RTCSA 2014
The 20th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications

Aug.20- Aug. 22, 2014 , Chongqing, China

Wanyou Conifer Hotel, Chongqing, China

Aug.20 (WED)	International Convention Hall	Jade Room	Amber Room	Crystal Room
09:00-09:10	Open Talk: **Edwin Sha**			
09:10-10:10	RTCSA Keynote: **Tei-Wei Kuo**			
10:10-10:40	Tea Break			
10:40-11:40	NVMSA Keynote: **Sangyeun Cho**			
11:50-13:40	Lunch Break at Taipans Chinese Restaurant			
13:40-15:20	重庆医疗信息化分会	RTCSA Session 1	RTCSA Session 2	NVMSA Session 1
15:20-15:50	Tea Break			
15:50-17:30	重庆医疗信息化分会	RTCSA Session 3	RTCSA Session 4	NVMSA Session 2
18:00-	ReceptionBuffet at Taipans Chinese Restaurant			
Aug.21 (THU)	International Convention Hall	Jade Room	Amber Room	Crystal Room
09:00-10:00	RTCSA Keynote: **Jeff Hao**			
10:00:10:30	Tea Break			
10:30-11:50		RTCSA Session 5	RTCSA Session 6	NVMSA Session 3
11:50-13:40	Lunch Break at Taipans Chinese Restaurant			
13:40-15:20		RTCSA Session 7	RTCSA Session 8	NVMSA Session 4
15:20-15:50	Tea Break			
15:50-17:30		RTCSA Session 9	RTCSA Session 10	NVMSA Session 5
18:00-	Banquetat Taipans Chinese Restaurant			
Aug.22 (FRI)	International Convention Hall	Jade Room	Amber Room	Crystal Room
08:30-09:50		RTCSA Session 11	IWMSA Session 1	CPS Tutorial1
09:50-10:20	Tea Break			
10:20-12:00		RTCSA Session 12	IWMSA Session 2	CPS Tutorial2

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WENSDAY, AUGUST 20th

09:00-09:10	**Open Talk**
09:10-10:10	**RTCSA Keynote Speech:**Non-Volatile Memory Innovation **By Dr. Tei-Wei Kuo**
10:10-11:40	**NVMSA Keynote Speech:** Flashing the Roads Ahead **ByDr. Sangyeun Cho**
13:40-15:20	**RTCSA Session 1**: Embedded System Architecture(**Jade Room**) **Chair:** Victor C.S. Lee, *City University of Hong Kong*
13:40-14:00	**R1.1 Non-volatile Registers Aware Instruction Selection and Register Reallocation for Embedded Systems** **Mimi Xie[1],** Chen Pan[1], Jingtong Hu[1], Chun Jason Xue[2] and QingfengZhuge[3] *[1]Oklahoma State University,[2]City University of Hong Kong,[3]Chongqing University*
14:00-14:20	**R1.2 Dynamic Tail Packing to Optimize Space Utilization of File Systems in Embedded Computing Systems** **Nien-I Hsu[1],** Tseng-Yi Chen[1], Yuan-Hao Chang[2], Hsin-Wen Wei[3] and Wei-Kuan Shih[4] *[1]National Tsing Hua University,[2]Academia Sinica,[3]TamKang University,[4]National Tsing-Hua University*
14:20-14:40	**R1.3 An Efficient Thermal Estimation Scheme for Microprocessors** **Pei-Shu Huang,** Quan-Chung Chen, Chen-Wei Huang and Shiao-Li Tsao *National Chiao Tung University*
14:40-15:00	**R1.4 Multi-objective aware design flow for coarse-grained systems on chip** **Peng Chen,** Chao Wang, Xi Li and Xuehai Zhou *University of Science and Technology of China*
15:00-15:20	**R1.5 CCM: Low Cost Dynamic data Exchange to Emulate RAM on NAND Flash** **Junhua Zhao,** Hejun Wu and Weiwei Liu, *Sun Yat-sen University*
13:40-15:20	**RTCSA Session 2:** Real-Time System Analysis(**Amber Room**) **Chair:** Jingtong Aaron Hu, *Oklahoma State University*
13:40-14:00	**R2.1 Direct Handling of Infeasible Paths in the Event Dependency Analysis** **KilianKempf**and Frank Slomka, *Ulm University*
14:00-14:20	**R2.2 Component-Based Analysis of Hierarchical Scheduling using Linear Hybrid Automata** **Youcheng Sun[1]**, Giuseppe Lipari[1], Romain Soulat[2], Laurent

