

8th IFAC International Conference on Fieldbuses and Networks in Industrial and Embedded Systems 2009

**Ansan, Republic of Korea
20-22 May 2009**

Editors:

Guy Juanole

Seung Ho Hong

ISBN: 978-1-61782-873-7

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2009) by Elsevier Limited
All rights reserved.

Printed by Curran Associates, Inc. (2011)

For permission requests, please contact the publisher, Elsevier Limited
at the address below.

Elsevier Limited
The Boulevard, Langford Lane
Kidlington OX5 1GB, United Kingdom

Phone: +44 (0)1865 844640
Fax: +44 (0)1865 843912

Email: eurobkinfo@elsevier.com

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

CONTENTS

Preface	7
Session I : Wireless Sensor Networks	
H-NAME: A Hidden-Node Avoidance Mechanism for Wireless Sensor Networks.....	10
<i>Anis Koubâa - ISEP-IPP – Portugal. Al-Imam Muhammad Ibn Saud University – Saudi Arabia.</i>	
<i>Ricardo Severino - ISEP-IPP - Portugal.</i>	
<i>Mário Alves - ISEP-IPP - Portugal.</i>	
<i>Eduardo Tovar - ISEP-IPP - Portugal.</i>	
On improving reliability of star-topology Wireless Sensor Network.....	20
<i>P. Ferrari - University of Brescia - Italy.</i>	
<i>A. Flammini - University of Brescia - Italy.</i>	
<i>D. Marioli - University of Brescia - Italy.</i>	
<i>E. Sisinni - University of Brescia – Italy</i>	
Routing Protocol for Wireless Sensor Networks in Home Automation.....	27
<i>Xiao Hui Li - Wuhan University of Science and Technology - China.</i>	
<i>Hong Qin Xu - Zhejiang University - China.</i>	
<i>Seung Ho Hong- Hanyang University - Korea.</i>	
<i>Zhi Wang- Zhejiang University - China.</i>	
<i>Xiang Fan Piao - Yanbian University - Korea.</i>	
Analysis of Low Powered Sensor Node Using Data Compression.....	34
<i>Hyo-deok Shin - Hanyang University - Korea.</i>	
<i>Sang-wook Ahn - Hanyang University - Korea.</i>	
<i>Tae-hoon Song - HUINS Inc. - Korea.</i>	
<i>Sang-hyeon Baeg - Hanyang University - Korea.</i>	
Session II : Control Systems	
Wireless Model Based Predictive Networked Control System.....	40
<i>Alphan Ulusoy - Sabanci University - Turkey.</i>	
<i>Ahmet Onat - Sabanci University - Turkey.</i>	
<i>Ozgur Gurbuz - Sabanci University - Turkey.</i>	
Time Constraints in PID controls with Send-on-Delta.....	48
<i>Volodymyr Vasyutynskyy - Dresden University of Technology - Germany.</i>	
<i>Klaus Kabitzsch - Dresden University of Technology - Germany.</i>	
Online adaptation of the IEEE 802.15.4 parameters for wireless networked control systems.....	56
<i>N. Boughanmi - LORIA - France.</i>	
<i>YQ. Song - LORIA - France.</i>	
<i>E. Rondeau - CRAN Université - France.</i>	

Optimal Control with Packet Drops in Networked Control Systems.....	64
<i>Flavia Felicioni - Universidad Nacional de Rosario - France.</i>	
<i>François Simonot - Nancy Université - France.</i>	
<i>Françoise Simonot-Lion - Nancy Université - France.</i>	
<i>Ye-Qiong Song - Nancy Université - France.</i>	
Codesign Strategy based upon Supervisory Fuzzy Control for Networked Control Systems and Real Time Computing.....	72
<i>PAUL E. MENDEZ - Universidad Nacional Autónoma de México - Mexico.</i>	
<i>HÉCTOR BENÍTEZ-PÉREZ - Universidad Nacional Autónoma de México - Mexico.</i>	

