Hindawi Publishing Corporation
EURASIP Journal on Wireless Communications and Networking
Volume 2007, Article ID 58964, 2 pages
doi:10.1155/2007/58964

Editorial
Satellite Communications

Ray E. Sheriff,[1] Anton Donner,[2] and Alessandro Vanelli-Coralli[3]

[1] *Mobile and Satellite Communications Research Centre, School of Engineering, Design and Technology, University of Bradford, Richmond Road Bradford BD7 1DP, UK*
[2] *German Aerospace Center, Institute of Communications and Navigation, Oberpfaffenhofen, 82234 Wessling, Germany*
[3] *ARCES, University of Bologna, Via Toffano 2, 40125 Bologna, Italy*

Received 28 November 2007; Accepted 9 December 2007

We are delighted to bring to you this special issue on satellite communications, which we have prepared as part of the spreading of excellence remit of the satellite communications network of excellence (SatNEx). The SatNEx project, which began in 2004, is funded for five years under the European Union's Sixth Framework Programme (FP6) Information Society Technologies (IST) Thematic Area. Led by the German Aerospace Center, SatNEx brings together a network of 24 partners, distributed throughout Europe, with membership drawn from ten countries.

The philosophy underlying the SatNEx approach revolves around the selection of focused actions under Joint Programmes of Activities, which are carried out collectively by the partners and include research, integration, and dissemination activities. Training represents an important part of the SatNEx remit and is supported through a number of initiatives including the hosting of internship projects and an annual summer school.

The call for papers resulted in a high number of submissions, from which we have been able to select 12 excellent papers dealing with the different aspects of satellite communications and navigation.

Multiple-input multiple-output (MIMO) techniques are attracting a considerable amount of attention from within the terrestrial wireless community. The first paper of this special issue, "Multisatellite MIMO communications at Ku band and above: investigations on spatial multiplexing for capacity improvement and selection diversity for interference mitigation," considers the application of such technology over a satellite platform operating in the Ku band and above. The paper considers how MIMO can be used to increase capacity by using a satellite spatial multiplexing system and how antenna selection can be used to mitigate interference. The next paper "Investigations in satellite MIMO channel modeling: accent on polarization" looks at MIMO systems from the polarization diversity point of view and dwells on the satellite cooperative communication concepts.

Switch and stay combining (SSC) is a form of diversity technique used in digital receivers to compensate for fade events introduced by the mobile channel. The third paper "Performance analysis of SSC diversity receivers over correlated Ricean fading satellite channels" investigates the performance of dual-branch SSC receivers for different fading channel characteristics.

The next four papers deal with the emerging scenario of mobile digital video broadcasting (DVB-S2 and RCS mobile). Alternative approaches to counteracting fading channels introduced when operating in a train environment receiving satellite DVB-S2 are presented in the paper "Advanced fade countermeasures for DVB-S2 systems in railway scenarios." Here, as a result of simulation analysis, antenna diversity and packet-level forward error correction mechanisms are proposed and their impact is evaluated with respect to the receiver design and system complexity. The theme of DVB-S2 is continued with the paper "Capacity versus bit error rate trade-off in the DVB-S2 forward link," which investigates how satellite capacity can be optimised for DVB-S2 transmissions. The DVB return channel via satellite (DVB-RCS) is then addressed in "Frequency estimation in iterative interference cancellation applied to multibeam satellite systems," which considers the application of interference cancellation on the reverse link of a multibeam satellite system, using DVB-RCS with convolutional coding as an example. The paper "A QoS architecture for DVB-RCS next-generation satellite networks" proceeds to design and emulate a quality-of-service (QoS) architecture that demonstrates using real multimedia applications how QoS can be supported over a DVB-RCS network.

Synchronization aspects are dealt with in "Maximum likelihood timing and carrier synchronization in burst-mode satellite transmissions." The paper addresses the problem of achieving synchronisation for a burst-mode satellite transmission over an AWGN channel. The subject of burst transmission continues with the paper "Burst format design for optimum joint estimation of Doppler-shift and Doppler-rate in packet satellite communications," which considers optimising the burst-format of packet-oriented transmissions by proposing very-low-complexity algorithms for carrier Doppler-shift and Doppler-rate estimation.

A network comprising satellite and high-altitude platforms is considered in the paper "TCP-call admission control interaction in multiplatform space architectures." Cross-layer techniques are implemented by means of TCP feeding back into call admission control (CAC) procedures for the purpose of prevention of congestion and improvement in QoS.

