

**2012 IEEE 15th International
Symposium on
Object/Component/Service-Oriented
Real-Time Distributed Computing
Workshops**

(ISORCW 2012)

**Shenzhen, China
11 April 2012**



IEEE Catalog Number: CFP1201K-PRT
ISBN: 978-1-4673-0900-4

2012 15th IEEE International Symposium on Object/Component/ Service-Oriented Real-Time Distributed Computing Workshops

ISORCW 2012

FORDS 2012 Message from the Workshop Chairs	ix
FORDS 2012 Program Committee	x
FORDS 2012 Reviewers	xi
iVCE 2012 Message from the Workshop Chairs	xii
iVCE 2012 Committees	xiii
iVCE 2012 Reviewers	xiv
RTSOAA 2012 Message from the Workshop Chair	xv
RTSOAA 2012 Workshop Organization	xvi
RTSOAA 2012 Reviewers	xvii
SORT 2012 Message from the Workshop Co-chairs	xviii
SORT 2012 Program Committee	xix
SORT 2012 Reviewers	xx

FORDS 2012 Session 1: Design and Analysis Methods for Real-Time Systems

STeC: A Location-Triggered Specification Language for Real-Time Systems	1
<i>Yixiang Chen</i>	
Functional Safety Analysis Method for CTCS Level 3 Based on Hybrid Automata	7
<i>Jintao Liu, Tao Tang, Lin Zhao, Tianhua Xu, and Wei Zheng</i>	
Low Power Consumption Data Structure Design for Embedded Applications in Real-Time Systems	13
<i>Linhua Jiang, Chao Peng, Haibin Cai, Yixiang Chen, and Xiaodong Chen</i>	
Measuring Time Lag with Nested Preemptions and Resumptions	19
<i>Guoqiang Li</i>	

FORDS 2012 Session 2: Cyber-Physical Systems

Review of Cyber-Physical System Architecture	25
<i>Liang Hu, Nannan Xie, Zhejun Kuang, and Kuo Zhao</i>	
Extending the Four-Variable Model for Cyber-Physical Systems	31
<i>Xiaohong Chen and Mingsong Chen</i>	

Component Based Design of Fault Tolerant Devices in Cyber Physical System.....	37
<i>Tianhua Xu, Zhiming Liu, Tao Tang, Wei Zheng, and Lin Zhao</i>	
RESTful Management for Cyber-Physical Systems	43
<i>Yue Zhang, Haibin Cai, and Minghua Zhu</i>	

FORDS 2012 Session 3: Pervasive Computing and Internet of Things

A Novel Self-Adaptive Fault-Tolerant Mechanism and Its Application for a Dynamic Pervasive Computing Environment.....	48
<i>Haibin Cai, Chao Peng, Linhua Jiang, and Yue Zhang</i>	
Design and Implementation of an Automotive Telematics Gateway Based on Virtualization	53
<i>Zonghua Gu, Zhu Wang, Shijian Li, and Haibin Cai</i>	
ESF - An Extensive Service Foundation from Internet of Things Perspective	59
<i>Jianqi Shi, Xin Ye, Liangyu Chen, Pei Zhang, and Ningkang Jiang</i>	
Research of Context Situation Awareness Technology.....	65
<i>Dianxi Shi, Zhendong Wu, Bo Ding, and Huining Yan</i>	

iVCE 2012 Session 1: Virtualization & Cloud Computing

DMSS: A Dynamic Memory Scheduling System in Server Consolidation Environments.....	70
<i>Lanzheng Liu, Rui Chu, Yongchun Zhu, Pengfei Zhang, and Liufeng Wang</i>	
A Reality Check of Multiple Snowball Tree File Dissemination in Large Scale Cloud Cluster	76
<i>Zhang Zhaoning, Lu Xicheng, Peng Yuxing, and Li Huiba</i>	
DVCE: The Virtual Computing Environment Supported by Distributed VM Images.....	81
<i>Tianyu Wo, Hanwen Wang, Chunming Hu, and Yabing Cui</i>	