	Fribourg[2] and Nicolas Markey[2] *[1]Scuola SuperioreSant'Anna,[2] ENS Cachan and CNRS*
14:20-14:40	**R2.3 Impact Analysis for Timing Requirements on Real-Time Systems** **Tayfun Gezgin[1]**, Ingo Stierand[2], Achim Rettberg[2] and Stefan Henkler[1],[1]OFFIS,[2]Uni Oldenburg
14:40-15:00	**R2.4 Static WCET Analysis of the H.264/AVC Decoder Exploiting Coding Information** **Chen-Wei Huang[1]**, Timon Kelter[2], Bjoern Boenninghoff[2], Jan Kleinsorge[2], Michael Engel[2], Peter Marwedel[2] and Shiao-Li Tsao[1] *[1]National Chiao Tung University,[2]Technical University Dortmund*
15:00-15:20	**R2.5 A Framework for the Derivation of WCET Analyses for Multi-Core Processors(WIP)** **Michael Jacobs,** *Saarland University*
15:50-17:30	**RTCSA Session 3:** Embedded System Memory(**Jade Room**) **Chair:** Yu Wang, *Tsinghua University*
15:50-16:10	**R3.1 Minimum-cost Data Allocation with Guaranteed Probability on Multiple Types of Memory** **Shouzhen Gu[1]**, Qingfeng Zhuge[1], Jingtong Hu[2], Juan Yi[1] and Edwin H.M. Sha[3] *[1]Chongqing University,[2]Oklahoma State University,[3] University of Texas at Dallas*
16:10-16:30	**R3.2 Memory Power Optimization on Different Memory Address Mapping Schemas** **Zongwei Zhu**, Xi Li, Chao Wang and Xuehai Zhou, University of Science and Technology of China
16:30-16:50	**R3.3 A Mixed Critical Memory Controller Using Bank Privatization and Fixed Priority Scheduling** **Leonardo Ecco**, Sebastian Tobuschat, Selma Saidi and Rolf Ernst *TechnischeUniversitätBraunschweig*
16:50-17:10	**R3.4 PUMA: Pseudo Unified Memory Architecture on Single-ISA Heterogeneous Multi-core Systems** **Gangyong Jia[1]**, Liang Shi[2], Xi Li[3], Jian Wan[1] and Dong Dai[4] *[1]HangZhou Dianzi University,[2]Chongqing University,[3]USTC,[4] Texas Tech University*
17:10-17:30	**R3.5 Wear-Leveling for PCM Main Memory on Embedded System via Page Management and Process Scheduling** **Chen Pan[1]**, Mimi Xie[1], Jingtong Hu[1], Meikang Qiu[2] and Qingfeng[3] *[1]Oklahoma State University,[2]San Jose State University,[3]Chongqing University*

