data Accesses in Memory and Storage Xiaodong Zhang
11:00-12:30	**RTCSA Session 1 (AAB201, Real-Time Systems Track): Multi-Core and Multiprocessor Systems**
11:00-11:30	R1.1 On the Soft Real-Time Optimality of Global EDF on Multiprocessors: From Identical to Uniform Heterogeneous Kecheng Yang and Jim Anderson
11:30-12:00	R1.2 Bounding Carry-in Interference to Improve Fixed-Priority Global Multiprocessor Scheduling Analysis Nan Guan, Meiling Han, Chuancai Gu, Qingxu Deng and Wang Yi
12:00-12:30	R1.3 Enhanced Fault-Tolerant Fixed-Priority Scheduling of Hard Real-Time Tasks on Multi-Core Platforms Qiushi Han, Tianyi Wang and Gang Quan
14:30-16:00	**RTCSA Session 2 (AAB201, Embedded System Track):**
14:30-15:00	R2.1 Schedulability Analysis for Real-Time P-FRP Tasks Under Fixed Priority Scheduling Yu Jiang, Albert M. K. Cheng and Xingliang Zou
15:00-15:30	R2.2 Smart^2: Smart charging for smart phones Alma Proebstl, Philipp Kindt, Emanuel Regnath and Samarjit Chakraborty
15:30-16:00	R2.3 C3: Cooperative Code Positioning and Cache Locking for WCET Minimization Fuyang Li, Mengying Zhao and Chun Jason Xue
16:30-18:00	**RTCSA Session 3 (AAB201, System Design Practice and Emerging Applications Track):**
16:30-17:00	R3.1 Fair-share Scheduling for Performance-asymmetric Multicore Architecture via Scaled Virtual Runtime Myungsun Kim, Soonhyun Noh, Sungju Huh and Seongsoo Hong
17:00-17:30	R3.2 Memory Pressure Balancing on Virtualized Servers Tzicker Chiueh
17:30-18:00	R3.3 A Cloud-Based Offloading Service for Computation-Intensive Mobile Applications Bo-Kai Huang, Chih-Chuan Cheng, Chun-Han Lin and Pi-Cheng Hsiu
11:00-12:30	**CPSNA Session 1 (AAB203, CPSNA Keynote Session)**
11:00-11:45	C1.1 Cross-Layer Design of Distributed Cyber-Physical Systems: From Physical Models to Semiconductor Reliability Samarjit Chakraborty
11:45-12:30	C1.2 Internet of Things (IoT) Revolution toward Hyper-connected World Kang-Won Lee
14:30-16:00	**CPSNA Session 2 (AAB203, Research Session 1 - Smartphones and Wearable Devices)**
14:30-15:00	C2.1 Elastic Computation Middleware for Interactive Wearable Devices in Cyber-Physical Systems Chi-Sheng Daniel Shih, Yu-Hsin Wang, Chang-Min Yang,and Shao-Hao Chao
15:00-15:30	C2.2 Formal Analysis of Android Application Behavior with Real-Time Maude Shin Nakajima
15:30-16:00	C2.3 XFace: A Face Recognition System for Android Mobile Phones Jiawei Hu, Liangrui Peng, and Li Zheng
16:30-18:00	**CPSNA Session 3 (AAB203, Research Session 2 - Realtime Computing)**
16:30-17:00	C3.1 A Real-Time Operating System with GNSS-Based Tick Synchronization Takanori Yokoyama, Ayane Matsubara, and Myungryun Yoo
17:00-17:30	C3.2 Multi-level QoS Support with Variable Window Size in Weakly Hard Real-Time Systems Nga Dang, Eli Bozorgzadeh, and Moonju Park

17:30-18:00	**C3.3 A Non-Visual Sensor Triggered Life Logging System Using Canonical Correlation Analysis** Inhwan Hwang and Songhwai Oh

11:00-12:30	NVMSA Session 1 (AAB204, NVM-Aware File Systems and Data Processing)
11:00-11:30	**N1.1 Designing an Efficient Persistent In-Memory File System** Edwin Sha, Xianzhang Chen, Qingfeng Zhuge, Liang Shi and Weiwen Jiang
11:30-12:00	**N1.2 Stream Query Processing on Emerging Memory Architectures** Bruce Childers, Chelsea Mafrica, John Johnson, Santiago Bock, Thao Pham, Panos Chrysanthis and Alexandros Labrinidis
12:00-12:30	**N1.3 MobiLock: An Energy-aware Encryption Mechanism for NVRAM-based Mobile Devices** Xianlu Luo, Duo Liu, Liang Liang, Yang Li, Kan Zhong and Linbo Long