Finally, since navigation is an extremely important part of the satellite system family, we have included two papers. The first paper "Efficient delay tracking methods with sidelobes cancellation for BOC-modulated signals" deals with binary offset carrier (BOC) modulation, which is adopted in typical navigation systems. The paper considers how to improve the tracking of the main lobe of the BOC-modulated signal by using sidelobe suppression techniques. An alternative approach based on filter bank processing is presented in "Analysis of filter-bank-based methods for fast serial acquisition of BOC-modulated signals" to conclude the special issue.

ACKNOWLEDGMENTS

It has been a pleasure for us to have put together this special issue, which we hope you will find interesting. We would like to thank the editorial staff at Hindawi for their support and assistance during the preparation of this special issue. We would like to thank the contributing authors for the excellent quality of their submissions and our SatNEx colleagues for their valuable assistance in the reviewing of papers. SatNEx is partially funded by the European Commission under the Sixth Framework Programme. Further information on SatNEx can be found on the project web site: http://www.satnex.org/.

Ray E. Sheriff
Anton Donner
Alessandro Vanelli-Coralli

EURASIP Journal on Wireless Communications and Networking

Special Issue on

Signal Processing-Assisted Protocols and Algorithms for Cooperating Objects and Wireless Sensor Networks

Call for Papers

With the advent of the so-called Internet of Things (IoTs), we will witness an unprecedented growth in the number of networked terminals and devices. In attaining this IoT vision, a class of energy- and, in general, resource-constrained systems like Wireless Sensor Networks (WSNs), networks of cooperating objects and embedded devices such as RFIDs, or networks for Device-to-Device (D2D) and Machine-to-Machine (M2M) communications are to play a fundamental role. The paradigm shift from general-purpose data networks to application-oriented networks (e.g., for parameter or random field estimation, event detection, localization, and tracking) clearly calls for further optimization at the physical, link, and network layers of the protocol stack. Interestingly, the above-mentioned estimation/detection/localization/tracking problems have been addressed for years by the signal processing community, this resulting into a number of well-known algorithms. Besides, some inspiration could be also borrowed from other communication schemes, such as MIMO and beamforming techniques or cooperative communications that were traditionally developed for wireless data networks, or even from other fields such as mathematical biology (e.g., networks of coupled oscillators). However, the challenge now is to enhance such algorithms and schemes and make them suitable for decentralized and resource-constrained operation in networks with a potentially high number of nodes. Complementarily, the vast literature produced by the information theory community, on the one hand, reveals the theoretical performance limits of decentralized processing (e.g., distributed source coding) and, on the other, offers insight on the scalability properties of such large networks and their behavior in the asymptotic regime. Realizing the information-theoretic performance with practical decentralized networking, radio resource management schemes, routing protocols, and other network management paradigms is a key challenge.

The objective of this Special Issue (whose preparation is carried out under the auspices of the EC Network of Excellence in Wireless Communications NEWCOM++) is to gather recent advances in the areas of cooperating objects, embedded devices, and wireless sensor networks. The focus is on how the design of future physical, link, and network layers could benefit from a signal processing-oriented approach. Specific topics for this Special Issue include but are not limited to:

- Decentralized parameter estimation
- Estimation of random fields
- Distributed MIMO and beamforming
- Decentralized and cooperative time and frequency synchronization
- Cooperative event detection
- Data gathering and data fusion
- Data-centric multihop techniques and routing
- Scalability and asymptotic laws for in-network distributed estimation/detection
- Energy-saving algorithms and protocols
- Feedback-limited scheduling and MAC protocols
- Decentralized joint source-channel coding
- Cooperative localization and tracking
- Topology control in resource-constrained networks
- Low-complexity opportunistic networking protocols

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Manuscript Due	February 1, 2010
First Round of Reviews	May 1, 2010
Publication Date	August 1, 2010

Lead Guest Editor

Carles Antón-Haro, Centre Tecnològic de Telecomunicacions de Catalunya (CTTC), 08860 Castelldefels, Barcelona, Spain; carles.anton@cttc.es

Guest Editors

Davide Dardari, WiLAB, University of Bologna at Cesena, Cesena (FC), Italy; ddardari@ieee.org

Osvaldo Simeone, Center for Wireless Communications and Signal Processing Research, New Jersey Institute of Technology (NJIT), Newark, NJ, USA; osvaldo.simeone@njit.edu

Roberto Verdone, WiLAB at the University of Bologna, Bologna, Italy; roberto.verdone@unibo.it

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International Journal of Microwave Science and Technology

Special Issue on CMOS Application to Wireless Communications

Call for Papers

Recent advances in semiconductor process technologies have motivated the development of fully integrated CMOS circuits for wireless communications. Consequently, tremendous research efforts have been directed to the design and implementation of CMOS radio-frequency integrated circuits (RFICs). The objective of this special issue is to highlight the up-to-date progress in the field of CMOS RF devices and circuits.