iVCE 2012 Session 2: Web Services & Concurrent Programming

Skyline Query Processing on Interval Uncertain Data.....	87
<i>Xiaoyong Li, Yijie Wang, Xiaoling Li, and Guangdong Wang</i>	
A Clustering-Based QoS Prediction Approach for Web Service Recommendation	93
<i>Jieming Zhu, Yu Kang, Zibin Zheng, and Michael R. Lyu</i>	
An Extension to Computing Elements in Erlang for Actor Based Concurrent Programming	99
<i>Kang Lianghuan and Cao Donggang</i>	

RTSOAA 2012 Session 1: Real-Time Cloud Computing

Real-Time Performance Prediction for Cloud Components.....	106
<i>Yilei Zhang, Zibin Zheng, and Michael R. Lyu</i>	
Scalable Architectures for SaaS	112
<i>Wei-Tek Tsai, Yu Huang, Xiaoying Bai, and Jerry Gao</i>	
Real-Time Fault-Tolerance in Federated Cloud Environments	118
<i>Peter Garraghan, Paul Townend, and Jie Xu</i>	
Investigation of IT Security and Compliance Challenges in Security-as-a-Service for Cloud Computing	124
<i>Hussain Al-Aqrabi, Lu Liu, Jie Xu, Richard Hill, Nick Antonopoulos, and Yongzhao Zhan</i>	

RTSOAA 2012 Session 2: Real-Time Service Applications

Experimental Feasibility Analysis of ROI-Based Hough Transform for Real-Time Line Tracking in Auto-Landing of UAV	130
<i>Tyan Vladimir, Dongwoon Jeon, Doo-Hyun Kim, Chun-Hyon Chang, and Jungguk Kim</i>	
A Framework for Improving Trust in Dynamic Service-Oriented Systems	136
<i>Paul Townend, Colin C. Venters, Lydia Lau, Karim Djemame, Vania Dimitrova, Alison Marshall, Jie Xu, Charlie Dibsdale, Nick Taylor, Jim Austin, John McAvoy, Martyn Fletcher, and Stephen Hobson</i>	
Overbooking-Based Resource Allocation in Virtualized Data Center.....	142
<i>Tianyu Wo, Qian Sun, Bo Li, and Chunming Hu</i>	
Information Assurance for Real-Time Decision Support.....	150
<i>Liangliang Xiao, Farokh Bastani, I-Ling Yen, and Raymond Paul</i>	

SORT 2012

Knowledge Representation for Cognitive Robotic Systems	156
<i>Emil Vassey and Mike Hinchev</i>	
Adaptive Distributed Embedded and Real-Time Java Systems Based on RTSJ.....	164
<i>M. Teresa Higuera-Toledano</i>	
Self-Organized Routing ID Tree-Based Multipath Construction for Ad Hoc Networks	172
<i>Tomoya Okazaki, Mario Takeuchi, Eitaro Kohno, and Yoshiaki Kakuda</i>	
A Generic VHDL Template for 2D Stencil Code Applications on FPGAs.....	180
<i>Michael Schmidt, Marc Reichenbach, and Dietmar Fey</i>	
An Aggressive Strategy for an Artificial Hormone System to Minimize the Task Allocation Time.....	188
<i>Uwe Brinkschulte and Mathias Pacher</i>	

An Approach for Self-Reconfiguring and Fault-Tolerant Distributed Real-Time Systems	196
<i>Kay Klobedanz, Wolfgang Mueller, and Achim Rettberg</i>	
Towards a Rigorous Modeling Formalism for Systems of Systems	204
<i>Tayfun Gezgin, Christoph Etzien, Stefan Henkler, and Achim Rettberg</i>	
Agent-Based Modeling and Simulation of Artificial Immune Systems	212
<i>Norma Montealegre and Franz J. Rammig</i>	
Author Index.....	COE