SympoTIC'06

JOINT IST WORKSHOP ON SENSOR NETWORKS

&

SYMPOSIUM ON TRENDS IN COMMUNICATIONS

24 - 27 June 2006
Bratislava, Slovakia

Proceedings

Co-sponsored by / technically co-sponsored by / in cooperation with

IEEE REGION 8

Združenie
Jozefa Murgaša
pre podporu činnosti
IEEE na Slovensku

IEEE
CAS, COM and SP chapter
CS Section

IEEE
CS SECTION

U.R.S.I.

Information Society Technologies

CRUISE

SympoTIC'06

JOINT IST WORKSHOP ON SENSOR NETWORKS & SYMPOSIUM ON TRENDS IN COMMUNICATIONS

© 2006 IEEE. Personal use of this material is permitted. However, permission to reprint/republish this material for advertising or promotional purposes or for creating new collective works for resale or redistribution to servers or lists, or to reuse any copyrighted component of this work in other works must be obtained from the IEEE.

IEEE Catalog Number: 06EX1373

ISBN: 1-4244-0368-5

Library of Congress: 2006924075

Order information:

IEEE Operations Center
445 Hoes Line
Piscataway, NJ 08854-4150
USA

+1 800 678 IEEE (+1 800 678 4333)
+1 732 981 1393
+1 732 981 9667 (FAX)
email: customer-service@ieee.org

TABLE OF CONTENTS:

SECTION: INVITED LECTURES

TUTORIAL

Measurement and modeling of wireless propagation channels for MIMO I
E. Bonek, Vienna University of Technology, Austria

KEYNOTE

The Sandbridge Sandblaster® SDR platform II
J. Glossner, D. Iancu, M. Moudgill, M.J. Schulte, Sandbridge Technologies, Inc., USA

SECTION S1: ALGORITHMS FOR SOFTWARE PLATFORMS AND DSP'S

Chairperson: J. Takala

Improved Spectral Efficiency through Iterative Concatenated
Convolutional Reed-Solomon Software Decoding 1
D. Iancu[1], H. Ye[1], J. Glossner[1,2], M. J. Schulte[3], S. Mamidi[3], J. Takala[4],
[1]Sandbridge Technologies, Inc., USA
[2]Delft University of Technology, The Netherlands
[3]University of Wisconsin-Madison, USA
[4]Tampere University of Technology, Finland

DSP Implementation of Cholesky Decomposition 6
P. Salmela[1], A. Happonen[2], T. Järvinen[2], A. Burian[2], J. Takala[1]
[1]Tampere University of Technology, Finland
[2]Nokia, Finland

Simplified Max-Log-MAP Decoder Structure 10
P. Salmela[1], T. Järvinen[2], J. Takala[1]
[1]Tampere University of Technology, Finland
[2]Nokia, Finland

High efficient two-dimensional multi-level discrete wavelet transform
algorithm for DM642 signal processor 14
A. Zlobin, Moscow Institute of Physics and Technology, Russia

SECTION S2: CODING

Chairperson: M. Rakus

Simple Iterative Decoding for Bit-Interleaved Coded Orthogonal Modulation 16
J. S. G. Panaro, INATEL, Brazil

Low Complexity BCM for Wireless Applications with Different Codeword Length 20
R. R. S. Junior, G. G. R. Gomes, INATEL, Brazil

Distributed Source Coding Using T-Direct Codes 24
R. S. R. Durai, IRISA/INRIA, France

SECTION S3: PROTOCOLS

Chairperson: A. H. Kemp

Frame Descriptor Tables for Minimized Signaling Overhead in
Beyond 3G MAC Protocols 28
O. Klein, M. Einhaus, A. Federlin, E. Weiss, RWTH Aachen University, Germany

SIP for Wireless Positioning: System and Architecture 32
B.Peng, A.H.Kemp, G.Brodin, University of Leeds, UK

Bandwidth Optimization in SLA Negotiation Process 36
S. Krile[1], D. Peraković[2], [1]University of Dubrovnik, Croatia, [2]University of Zagreb, Croatia

SECTION S4: SEQUENCES

Chairperson: P. Farkas

Design of Modified UCHT Sequences 40
G. Cresp[1,2], H. H. Dam[3], H. J. Zepernick[4],
[1]Western Australian Telecommunications Research Institute, Australia
[2]The University of Western Australia, Australia
[3]Curtin University of Technology, Australia
[4]Blekinge Institute of Technology, Sweden