The International Journal of Microwave Science and Technology invites authors to submit papers for the special issue on CMOS RF. Original papers previously unpublished and not currently under review by another journal are solicited for this special issue. Topics of interest include, but are not limited to:

- CMOS and BiCMOS RF device technologies
- Small-signal circuits
- Large-signal circuits
- Mixed-signal circuits
- Millimeter-wave integrated circuits
- Signal generation circuits
- Frequency-conversion circuits
- Wide-band integrated circuits
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Manuscript Due	September 1, 2009
First Round of Reviews	December 1, 2009
Publication Date	March 1, 2010

Lead Guest Editor

Liang-Hung Lu, Department of Electrical Engineering, National Taiwan University, Roosevelt Road, Taipei 106, Taiwan; lhlu@cc.ee.ntu.edu.tw

Guest Editor

Huei Wang, Department of Electrical Engineering, National Taiwan University, Roosevelt Road, Taipei 106, Taiwan; hueiwang@ntu.edu.tw

EURASIP Journal on Advances in Signal Processing

Special Issue on Robust Processing of Nonstationary Signals

Call for Papers

Techniques for processing signals corrupted by non-Gaussian noise are referred to as the robust techniques. They are established and used in science in the past 40 years. The principles of robust statistics have found fruitful applications in numerous signal processing disciplines especially in digital image processing and signal processing for communications. Median, myriad, meridian, L filters (with their modifications), and signal-adaptive realizations form a powerful toolbox for diverse applications. All of these filters have lowpass characteristic. This characteristic limits their application in analysis of diverse nonstationary signals where impulse, heavy-tailed, or other forms of the non-Gaussian noise can appear: FM, radar and speech signal processing, and so forth. Recent research activities and studies have shown that combination of nonstationary signals and non-Gaussian noise can be observed in some novel emerging applications such as internet traffic monitoring and digital video coding.

Several techniques have been recently proposed for handling the signal filtering, parametric/nonparametric estimation, feature extraction of nonstationary and signals with high-frequency content corrupted by non-Gaussian noise. One approach is based on filtering in the time-domain. Here, the standard median/myriad forms are modified in such a manner to allow negative- and complex-valued weights. This group of techniques is able to produce all filtering characteristics: highpass, stopband, and bandpass. As an alternative, the robust filtering techniques are proposed in spectral (frequency- Fourier, DCT, wavelet, or in the time-frequency) domain. The idea is to determine robust transforms having the ability to eliminate or surpass influence of non-Gaussian noise. Then filtering, parameter estimation, and/or feature extraction is performed using the standard means. Other alternatives are based on the standard approaches (optimization, iterative, ML strategies) modified for nonstationary signals or signals with high-frequency content.

Since these techniques are increasingly popular, the goal of this special issue is to review and compare them, propose new techniques, study novel application fields, and consider their implementations.

Topics of interest include, but are not limited to:

- Robust statistical signal processing (estimation, detection, decisions)
- Robust tracking, classification and control
- Performance analysis, comparison, benchmark setting, and achievable bounds
- Robust parametric/non-parametric estimation, filtering, and feature extraction of nonstationary signals
- Robust learning and adaptive robust techniques
- Fast software and hardware realizations
- Applications

Before submission authors should carefully read over the journal's Author Guidelines, which are located at http://www.hindawi.com/journals/asp/guidelines.html. Prospective authors should submit an electronic copy of their complete manuscript through the journal Manuscript Tracking System at http://mts.hindawi.com/ according to the following timetable:

Manuscript Due	January 1, 2010
First Round of Reviews	April 1, 2010
Publication Date	July 1, 2010

Lead Guest Editor

Igor Djurović, Department of Electrical Engineering, University of Montenegro, Cetinjski put bb, 81000 Podgorica, Montenegro; igordj@ac.me

Guest Editors

Ljubiša Stanković, Department of Electrical Engineering, University of Montenegro, Cetinjski put bb, 81000 Podgorica, Montenegro; ljubisa@ac.me

Markus Rupp, Institute of Communications and Radio Engineering, Vienna University of Technology, Gusshausstrasse 25/389, 1040 Wien, Austria; m.rupp@nt.tuwien.ac.at

Ling Shao, Philips Research Labaratories, 5656 AE Eindhoven, The Netherlands; l.shao@philips.com