15:50-17:30	**RTCSA Session 4:** Real-Time Task Schedule A **(Amber Room)**
	Chair: Li-Pin Chang, *National Chiao Tung University*
15:50-16:10	**R4.1 Contention-Aware Task and Communication Co-Scheduling for Network-on-Chip based Multiprocessor System-on-Chip**
	Lei Yang, Weichen Liu, Weiwen Jiang, Juan Yi, Duo Liu and QingfengZhuge,*Chongqing University*
15:10-16:30	**R4.2 Optimal Semi-Partitioned Scheduling in Soft Real-Time Systems**
	Jim Anderson[1], Jeremy Erickson[1], Umamaheswari Devi[2] and Benjamin Casses[1] , *[1]University of North Carolina,[2]IBM Research*
16:30-16:50	**R4.3 Minimizing Response Times of Automotive Dataflows on Multicore**
	Glenn A. Elliott[1], Namhoon Kim[1], Jeremy P. Erickson[1], Cong Liu[2] and James H. Anderson[1]
	[1]University of North Carolina at Chapel Hill,[2]University of Texas at Dallas
16:50-17:10	**R4.4 Improving the Response Time Analysis of Global Fixed-Priority Multiprocessor Scheduling**
	Youcheng Sun[1], Giuseppe Lipari[1], Nan Guan[2] and Wang Yi[3]
	[1]Scuola SuperioreSant'Anna,[2]NortheasternUniv.,[3]Uppsala Univ.
16:10-17:30	**R4.5 Effects of Structured Parallelism by Parallel Design Patterns on Embedded Hard Real-time Systems**
	Ralf Jahr[1], Mike Gerdes[1], Theo Ungerer[1], Haluk Ozaktas[2], Christine Rochange[3] andPavel G. Zaykov[4]
	[1]University of Augsburg,[2]Université Paul Sabatier,[3]IRIT - Université de Toulouse,[4]Honeywell International s.r.o
13:40-15:20	**NVMSA Session 1:** Flash and SSD **(Crystal Room)**
13:40-14:00	**N1.1 TxCache: Transactional Cache using Byte-addressable Non-Volatile Memories in SSDs**
	Y. Lu, Jiwu Shu and Peng Zhu,*Tsinghua University*
14:00-14:20	**N1.2 Energy-Aware Data Placement Strategy for SSD-Assisted Streaming Video Servers**
	C. Ho, *et al.National Taiwan University*
14:20-14:40	**N1.3 Fast File Synching for Applications in Flash-Based Android Devices**
	L. Chang, *et al.National Chiao-Tung University*
14:40-15:00	**N1.4 Configurable Reliability Framework for SSD-RAID**
	J. Hsieh, *et al, National Taiwan University*
15:00-15:20	**N1.5 The Design And Implementation Of Flash Based NVDIMM**
	H. Huang, *et al, WindawnTechnology*

15:50-17:30	**NVMSA Session 2:** NVM **(Crystal Room)**
15:50-16:10	**N2.1 One-Step Majority-Logic-Decodable Codes Enable STT-MRAM for High Speed Working Memories** **W. Kang**, *et al., Beihang University*
15:10-16:30	**N2.2 Energy Efficient Page Initialization for Storage Class Memory** **F. Xia**, *et al., University of Chinese Academy of Sciences*
16:30-16:50	**N2.3 Data-aware Power Management for Periodic Real-time Systems with Non-Volatile Memory** **T. Nakada**, *et al., The University of Tokyo*
16:50-17:10	**N2.4 Short-SET: An Energy-Efficient Write Scheme for MLC PCM** **L. Bing**, *et al., University of Chinese Academy of Sciences*
17:10-17:30	**N2.5 Challenges in Circuits and Applications for Resistive RAM (ReRAM)** **Meng-Fan (Marvin) Chang**, *National Tsing Hua University*

