

# **2010 International Symposium on Industrial Embedded Systemu**

**(SIES 2010)**

**Trento, Italy  
7 – 9 July 2010**



**IEEE Catalog Number: CFP10INB-PRT  
ISBN: 978-1-4244-5839-4**

# Table of contents

Committees	vi
Welcome Address	viii
<b>Regular Papers</b>	
Inferring Energy and Performance Cost of RTOS in Priority-Driven Scheduling <i>Sandro Penolazzi, Ingo Sander, Ahmed Hemani</i>	1
Optimizing Hierarchical Schedules for Improved Control Performance <i>Harald Voit, Reinhard Schneider, Dip Goswami, Anuradha Annaswamy, Samarjit Chakraborty</i>	9
A Comparison of Linux CAN Drivers and their Applications <i>Michal Sojka, Pavel Piša, Martin Petera, Ondřej Špinka, Zdeněk Hanzálek</i>	18
Verification of a CAN bus model in SystemC with functional coverage <i>Gilles B. Defo, Christoph Kuznik, Wolfgang Müller</i>	28
Compressive sensing optimization over ZigBee networks <i>Carlo Caione, Davide Brunelli, Luca Benini</i>	36
An innovative frequency hopping management mechanism for Bluetooth-based industrial networks <i>Orazio Mirabella, Lucia Lo Bello, Mario Collotta</i>	45
Design of a Reconfigurable Pipelined Switch for Faulty On-Chip Networks <i>Hsin-Chou Chi, Tat-Seng Chang, Chia-Ming Wu</i>	51
Scratch Detector - A FPGA Based System for Scratch Detection in Industrial Picture Development <i>Luca Bochi Saldanha, Robert Hartmann, Christophe Bobda</i>	57
Implementation of a bumpless switch in axial magnetic bearings <i>Alexander Smirnov, Kimmo Tolsa, Rafal Jastrzebski</i>	63
A semi-active suspension embedded controller in a FPGA <i>Koldo Basterretxea, Inés del Campo, Javier Echanove</i>	69
Distributed Coordination of Task Migration for Fault-Tolerant FlexRay Networks <i>Kay Klobedanz, Gilles B. Defo, Wolfgang Müller, Timo Kerstan</i>	79
HILAC: A framework for Hardware In the Loop simulation and multi-platform Automatic Code Generation of WSN Applications <i>Mohammad M. R. Mozumdar, Luciano Lavagno, Laura Vanzago, Alberto L. Sangiovanni-Vincentelli</i>	88
VHDL Observers for Clock Constraint Checking" <i>Charles André, Frédéric Mallet, Julien DeAntoni</i>	98
Automated Conflict-free distributed implementation of component-based models, <i>Borzoo Bonakdarpour, Marius Bozga, Mohamad Jaber, Jean Quilbeuf, Joseph Sifakis</i>	108
A system for synthesizing abstraction-enabled simulators for binary code verification <i>Dominique Gückel, Jörg Brauer, Stefan Kowalewski</i>	118

Usage of the safety-oriented real-time OASIS approach to build deterministic protection relays, Mathieu Jan, Vincent David, Jimmy Lalande, Maurice Pitel	128
An Exception Based Approach to Timing Constraints Violations in Real-Time and Multimedia Applications, Tommaso Cucinotta, Dario Faggioli	136
Enhancing Reliability in IEEE 802.11 Based Real-Time Networks through Transport Layer Retransmissions Kristina Kunert, Elisabeth Uhlemann, Magnus Jonsson	146
An Energy-Aware Algorithm for TDMA MAC Protocols in Real-Time Wireless Networks Gianluca Franchino, Giorgio Buttazzo, Mauro Marinoni	156
An Energy Saving Criterion for Wireless Sensor Networks with Time Synchronization Requirements David Macii, Anton Ageev, Luca Abeni	166
A Component-Based Architecture for Adaptive Bandwidth Allocation in Wireless Sensor Networks Luca Santinelli, Mangesh Chitnis, Christian Nastasi, Fabio Checconi, Giuseppe Lipari, Paolo Pagano	174
<b>Work-in-Progress Papers</b>	
Improving the tests coverage of a medium voltage protection device using system simulation approaches Khaled Rahmouni, Frédéric Pétrot	184
Multi-Server Web Industrial Facility Monitoring by Only COTS Browser's Existing Functionality Ki7y Chuzo Ninagawa, Tomotaka Sato, Tomohisa Yamada	188
Development of an Embedded System for Visual Servoing in an Industrial Scenario Maria Isabel de la Fuente, Javier Echanobe, Inés del Campo, Loreto Susperregui, Iñaki Maurtua	192
Context Modelling and Partial-Order Reduction: Application to SDL Industrial Embedded Systems Xavier Dumas, Frédéric Boniol, Philippe Dhaussy, Eric Bonnafous	197
Redundant and synchronized EtherCAT network Gunnar Prytz, Jonny Skaalvi	201
A Longest-Path Problem for Evaluating the Worst-Case Packet Delay of Switched Ethernet Klaus Schmidt, Ece G. Schmidt	205
Performance Evaluation of FlexRay/CAN Networks Interconnected by a Gateway Ece G. Schmidt, Melih Alkan, Klaus Schmidt, Emrah Yürüklü, Utku Karakaya	209
A Protocol Performance Comparison in Modular WSNs for Data Center Server Monitoring Swaytha Sasidharan, Fernando Pianegiani, David Macii	213
Compositional Translation of Simulink Models into Synchronous BIP Vassiliki Sfyrla, Georgios Tsiligiannis, Iris Safaka, Marius Bozga, Joseph Sifakis	217
Design and Implementation of a WirelessHART Simulator for Process Control Kunjesh Shah, Tiberiu Seceleanu, Mikael Gidlund	221
L2 Cache Modeling based on address modification for Native Co-Simulation in SystemC Sara Real, Hector Posadas, Eugenio Villar	225

A Design Flow for Critical Embedded Systems	229
<i>Vincent Lefftz, Jean Bertrand, Hugues Cassé, Christophe Clienti, Philippe Coussy, Laurent Maillet-Contoz, Philippe Mercier, Pierre Moreau, Laurence Pierre, Emmanuel Vaumorin</i>	
Design and implementation of a suitable core for on-chip long-term verification	234
<i>Julian Viejo, Jose Ignacio Villar, Jorge Juan, Alejandro Millan, Manuel Jesus Bellido, Enrique Ostua</i>	