A High Peak-to-Average Power Ratio Reduction in OFDM Systems by Ideal
N/2-shift Aperiodic Auto-Correlation Property 44
P. Svac, O. Hrdlicka, Siemens Program and System Engineering, s.r.o., Slovakia

SECTION S5: APPLICATIONS OF NEURAL NETWORKS AND COMPUTATIONAL INTELLIGENCE

Chairperson: I. Lokshina

Two-Dimensional Evaluation of the Queuing Network Equilibrium
Based on Clustering and Self-Organizing Map 48
D. Radev[1], I. Lokshina[2], S. Radeva[3],
[1]University of Rousse, Bulgaria
[2]Division of Economics and Business, SUNY Oneonta, USA
[3]University of Architecture, Civil Engineering and Geodesy, Sofia, Bulgaria

An Integrated Security Framework for Assisting
in the Defence of Computer Networks 52
C. Onwubiko, A. P. Lenaghan, L. Hebbes, Faculty of Computing,
Information Systems and Mathematics, Kingston upon Thames, UK

Optimization of ANN Applied to Non-linear
System Identification Based in UWB 56
P. Corral[1], O. L. Júnior[2], A. C. de C. Lima[3],
[1]Universidad Miguel Hernández, Elche-Alicante, Spain
[2]Faculdade de Tecnologia e Ciência, Salvador, Brazil
[3]Universidade Federal da Bahia, Salvador, Brazil

SECTION S6: CHANNEL ESTIMATION AND MODELING

Chairperson: H. Bali

Joint Blind Channel Estimation and Interference Suppression
for Single Carrier Systems 60
K. Amleh[1], H. Li[2],
[1]Penn State University at Mont Alto, USA
[2]Stevens Institute of Technology, Hoboken, USA

Finite-alphabet and Decision-feedback Based Channel Estimation
for Space-time Coded OFDM Systems 64
Z. Chen, T. Zhang, Z. Gong, Xi'an Jiaotong University, Xi'an, China

Modeling Dual Polarization Wireless
Fading Channels using Quaternions 68
B. J. Wysocki, T. A. Wysocki, J. Seberry, University of Wollongong, Australia

Probability of Signal-to-Interference Ratio in Mobile Cellular Systems 72
E. Zentner[1], S. Z. Pilinsky[2],
[1]University of Zagreb, Croatia
[2]Polytechnics of Zagreb, Croatia

SECTION S7: MC CDMA

Chairperson: H. J. Zepernick

MC-CDMA System with Double Spreading Codes for MAI Reduction in the
Multi-Path Fading Downlink Channel 76
D. A. Nunes, D. A. Guimarães, National Institute of Telecommunications - Inatel, Brazil

UWB Spatial Multiplexing by Multiple Antennas and RAKE Decorrelation 80
V. P. Tran, A. Sibille, Ecole Nationale Supérieure de Techniques Avancées (ENSTA), France

Performance Evaluation of Two-Dimensional Quasi Orthogonal Complete
Complementary Codes in Fading Channels 84
M. Turcsany, P. Farkas, P. Duda, J. Kralovic, Slovak Technical University, Slovakia

Multicarrier Multiuser Modulation Performance in Severely Fading Channels 88
D. W. Matolak, I. Sen, W. Xiong, Ohio University, USA

SECTION S8: ENHANCEMENT OF MOBILE VISUAL SERVICES AND WIRELESS SOLUTIONS

Chairperson: H. J. Zepernick

Perceptual Evaluation of Motion JPEG2000
Quality over Wireless Channels... 92
U. Engelke[1], H. J. Zepernick[1], T. M. Kusuma[2],
[1]Blekinge Institute of Technology, Sweden
[2]Gunadarma University, Indonesia

A Steganographic Method for the Secure Embedding of
GIS Data Streams into Aerial Photography 97
L. Hebbes, F. Y. Janjua, D. Livingstone, J. Orwell, Kingston University, UK

Simple Telemetry System for Medical and Industry
Data Transmission 101
M. Stork, University of West Bohemia, Czech Republic

SECTION S9: PRESENTATION OF SELECTED IST PROJECTS

Chairperson: P. Farkas

Towards Creating Ubiquitous Intelligent Sensing Environments - the NoE CRUISE..... 105
G. Kotsis, Johannes Kepler University Linz, Austria

Presentation of WINNER Project 106
M. Bublin, I. Kambourov, Siemens AG, Austria