THURSDAY, AUGUST 21th

09:00-10:00	**RTCSA Keynote Speech:** High Throughput Computing Data Center By Dr. Jeff Hao
10:30-11:50	**RTCSA Session 5:** Architecture-Aware Schedule **(Jade Room)** **Chair:** Liang Shi, *Chongqing University*
10:30-10:50	**R5.1 Energy Efficient Real-Time Task Scheduling for Embedded Systems with Hybrid Main Memory** **Zhiyong Zhang**, Peng Liu, Lei Ju and Zhiping Jia *Shandong University*
10:50-11:10	**R5.2 Current-Aware Scheduling for Flash Storage Devices** **Tzu-Jung Huang**[1], Chien-Chung Ho[1], Po-Chun Huang[2], Yuan-Hao Chang[3], Che-Wei Chang[4] and Tei-Wei Kuo[1] [1]*National Taiwan University,*[2]*Department of Computer Science and Information Engineering & Innovation Center for Big Data and Digital Convergence,*[3]*Institute of Information Science, Academia Sinica,*[4]*Chang Gung University*
11:10-11:30	**R5.3 An Adaptive Server-Based Scheduling Framework with Capacity Reclaiming and Borrowing** **Meng Liu**[1], Moris Behnam[1], Shinpei Kato[2] and Thomas Nolte[1] [1]*Mälardalen University,*[2]*Nagoya University*
11:30-11:50	**R5.4 A Memory Schedule Policy Oriented to Stream Architecture** **Chiyuan Ma** and Xiaoqiang Ni *National University of Defense Technology*
10:30-11:50	**RTCSA Session 6:** Real-Time System Architecture **(Amber Room)** **Chair:** Nan Guan, *Northeastern University*
10:30-10:50	**R6.1 A Dynamic Virtual Memory Management under Real-Time Constraints** **Martin Boehnert** and Christoph Scholl,*University of Freiburg*
10:50-11:10	**R6.2 A Hardware Architecture to Deploy Complex Multiprocessor Scheduling Algorithms** **Renato Mancuso**, Prakalp Srivastava, Deming Chen and Marco Caccamo, *University of Illinois at Urbana-Champaign*
11:10-11:30	**R6.3 Optimal and fast composition of resource-sharing components in hierarchical real-time systems** **Martijn M.H.P. Van Den Heuvel**[1], Moris Behnam[2], Reinder J. Bril[3], Johan Lukkien[1] and Thomas Nolte[2] [1]*Eindhoven University of Technology,* [2]*MRTC/Mälardalen University,*[3]*Technische Universiteit Eindhoven*

11:30-11:50	**R6.4 A Context Aware Cache Controller to Bridge the Gap Between Theory and Practice in Real-Time Systems** **Yannick Allard**[1], Geoffrey Nelissen[2], Joël Goossens[1] and Dragomir Milojevic[1] *[1]Université libre de Bruxelles,[2]Polytechnic Institute of Porto*
13:40-15:20	**RTCSA Session 7:** Multicore Embedded System**(Jade Room)** **Chair:** Dakai Zhu, *University of Texas at San Antonio*
13:40-14:00	**R7.1 On Self-Timed Ring for Consistent Mapping and Maximum Throughput** **Weiwen Jiang**[1], Qingfeng Zhuge[1], Juan Yi[1], Lei Yang[1] and Edwin Sha[2] *[1]Chongqing University,[2]University of Texas at Dallas*
14:00-14:20	**R7.2 Energy-Efficient Allocation of Real-Time Applications onto Heterogeneous Processors** **Alexei Colin**, Arvind Kandhalu and Raj Rajkumar *Carnegie Mellon University*
14:20-14:40	**R7.3 Adaptive Dynamic Power Management for Hard Real-time Pipelined Multiprocessor Systems** **Gang Chen**, Kai Huang and Alois Knoll *Technical University Munich*
14:40-15:00	**R7.4 Operating System Support to an Online Hardware-Software Co-Design Scheduler for Heterogeneous Multicore Architectures** **MaikonBueno**, José Holanda, Erinaldo Pereira and Eduardo Marques *University of Sao Paulo*
15:00-15:20	**R7.5 A Task-Level Superscalar Microarchitecture for Large Scale Chip Multiprocessors** **Jianqing Xiao**, PengweiLv, Mian Lou, Xunying Zhang and Xubang Shen *Xi'an Microelectronics Technology Institute*
13:40-15:20	**RTCSA Session 8:** Networked System and Analysis **(Amber Room)** **Chair:** Chengliang Jimmy Wang, *Chongqing University*
13:40-14:00	**R8.1 Schedulability Analysis of Ethernet AVB Switches** **Unmesh D. Bordoloi**, Amir Aminifar, PetruEles and Zebo Peng Linköping University
14:00-14:20	**R8.2 Network-Harmonized Scheduling for Multi-Application Sensor Networks** **Vikram Gupta**[1,2], Nuno Pereira[1], Shashank Gaur[1], Eduardo Tovar[1] and Ragunathan Rajkumar[2] *[1]CISTER/INESC-TEC, ISEP, IPP, Portugal, [2]Carnegie Mellon*