14:30-16:00	NVMSA Session 2 (AAB204, I/O Scheduling and Wear Leveling)
14:30-15:00	**N2.1 Workload-Aware Budget Compensation Scheduling for NVMe Solid State Drives** Byunghei Jun and Dongkun Shin
15:00-15:30	**N2.2 Mixer: Software Enabled Wear Leveling for Morphable PCM in Embedded Systems** Linbo Long, Duo Liu, Liang Liang, Kan Zhong, Xiao Zhu and Edwin Sha
15:30-16:00	**N2.3 Energy Efficient Task Allocation for Hybrid Main Memory Architecture** Xiaojun Cai, Lei Ju, Xin Li, Zhiyong Zhang and Zhiping Jia

16:30-18:00	NVMSA Session 3 (AAB204, Architectural/Circuit Exploration and Optimization)
16:30-17:00	**N3.1 Read Disturbance Issue for Nanoscale STT-MRAM** Yi Ran, Wang Kang, Youguang Zhang, Jacques-Olivier Klein and Weisheng Zhao
17:00-17:30	**N3.2 Improving MLC PCM Write Throughput by Write Reconstruction** Huizhang Luo, Liang Shi, Mengying Zhao, Qingfeng Zhuge and Chun Xue
17:30-17:45	**N3.3 HMMSim: A Simulator for Hardware-Software Co-Design of Hybrid Main Memory (short)** Santiago Bock, Bruce Childers, Rami Melhem and Daniel Mosse
17:45-18:00	**N3.4 STT-MRAM Cell Design with Partial Source Line Planes: Improving the Trade-Off between Area and Series Resistance (short)** Raf Appeltans, Stefan Cosemans, Praveen Raghavan, Diederik Verkest, Liesbet Van der Perre and Wim Dehaene

THURSDAY, AUGUST 20th	

09:30-10:30	Keynote Speaker2 (AAB201)
09:30-10:30	**When Bits meet Joules: A view from data center operations' perspective** Steve, Xue Liu

11:00-12:30	RTCSA Session 4 (AAB201, Real-Time Systems Track): Virtualization
11:00-11:30	**R4.1 Responsive and Enforced Interrupt Handling for Real-Time System Virtualization** Hyoseung Kim, Shige Wang and Raj Rajkumar
11:30-12:00	**R4.2 Bi-Level Deadline Scaling for Admission Control in Mixed-Criticality Systems** Alejandro Masrur, Dirk Mueller and Matthias Werner
12:00-12:30	**R4.3 Overhead-aware schedulability evaluation of semi-partitioned real-time schedulers** Pedro Souto, Paulo Sousa, Rob Davis, Konstantinos Bletsas and Eduardo Tovar

14:30-16:30	RTCSA Session 5 (AAB201, Short Papers):
14:30-14:50	**R5.1 Hard real-time multiprocessor scheduling resilient to core failures** Borislav Nikolic, Konstantinos Bletsas and Stefan M. Petters
14:50-15:10	**R5.2 On Component-Based Software Development for Multiprocessor Real-Time Systems** Nima Khalilzad, Moris Behnam and Thomas Nolte