Session III : PHY & MAC

WUR-MAC: Energy efficient Wakeup Receiver based MAC Protocol.....	79
<i>S. Mahlknecht - Vienna University of Technology - Austria.</i>	
<i>M. Spinola Durante - Vienna University of Technology - Austria.</i>	
An Efficient Channel Selection Algorithm for Cognitive Radio Networks.....	84
<i>Thi Hong Chau Pham - University of Ulsan - Korea.</i>	
<i>Insoo Koo - University of Ulsan - Korea.</i>	
Wireless Field Buses for Aerospace Ground and In-Flight Testing: an Experiment.....	89
<i>Julien HENAUT - LAAS - Université de Toulouse- France.</i>	
<i>Akram HKIRI - LAAS - Université de Toulouse - France.</i>	
<i>Pascal BERTHOU - LAAS - Université de Toulouse - France.</i>	
<i>Daniela DRAGOMIRESCU - LAAS - Université de Toulouse - France.</i>	
<i>Thierry GAYRAUD - LAAS - Université de Toulouse - France.</i>	
<i>Robert PLANA - LAAS - Université de Toulouse - France.</i>	
Performance Evaluation of the IEEE 802.11 WLAN Supporting Quality of Service.....	97
<i>Adel BEDOUI - Laboratoire SYSCOM - Tunisie.</i>	
<i>Kamel BARKAOUI - Laboratoire CEDRIC - France.</i>	
<i>Karim Djouani - Laboratoire LISSI - France.</i>	
Managing the virtual collision in IEEE 802.11e EDCA.....	104
<i>Mohamad El Masri - LAAS - Université de Toulouse - France.</i>	
<i>Slim Abdellatif - LAAS - Université de Toulouse - France.</i>	

Session IV: ZigBee

Dynamic GTS Scheduling of Periodic Skippable Slots in IEEE 802.15.4 Wireless Sensor Networks.....	110
<i>Tiago Semprebom - Federal University of Santa Catarina - Brazil.</i>	
<i>Carlos Montez - Federal University of Santa Catarina - Brazil.</i>	
<i>Ricardo Moraes - Federal University of Santa Catarina - Brazil.</i>	
<i>Francisco Vasques -University of Proto - Portugal.</i>	
<i>Paulo Portugal -University of Proto -Portugal.</i>	

Performance Evaluation of Time-Triggered IEEE 802.15.4 for Wireless Industrial Network.....	118
<i>Jee Hun Park - Pusan National University - Korea.</i>	
<i>Suk Lee - Pusan National University - Korea.</i>	
<i>Kyung Chang Lee - Pukyong National University - Korea.</i>	

A Beacon-Aware Device For The Interconnection of ZigBee Networks.....	123
<i>M. I. Benakila - France.</i>	
<i>L. George - France.</i>	
<i>S. Femmam - France.</i>	

Session V : Distributed Systems and Middleware

Field Bus Abstraction as a Means to Enable Network-Independent Applications.....	131
<i>Stefan Theurich - Technische Universität Dresden - Germany.</i>	
<i>Christian Hahn - Technische Universität Dresden - Germany.</i>	
<i>Roman Frenzel - Technische Universität Dresden - Germany.</i>	
<i>Martin Wollschlaeger - Technische Universität Dresden - Germany.</i>	

Implementation of EtherCAT Master Middleware Component for Distributed Robot Control Architecture.....	139
<i>Yongseon Moon - Sunchon National University - Korea.</i>	
<i>Tuan Anh Vo Trong - Sunchon National University - Korea.</i>	
<i>Nak Yong Ko - Chosun University - Korea.</i>	
<i>Kwangjin Kim - Chosun University - Korea.</i>	
<i>Youngchul Bae - Chonnam National University - Korea.</i>	

Transaction Safe Field Devices Base of System Wide Data Consistency.....	144
<i>Thorsten Szczepanski - ifak system GmbH- Germany.</i>	
<i>René Simon - HS Harz - Germany.</i>	
<i>Sören Scharf - ifak system GmbH - Germany.</i>	

Invited Speaker II

Networked Control Systems: From Independent Designs of the Network Qos and the Control to Co-design.....	155
<i>Prof. Ye Qiong Song- Institut National Polytechnique de Lorraine</i>	

Session VI : Network Dependability

A Survey of Ethernet Redundancy Methods for Real-Time Ethernet Networks and its Possible Improvements.....	163
<i>Lukasz Wisniewski - Ostwestfalen-Lippe University of Applied Sciences - Germany</i>	
<i>Mohsin Hameed - Ostwestfalen-Lippe University of Applied Sciences - Germany.</i>	
<i>Sebastian Schriegel - Ostwestfalen-Lippe University of Applied Sciences - Germany.</i>	
<i>Juergen Jasperneite - Ostwestfalen-Lippe University of Applied Sciences - Germany.</i>	
WSN Security Scheme Based on Ultrasonic Device Locating.....	171
<i>Herbert Schweinzer - Vienna University of Technology - Austria.</i>	
<i>Gerhard Spitzer - Vienna University of Technology - Austria.</i>	
Hybrid-time Chaotic Encryption and Sender Authentication of Data Packets in Automation Networks.....	179
<i>Wolfgang A. Halang - Fernuniversität - Germany.</i>	
<i>Wallace K.S. Tang - City University of Hong Kong - China.</i>	
<i>Ho Jae Lee - Inha University – Korea.</i>	
<i>J. Gonzalo Baraias Ramirez - IPICYT - Mexico.</i>	
Highly Available and Reliable Networks based on Commercial-off-the-shelf Hardand Software.....	185
<i>Thomas Turek - Vienna University of Technology - Austria.</i>	
<i>Heimo Zeilinger - Vienna University of Technology - Austria.</i>	
<i>Berndt Sevcik - Vienna University of Technology - Austria.</i>	
<i>Edger Holleis - Vienna University of Technology - Austria.</i>	
<i>Gerhard Zucker - Vienna University of Technology - Austria.</i>	