	University
14:20-14:40	**R8.3 The trajectory approach for AFDX FIFO networks revisited and corrected** **Xiaoting Li**[1], Olivier Cros[2] and Laurent George[2] *[1]ECE Paris, [2]Université Paris-Est / LIGM*
14:40-15:00	**R8.4 Reduced Buffering Solution for Multi-Hop HaRTES Switched Ethernet Networks** **Mohammad Ashjaei**[1], Moris Behnam[1], Paulo Pedreiras[2], Reinder J. Bril[3], Luis Almeida[4] and Thomas Nolte[1] *[1]MRTC/Mälardalen University, [2]DETI/IT/University of Aveiro, [3]Technische Universiteit Eindhoven (TU/e), [4]IT/DEEC/University of Porto*
15:00-15:20	**R8.5 Worst-Case Communication Delay Analysis for Many-Cores using a Limited Migrative Model** **BorislavNikolic**, Patrick MeumeuYomsi and Stefan M. Petters *CISTER Research Unit ISEP/IPP*
15:50-17:30	**RTCSA Session 9:** Embedded System Software **(Jade Room)** **Chair:** Chunhua Xiao, *Chongqing University*
15:50-16:10	**R9.1 Time square -- marriage of real-time and logical-time in GALS and synchronous languages** **Heejong Park**, Avinash Malik and Zoran Salcic *The University of Auckland*
16:10-16:30	**R9.2 An Evaluation of Code Generation of Dataflow Languages on Manycore Architectures** **Suleyman Savas**[1,2], Essayas Woldu[1], Zain Ul-Abdin[2], Tomas Nordstrom[2] and Mingkun Yang[2]. *[1]Centre for Research on Embedded Systems (CERES), [2]Halmstad University*
16:30-16:50	**R9.3 Light-PREM: Automated Software Refactoring for Predictable Execution on COTS Embedded Systems** **Renato Mancuso**, Roman Dudko and Marco Caccamo *University of Illinois at Urbana-Champaign*
16:50-17:10	**R9.4 Hazard Analysis for AADL Model** **Xiaomin Wei**[1], Yunwei Dong[1], Mengmeng Yang[1], Ning Hu[2] and Hong Ye[2] *[1]Northwestern Polytechnical University, [2]Aeronautics Computing Technique Research Institute*
17:10-17:30	**R9.5 A Dynamic Covering Algorithm of Wireless Sensor Network Based on CVT** **Hongxing Wei** and Qiang Mao

	Beihang University
15:50-17:30	**RTCSA Session 10:** Real-Time Task Schedule B **(Amber Room)** **Chair:** Guangyu Sun, *Peking University*
15:50-16:10	**R10.1 Federated Scheduling for Stochastic Parallel Real-time Tasks** **Jing Li**, Kunal Agrawal, Christopher Gill and Chenyang Lu *Washington University in St. Louis*
16:10-16:30	**R10.2 Service Guarantee Exploration for Mixed-Criticality Systems** **Hang Su**[1], Nan Guan[2,3] and Dakai Zhu[1] [1]*University of Texas at San Antonio,* [2]*Northeastern University,* [3]*Uppsala University, Sweden*
16:30-16:50	**R10.3 Power Minimization for Parallel Real-Time Systems with Malleable Jobs and Homogeneous Frequencies** **Antonio Paolillo**[1], Joël Goossens[1], Pradeep M. Hettiarachchi[2] and Nathan Fisher[2] [1]*Université Libre de Bruxelles,* [2]*Wayne State University*
16:50-17:10	**R10.4 Partitioned Multiprocessor Scheduling of Mixed-Criticality Parallel Jobs** **Guangdong Liu**[1], Ying Lu[1], Shige Wang[2] and Zonghua Gu[3] [1]*University of Nebraska-Lincoln,* [2]*GM R&D,* [3]*Zhejiang University*
17:10-17:30	**R10.5 Computation Offloading for Sporadic Real-Time Tasks** **AnasToma**, Jian-Jia Chen and Wei Liu *Karlsruhe Institute of Technology (KIT)*
10:30-11:50	**NVMSA Session 3: (Crystal Room)**
10:30-10:50	**N3.1 On the Performance and Dependability Modeling of Large-Scale Solid-State Drives** **Patrick Lee,** *The Chinese University of Hong Kong*
10:50-11:10	**N3.2 Lifetime Improvement of NAND Flash-Based Storage Systems** **Jihong Kim,** *Seoul National University*
11:10-11:30	**N3.3 Non-volatile Storage Support for Data Deduplication** **Yu Hua,** *Huazhong University of Science and Technology*
13:40-15:20	**NVMSA Session 4: (Crystal Room)**
13:40-14:00	**N4.1 Circuit Level Modeling and Design Exploration of Racetrack Memory** **Guangyu Sun,** *Peking University*
14:00-14:20	**N4.2 NV-CAM: Alternative Interests and Practices in NVM Designs** **Yiran Chen,** *University of Pittsburgh*
14:20-14:40	**N4.3 TBD** **Yuan Xie**, *The Pennsylvania State University*
15:50-17:30	**NVMSA Session 5:(Crystal Room)**
15:50-16:10	**N5.1 PMBD: A Hybrid Memory-Storage Model for Persistent**