15:10-15:30	**R5.3 A Memory Access Detection Methodology for Accurate Workload Characterization** Marco Cesati, Renato Mancuso, Emiliano Betti and Marco Caccamo
15:30-15:50	**R5.4 End-to-end Timing Analysis of Black-box Models in Legacy Vehicular Distributed Embedded Systems** Saad Mubeen, Mikael Sjodin, Thomas Nolte, John Lundbäck, Mattias Gålnander and Kurt-Lennart Lundbäck
15:50-16:10	**R5.5 Reconfigurable Communication Middleware for FlexRay-based Distributed Embedded Systems** Diptesh Majumdar, Licong Zhang, Purandar Bhaduri and Samarjit Chakraborty
16:10-16:30	**R5.6 Ballroom Intersection Protocol: Synchronous Autonomous Driving at Intersections** Reza Azimi, Gaurav Bhatia and Ragunathan (Raj) Rajkumar
11:00-12:30	**CPSNA Session 4 (AAB203, Invited Session)**
11:00-11:30	**C4.1 Broadcast Control of Multi-Agent Systems: A Key Technology for Cyber-Physical Systems (Invited Talk)** Shun-ichi Azuma
11:30-12:00	**C4.2 An Interdisciplinary Approach for Thermal Comfort and Energy Conservation in Buildings (Invited Talk)** Dan Wang
12:00-12:30	**C4.3 Reliable CPS Design for Mitigating Semi-Conductor and Battery Aging in Electric Vehicles (Invited Position Paper)** Wanli Chang, Alma Proebstl, Dip Goswami, Majid Zamani, and Samarjit Chakraborty
14:30-16:30	**CPSNA Session 5 (AAB203, Industry Session & WiP Session)**
14:30-15:00	**C5.1 Large-scale CPS based on Data-centric Communication Middleware (Invited Talk)** Won-Tae Kim
15:00-15:30	**C5.2 Agile Factory - An Example of an Industry 4.0 Manufacturing Process** Constantin Scheuermann, Stephan Verclas, and Bernd Brügge
15:30-16:30	**C5.3 Work-in-Progress Session**
11:00-12:30	**NVMSA Session 4 (AAB204, Invited Session 1 - Emerging NVM and Nonvolatile Processors)**
11:00-11:30	**N4.1 Leveraging Nonvolatility for Architecture Design with Emerging NVM** Shuangchen Li, Ping Chi, Jishen Zhao, and Yuan Xie
11:30-12:00	**N4.2 Design Exploration of Inrush Current Aware Nonvolatile Controller for Nonvolatile Processor** Yongpan Liu, Su Fang, Zhibo Wang, Huazhong Yang
12:00-12:30	**N4.3 Exploring Data Placement in Racetrack Memory based Scratchpad Memory** Haiyu Mao, Chao Zhang, Guangyu Sun, and Jiwu Shu
14:30-16:30	**NVMSA Poster Session (AAB205)**
	Relay-based Key Management to Support Secure Deletion for Low-end Flash-Memory Storage Devices Wei-Lin Wang, Yuan-Hao Chang, Po-Chun Huang, Chia-Heng Tu, Hsin-Wen Wei and Wei-Kuan Shih **A Design Guideline for Volatile STT-RAM with ECC and Scrubbing** Namhyung Kim and Kiyoung Choi **Multi-version Checkpointing for Flash File Systems** Shih-Chun Chou, Yuan-Hao Chang, Yuan-Hung Kuan, Po-Chun Huang, Che-Wei Tsao and Shih-Hao Hung **FFSMark: a Postmark Extension for Dedicated Flash File Systems** Pierre Olivier and Jalil Boukhobza
	FRIDAY, AUGUST 21st
09:30-10:30	**Keynote Speaker3 (AAB201)**
09:30-10:30	**WInternet: From Net of Things to Internet of Things** Wei Zhao

11:00-12:30	RTCSA Session 6 (AAB201, Real-Time Systems Track): Schedulability 1
11:00-11:30	R6.1 Techniques for Schedulability Analysis in Mode Change Systems under Fixed-Priority Scheduling Wen-Hung Huang and Jian-Jia Chen
11:30-12:00	R6.2 EDF Schedulability Analysis on Mixed-Criticality Systems with Permitted Failure Probability Zhishan Guo, Luca Santinelli and Kecheng Yang
12:00-12:30	R6.3 Schedulability Analysis for Real-time Task Set on Resource with Performance Degradation and Periodic Rejuvenation Xiayu Hua, Chunhui Guo, Hao Wu, Douglas Lautner and Shangping Ren

14:30-16:00	RTCSA Session 7 (AAB201, Real-Time Systems Track): Schedulability 2
14:30-15:00	R7.1 Improving WCET Analysis Precision through Automata Product Vincent Mussot and Pascal Sotin
15:00-15:30	R7.2 Tracing Flow Information for Tighter WCET Estimation: Application to Vectorization Hanbing Li, Isabelle Puaut and Erven Rohou
15:30-16:00	R.3 Priority-Based Functional Reactive Programming (P-FRP) using Deferred Abort Hing Choi Wong and Alan Burns

16:30-18:00	RTCSA Session 8 (AAB201, Real-Time Systems Track): Interdisciplinary
16:30-17:00	R8.1 A Stochastic Response Time Analysis for Communications in On-Chip Networks Meng Liu, Moris Behnam and Thomas Nolte
17:00-17:30	R8.2 Exploiting Job Response-Time Information in the Co-Design of Real-Time Control Systems Yang Xu, Karl-Erik Ǻrzén, Anton Cervin, Enrico Bini and Bogdan Tanasa
17:30-18:00	R8.3 EDF-PStream: Earliest deadline first scheduling of preemptable data streams - Issues related to automotive applications Akihiro Yamaguchi, Yukikazu Nakamoto, Kenya Sato, Yousuke Watanabe and Hiroaki Takada