Session VII : Applications

WAVE Based Architecture for Safety Services Deployment in Vehicular Networks.....	191
<i>Nuno Ferreira - Universidade de Aveiro - Portugal.</i>	
<i>Tiago Meireles - Universidade de Aveiro - Portugal.</i>	
<i>José Fonseca - Universidade de Aveiro - Portugal.</i>	
<i>João Nuno Matos - Universidade de Aveiro - Portugal.</i>	
<i>Jorge Sales Gomes - BRISA - Portugal.</i>	
Using Low-Power Radios for Mobile Robots Navigation.....	198
<i>Hongbin Li - Zhejiang University - China.</i>	
<i>Luis Almeida - University of Porto - IEETA - Portugal.</i>	
<i>Fausto Carramate - University of Aveiro - Portugal.</i>	

Zhi Wang - Zhejiang University - China.
Youxian Sun - Zhejiang University - China.

Behavior Recognition and Prediction with Hidden Markov Models
for Surveillance Systems.....206

Josef Mitterbauer - Vienna University of Technology - Austria.
Dietmar Bruckner - Vienna University of Technology - Austria.
Rosemarie Velik - Vienna University of Technology - Austria.

Automated Buildings as Active Energy Consumers.....212

Friederich Kupzog - Vienna University of Technology - Austria.
Klaus Pollhammer - Vienna University of Technology - Austria.

Timing properties requirements and robustness analysis of a platoon of vehicles.....218

Lionel Havet - INRIA - France.
François Simonot - University of Nancy - France.

Work in progress - I

Compression of Inertial and Magnetic Sensor Data for Network Transmission..... 226

Young Soo Suh – University of Ulsan - Korea.

A Study on the Development of Embedded System Software for Ubiquitous Sensor
Networks using UML.....230

Jong-Won Choi - Hanyang University - Korea.
Dong-Jin Lim - Hanyang University - Korea.

Introducing a simulation tool for WirelessHART networks.....234

A. Depari - University of Brescia - Italy.
P. Ferrari - University of Brescia - Italy.
A. Flammini - University of Brescia - Italy.
E. Sisinni - University of Brescia - Italy.

Multiple Camera-based Correspondences of People using Camera Networks and
Context Information.....238

Hyun-uk Chae - University of Ulsan - Korea.
Suk-Ju Kang - University of Ulsan - Korea.
Kang-Hyun Jo - University of Ulsan - Korea.

Work in progress - II

Automatically Rotating PDP TV Using Multiple Sensor Information.....242

Jong-Tae Seo - Hanyang University - Korea.
Seok Cheol Park - Hanyang University - Korea.
Songjun Lee - Hanyang University - Korea.
Byung-Ju Yi - Hanyang University - Korea.

A case study on wireless networks for agricultural applications.....246
P. Mariño - University of Vigo - Spain.
F.P. Fontán - University of Vigo - Spain.
M.A. Domínguez - University of Vigo - Spain.
S. Otero - University of Vigo - Spain.

An Autonomous Adaptive Multiagent Model for Building Automation..... 250
Tehseen Zia - Vienna University of Technology - Austria.
Roland Lang - Vienna University of Technology - Austria.
Harold Boley - National Research Council Canada Fredericton - Canada.
Dietmar Bruckner - Vienna University of Technology - Austria.
Gerhard Zucker - Vienna University of Technology - Austria.

Work in progress -III

Lightweight Data Duplication for Fault Tolerant Structural Health Monitoring System.....255
Yoshinao Matsushiba - Keio University - Japan.
Hiroaki Nishi - Keio University - Japan.

An Approach to Remote Monitoring and Control based on OPC Connectivity.....259
Vu Van Tan - University of Ulsan - Korea.
Dae-Seung Yoo - University of Ulsan - Korea.
Myeong-Jae Yi - University of Ulsan - Korea.

A Dynamic Software Configuration Model Based on Embedded System.....263
CHEN Heping - Wuhan University of Science and Technology - China.
WANG Jincun - Wuhan University of Science and Technology - China.
CHEN Bin - Wuhan University of Science and Technology - China.
LI Xiaohui - Wuhan University of Science and Technology - China.

Control of IPMC Actuator using Self-sensing Method.....267
Bonmin Koo - Hanyang University - Korea.
Doo-su Na - Hanyang University - Korea.
Songjun Lee - Hanyang University - Korea.