	Memory **Feng Chen,** *Louisiana State University*
16:10-16:30	**N5.2 Virtual-Machine Metadata Optimization for I/O Traffic Reduction in Mobile Virtualization** **Zili Shao,** *Hong Kong PolytechnicUniversity*
16:30-16:50	**N5.3 Optimizing Space Utilization of File Systems on PCM-based Storage Devices** **Yuan-Hao Chang**, *Institute of Information Science, Academia Sinica*
16:50-17:10	**N5.4 A High-Efficiency Dual-Channel Photovoltaic Power System for Nonvolatile Sensor Nodes** **Yongpan Liu,** *Tsinghua University*

FRIDAY, AUGUST 22th

08:30-09:50	**RTCSA Session 11:** Emerging Applications **(Jade Room)** **Chair:** Yuan-Hao Chang, *Academia Sinica*
08:30-08:50	**R11.1 Towards Scalable, Fair and Robust Data Dissemination via Cooperative Vehicular Communications** **Kai Liu[1]**, Joseph Ng[2], Victor Lee[3], Weiwei Wu[4] and Sang Son[5] *[1]Chongqing University [2]Hong Kong Baptist University,[3]City University of Hong Kong,[4] Southeast University, [5]Daegu Gyeongbuk Institute of Science and Technology*
08:50-09:10	**R11.2 Deadline-Aware Load Balancing for MapReduce** **Zhao-Rong Lai[1]**, Che-Wei Chang[2], Xue Liu[3], Tei-Wei Kuo[1] and Pi-Cheng Hsiu[4] *[1]National Taiwan University, [2]Chang Gung University,[3]McGill University, [4]Academia Sinica*
09:10-09:30	**R11.3 Workload Migration Framework for Streaming Applications on Smartphones** **Chi-Sheng Daniel Shih**, Shun-Min Wang and Yu-Hsin Wang *National Taiwan University*
09:30-09:50	**R11.4 Development of Gaze Tracking System with iPad** **Jiajin Zhang[1]**, Liu Di[2] and Lichang Chen[1] *[1]YNAU,[2]YAU*
10:20-12:00	**RTCSA Session 12:** System Design Practice **(Jade Room)** **Chair:**Yongpan Liu,*Tsinghua University*
10:20-10:40	**R12.1 The Acceleration of Pipeline Workloads under the FPGA Area and Bandwidth Constraints** **Wei-Ning Huang[1]**, Sheng-Wei Cheng[2], Che-Wei Chang[2], Yu-ChenWu[1],Tei-Wei Kuo[1], Yung-Chin Hsu[3], Wen-Yih Isaac Tseng[4]and and Shih-Hao Hung *[1]National Taiwan University,[2]Chang Gung University,[3]National Taiwan University College of Medicine, [4]National Taiwan University Hospital*
10:40-11:00	**R12.2 An Energy Efficient OpenCL Implementation of a Fingerprint Verification System on Heterogeneous Mobile Device** **Zhi Qi**, Wen Wen, Wei Meng, Ya Zhang and Longxing Shi *Southeast University*
11:00-11:20	**R12.3 A Real-Time Distributed Hash Table** **Tao Qian[1]**, Frank Mueller[2] and Yufeng Xin[3] *[1]North Carolina State University, [2]NCSU, [3]RENCI*
11:20-11:40	**R12.4 A Management Architecture of Cloud Server Systems**

