

# **2nd IFAC Symposium on Telematics Applications 2010**

**Timisoara, Romania  
5 – 8 October 2010**

ISBN: 978-1-61782-556-9

**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© (2010) 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](mailto: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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

## **SESSION S1: CONTRIBUTED SESSION ON TRAFFIC CONTROL**

<b>Intermodal Traffic Management Networks - Methods Of Converting Bilateral Data Exchange To Service Orientated Architecture</b> .....	1
<i>C. Engel, S. Jenkner, R. Mobius</i>	
<b>An Agent-Oriented Software Platform for Urban Traffic Networks Modelling, Analysis and Control</b> .....	7
<i>S. Caramihai, I. Dumitrache, M. Voinescu</i>	
<b>The Communication Architecture for an Interurban Traffic Management System Architecture</b> .....	13
<i>C. Alexandrescu, R. Timnea</i>	
<b>Train Traffic Control Based on Distributed Resource Allocation</b> .....	19
<i>T. Letia, A. Astilean, R. Miron, M. Santa</i>	

## **SESSION S2: INVITED SESSION ON TELECONTROL OF MOBILE ROBOTS AND ROBOT SWARMS**

<b>CBRNE Reconnaissance with an Unmanned Vehicle - A Semi-Autonomous Approach -</b> .....	25
<i>F. Schneider, T. Rohling, B. Bruggemann, D. Wildermuth</i>	
<b>Methods for Control of UGV Convoys in Unexplored and Partially Unpaved Terrain</b> .....	31
<i>T. Kopfstedt, M. Menges, S. Bullmer</i>	
<b>Calibration of a Car-Like Mobile Robot with a High-Precision Positioning System</b> .....	37
<i>L. Lemmer, R. Heß, M. Krauß, K. Schilling</i>	
<b>Control of a Semi-Autonomous UGV Using Lossy Low-Bandwidth Communication</b> .....	43
<i>M. Langerwisch, M. Reimer, M. Hentschel, B. Wagner</i>	
<b>A Behaviour-Based Integration of Fully Autonomous, Semi-Autonomous, and Tele-Operated Control Modes for an Off-Road Robot</b> .....	50
<i>C. Armbrust, M. Proetzsch, B. Schafer, K. Berns</i>	

## **SESSION S3: CONTRIBUTED SESSION ON TELEOPERATION**

<b>Critical Resource Infrastructure Supervision and Intervention System</b> .....	56
<i>S. Arghir, R. Dobrescu, D. Popescu, H. Humaila</i>	
<b>An Augmented Reality Supported Control System for Remote Operation and Monitoring of an Industrial Work Cell</b> .....	63
<i>M. Sauer, F. Leutert, K. Schilling</i>	
<b>Issues of Identifying, Estimating and Using Delay Times in Telecontrol Systems Based on TCP/IP Networks</b> .....	69
<i>O. Stefan, T. Dragomir, A. Codrean, I. Silea</i>	
<b>Video and Laser Based Augmented Reality Stereoscopic Viewing for Mobile Robot Teleoperation</b> .....	75
<i>S. Livatino, G. Muscato, F. Banno, D. Tommaso, M. Macaluso</i>	

## **SESSION S4: INVITED SESSION ON TELE-HEALTH AND CONTINUITY OF CARE**

<b>ICT Frame Supporting Continuity of Care towards Increased Quality of Healthcare Services</b> .....	83
<i>L. Stoicu-Tivadar</i>	
<b>Wireless Sensor Network Interface for a Residential Monitoring System</b> .....	87
<i>M. Ghenghea, A. Darie, I. Bogdan</i>	
<b>Indoor Broadcasting System for Personalized TV Emissions Addressed to Teleassisted Persons</b> .....	92
<i>I. Silviu, M. Alin, I. Laurentiu, A. Petre</i>	
<b>Integrated Tele-assistance Platform - TELEASIS</b> .....	97
<i>S. Puscoci, L. Stoicu-Tivadar, F. Serbanescu, F. Bajan, I. Bogdan, S. Ionita, C. Ciortan</i>	