16:30-18:00	RTCSA Session 9 (AAB204): Work-in-Progress Session
16:30-16:48	R9.1 WiP Abstract: Adaptive Routing of Real-Time Traffic on a 2D-Mesh Based NoC Matthias Becker, Meng Liu, Moris Behnam and Thomas Nolte
16:48-17:06	R9.2 WiP Abstract: Towards Stochastic Response Time Analysis for CAN Messages with Multiple Probabilistic Factors Meng Liu, Saad Mubeen, Moris Behnam and Thomas Nolte
17:06-17:24	R9.3 WiP Abstract: Towards Efficient Data Dissemination using the Cooperation among Multiple Roadside Units Byungjin Ko, Kai Liu, Haengju Lee and Sang Hyuk Son
17:24-17:42	R9.4 WiP Abstract: Brushless Motor Control using RTM and TECS Ryo Hasegawa, Hiroshi Oyama and Takuya Azumi
17:42-18:00	R9.5 WiP abstract: Which switched Ethernet technology for a given embedded system? HE Feng, Jean-Luc Scharbarg and Christian Fraboul

11:00-12:30	CPSNA Session 6 (AAB203, Research Session 3 - Systems and Applications)
11:00-11:20	C6.1 HexaCam: An FPGA-based Multi-view Camera System Abraham Monrroy, Manato Hirabayashi, Shinpei Kato, Masato Edahiro, Takefumi Miyoshi, and Satoshi Funada
11:20-11:40	C6.2 Distributed Sensing of Fluid Dynamic Phenomena with the XDense Sensor Grid Network Joao Loureiro, Raghuraman Rangarajan, and Eduardo Tovar
11:40-12:00	C6.3 Real-Time Visualization of Moving Objects Patricia Ortal, Shinpei Kato, and Masato Edahiro
12:00-12:20	C6.4 Adaptive Periodic Communication over MQTT for Large-Scale Cyber-Physical Systems Hyun-Chul Jo and Hyun-Wook Jin

14:30-16:00	CPSNA Session 7 (AAB203, Research Session 4 - Performance and Multicores)
14:30-15:00	C7.1 Intra-Operation Dynamic Voltage Scaling Daniel Moore and Alexander Dean
15:00-15:30	C7.2 Racing and Pacing to Idle: Multicore Energy Optimization Under Performance Constraints David H. K. Kim, Connor Imes, and Henry Hoffmann
15:30-16:00	C7.3 MEDUSA: A Predictable and High-Performance DRAM Controller for Multicore based Embedded Systems Prathap Kumar Valsan and Heechul Yun
11:00-12:30	NVMSA Session 5 (AAB204, Software Optimization for NAND Flash)
11:00-11:30	N5.1 FlashDefibrillator: A Data Recovery Technique for Retention Failures in NAND Flash Memory Jaeyong Jeong, Youngsun Song and Jihong Kim
11:30-11:50	N5.2 Data-centric garbage collection for NAND flash-based devices (short) Chundong Wang, Qingsong Wei, Mingdi Xue, Jun Yang and Cheng Chen
11:50-12:10	N5.3 A Software-Defined Fusion Storage System for PCM and NAND Flash (short) Zheng Li, Shuangwu Zhang, Jingning Liu, Wei Tong, Yu Hua, Dan Feng and Chenye Yu
12:10-12:30	N5.4 NVM Aware MariaDB Database System (short) Jan Lindström, Dhananjoy Das, Torben Mathiasen and Nisha Talagala
14:30-16:00	NVMSA Session 6 (AAB204, Invited Session 2 - Hybrid Memory and Multi-chip Flash)
14:30-15:00	C6.1 A Buffer Cache Architecture for Smartphones with Hybrid DRAM/PCM Memory Ye-Jyun Lin, Chia-Lin Yang, Hsiang-Pang Li and Cheng-Yuan Michael Wang
15:00-15:30	C6.2 Allocation and Scheduling of Real-Time Tasks with Volatile/Non-Volatile Hybrid Memory Systems Yuhan Lin, Nan Guan and Qingxu Deng
15:30-16:00	C6.3 Logical Data Packing for Multi-chip Flash-memory Storage Systems Ming-Chang Yang, Yuan-Hao Chang, Yu-Cheng Chang, and Po-Chun Huang