	Hua Nie[1],Gongbo Li[2], Xingkui Liu[3], Xiaojun Yang[3] and Keping Long[1] [1]*University of Science and Technology Beijing,* [2]*University of Chinese Academy of Sciences,* [3]*Dawning Information Industry Co., Ltd.*
11:40-12:00	**R12.5 Design and Implementation of A Multi-Node WIFI Heart Rate Variability Analysis System** **Kai Li**, Xin Wang and Jianhua Shen *East China Normal University*
08:30-09:50	**IWMSA Session 1(Amber Room)** **Chair:** Weichen Liu, *Chongqing University*
08:30-08:50	**I1.1 TACO: A Scalable Framework for Timing Analysis and Code Optimization of Synchronous Programs** **Zhenmin Li**, Avinash Malik and Zoran Salcic *The University of Auckland*
08:50-09:10	**I1.2 A Plasmonic Refractive Index Sensor Based on A MIM Waveguide with A Side-coupled Nanodisk Resonator** **Yexiong Huang**, YiyuanXie, Weilun Zhao, HongjunChe, Weihua Xu, Xin Li and Jiachao Li *Southwest University*
09:10-09:30	**I1.3 An Implementation of Partitioned Scheduling Scheme for Hard Real-Time Tasks in Multicore Linux with Fair Share for Linux Tasks** **N. Saranya**[1]and R. C. Hansdah[2] [1]*Indian Institute of Science,* [2]*Bangalore, IISc*
09:30-09:50	**I1.4 Enhancing Lifetime of NVM-based Main Memory with Bit Shifting and Flipping** **Xianlu Luo**, Duo Liu, Kan Zhong, Dan Zhang, Yi Lin, Jie Dai, Weichen Liu Chongqing University
10:20-12:00	**IWMSA Session 2(Amber Room)** **Chair:** Duo Liu, *Chongqing University*
10:20-10:40	**I2.1 Performance Isolation for Real-time Systems with Xen Hypervisor on Multi-cores** **Wei Jing**[1], Nan Guan[2] and Wang Yi[2] [1]*Hatteland Display AS,* [2]*Uppsala University*
10:40-11:00	**I2.2 Performance Improvement in Mesh-based Optical Networks-on-Chip** **Weilun Zhao**, Yiyuan Xie, Hongjun Che, Yexiong Huang, Weihua Xu, Xin Li and Jiachao Li *Southwest University*

11:00-11:20	**I2.3 Energy efficient routing techniques with guaranteed reliability based on multi-level uncertain graph** **Wendi Nie**, Yaoxin Duan, Kaijie Wu, Qingfeng Zhuge and Edwin Sha, *Chongqing University*
11:20-11:40	**I2.4 A Hardware-Software Co-design Experiments Platform for NAND Flash Based on Zynq** **Wei Debao**, Youhua Gong, LiyanQiao and Libao Deng *Harbin Institute of Technology*
11:40-12:00	**I2.5 Performance Optimization in Torus-based Optical Networks-on-Chip** **Weihua Xu[1]**, Yiyuan Xie[1], Yantao Wang[2], Hongjun Che[1], Weilun Zhao[1], Yexiong Huang[1], Xin Li[1] and Jiachao Li[1] *[1]Southwest University, [2]Military Representative Bureau of Naval Equipment Department in Chongqing Region*
08:30-09:50	**Tutorial1:** Automotive Cyber-Physical Systems**(Crystal Room)** **Chair:** Kai Liu, *Chongqing University*
08:30-09:10 09:10-09:50	**Registration** **Samarjit Chakraborty**, *TU Munich, Germany*
10:20-11:40	**Tutorial2:** Automotive Cyber-Physical Systems**(Crystal Room)** **Chair:** Kai Liu, *Chongqing University*
10:20-11:00 11:00-11:40	**Majid Zamani**, *TU Munich, Germany* **Jason Xue**, *City University of Hong Kong*

RTCSA KEYNOTE SPEECH 1

Non-Volatile Memory Innovation

Dr. Tei-Wei Kuo

Distinguished Professor, IEEE Fellow, National Taiwan University

Abstract

As flash memory gains its huge momentum in the storage market, people have high expectation on other potential roles that could be played by non-volatile memory. It has been a grand challenge to position selected non-volatile memory technologies in the memory hierarchy. In this talk, I will take flash memory and phased change memory (PCM) as examples to address the challenges and design methodologies for non-volatile memory as a storage medium or to serve as the role of DRAM. The talk will be concluded by moving the discussion forward to the opportunities of non-volatile memory in system designs, such as server cache and data storage in data manipulation.