## **SESSION S5: INVITED SESSION ON TRANSPORT TELEMATICS**

<b>Telematics and the Transportation System's Value</b> .....	103
<i>R. Janecki, S. Krawiec, G. Sierpinski</i>	
<b>The Pilot Project of the National Automatic Toll Collection System</b> .....	110
<i>G. Nowacki, E. Smoczynska, A. Niedzicka</i>	
<b>The Possibility of Use of the AIS Data Transmissions for Safety and Security Monitoring in the Polish Maritime Areas</b> .....	118
<i>R. Wawruch, T. Stupak</i>	
<b>Floating Car Observer - An Innovative Vehicle-sensor for Urban and Highway Scenarios</b> .....	124
<i>S. Naumann, F. Wolf, R. Schonrock</i>	

## **SESSION S6: INVITED SESSION ON MAN-MACHINE INTERFACES FOR TELEMATICS SYSTEMS**

<b>Mixed-Reality User Interface for Mobile Robot Teleoperation in Ad-Hoc Networks</b> .....	130
<i>M. Sauer, F. Zeiger, K. Schilling</i>	
<b>Exploratory Analysis of Operator: Robot Ratio in Search and Rescue Missions</b> .....	136
<i>A. Valero, P. Puente, D. Rodriguez-Losada</i>	
<b>Remote and In-Situ Multirobot Interaction for Firefighters Interventions Under Smoke Conditions</b> .....	144
<i>A. Naghsh, J. Saez-Pons, J. Penders, J. Gancet, E. Motard, L. Nomdedeu, J. Sales, E. Cervera, R. Marin, P. Sanz, R. Sebastia</i>	
<b>A User Interface for the Control of Component-Based Multi-Robot Systems</b> .....	151
<i>A. Holttä, J. Saarinen, A. Maula, A. Halme</i>	

## **SESSION S7: CONTRIBUTED SESSION ON REMOTE SENSOR DATA ACQUISITION**

<b>Sensor-Actuator-Based Network for an Early-Warning System in Extreme Weather Conditions</b> .....	157
<i>U. Hempel, J. Auge, M. Schutze, C. Engel</i>	
<b>Engineering Challenges and Approaches in Water Quality Monitoring Networks</b> .....	163
<i>C. Hubner, M. Thron, J. Copp, L. Rieger, P. Vanrolleghem</i>	
<b>Automated Environmental Monitoring with Remote Biological Sensors for Large Areas</b> .....	169
<i>M. Drentschew, F. Zeiger, K. Schilling</i>	
<b>Remote Monitoring of Industrial Systems Health</b> .....	175
<i>D. Moga, M. Dumitrescu, N. Stroia, D. Petreus</i>	

## **SESSION S8: CONTRIBUTED SESSION ON ROBOTICS**

<b>Tractive Force Prediction for Unmanned Ground Vehicles in Rough Terrain</b> .....	180
<i>K. Althoefer, L. Seneviratne, S. Al-Milli, S. Chhaniyara, X. Song</i>	
<b>Mobile Robot Exploration Based on Three Dimension Cameras Acquisition</b> .....	186
<i>C. Roth</i>	
<b>Track Loader Kinematics</b> .....	192
<i>H. Fredriksson, U. Andersson, K. Hyyppä</i>	

## **SESSION S9: CONTRIBUTED SESSION ON CONTROL VIA COMMUNICATION NETWORKS**

<b>Power Consumption Profiling for Wireless Industrial Mixed-Signal Devices</b> .....	196
<i>P. Nenninger, F. Mendoza</i>	
<b>Communication and Co-operation for Traffic Systems</b> .....	202
<i>F. Wolf, W. Libbe, A. Herrmann</i>	
<b>Fast Design of Network Topology</b> .....	208
<i>T. Fencl, P. Burget, J. Bilek</i>	
<b>On the Energy Problem of Wireless Applications in Industrial Automation</b> .....	214
<i>P. Nenninger, M. Ulrich, H. Kaul</i>	
<b>Author Index</b>	