RTCSA KEYNOTE SPEECH 2

High Throughput Computing Data Center

Dr. Qinfen (Jeff) Hao

Technical Director, Shannon Lab, Huawei Corporate Research.

Abstract

Over the last few decades, data center (DC) technology has evolved from DC 1.0 (tightly-coupled silos) to DC 2.0 (computer virtualization) in order to enhance data processing capability. In the era of big data, highly diversified analytics applications stress data centers. The mounting requirements on throughput, resource utilization, manageability and energy efficiency demand seamless integration of heterogeneous system resources to adapt to varied big data applications, for which DC 2.0 does not suffice. By rethinking the challenges of big data applications, Huawei proposes a High Throughput Computing Data Center architecture (HTC-DC) toward the design of DC 3.0. HTC-DC features resource disaggregation via unified interconnection. It offers PB-level data processing capability, intelligent manageability, high scalability and high energy efficiency, hence a promising candidate for DC 3.0.

NVMSA KEYNOTE SPEECH

Flashing the Roads Ahead

Dr. Sangyeun Cho

VP of Research for Memory Solutions Lab in Samsung's Memory Division

Abstract

The flash memory technology has dramatically changed the capabilities and form factors of persistent computer storage. Without continuous scaling and advances of the technology, we wouldn't have seen the widespread deployment of attractive mobile devices or pleasantly fast response times of large social network services that we tap every day. In this talk, I will first describe how computing systems have traditionally interfaced with flash memory devices in the past, leading to today's prevalent form of solid-state drives (SSDs). Moreover, there are growing interests among the industry and academic communities in renewed flash storage interfaces (and features) for several compelling reasons. I will discuss these trends and suggest promising future directions to accommodate some of the immediate needs.

TUTORIAL

Automotive Cyber-Physical Systems

Samarjit Chakraborty, *TU Munich, Germany*

Majid Zamani, *TU Munich, Germany*

Jason Xue, *City University of Hong Kong*

Abstract

Modern cars have 50-100 electronic control units (ECUs) that are connected by a complex communication network using CAN, FlexRay and Ethernet and several gateways. Such a platform is used to support various control applications ranging over safety-critical, driver assistance and comfort-related functions. In such a setup, traditional control theoretic techniques -- where control engineers are only concerned with high-level plant and controller models and abstract away platform-specific implementation details like numerical precision, computation times and message communication delays -- suffer from a number of problems.

In particular, in such cases model-level semantics and control performance deviates significantly from what is seen after the implementation. In order to close this gap, a considerable effort is spent on integration, testing and debugging which significantly increases the development cost and poses an obstacle towards certification.

The goal of this tutorial is to highlight these problems and present approaches currently being developed in the area of cyber-physical systems towards co-design of control algorithms and their implementation platforms. In particular we will discuss techniques for communication, computation and memory-aware controller design, along with techniques for controller synthesis from formal specifications.

Target audience: This tutorial is targeted towards an audience with a background in real-time and embedded systems. No previous experience in automotive systems or control theory will be assumed.

重庆医疗信息化 RTCSA 分会场讨论

分会主席：沙行勉，戴伟杰

宣传主席：周维康

主持人：朱叶庆

特邀信息化专家：邵子立，香港理工大学副教授，博导

特邀信息化专家：吴剀劼，重庆大学计算机学院特聘教授，博导

8.20（周三）**10：00** 注册

8.20（周三）**13:40-15:20 Medical Session 1:**
信息专家讲座（国际会议厅）

8.20（周三）**15:50-17:30 Medical Session 2:**
信息专家讲座和医疗专家讨论（国际会议厅）