Curriculum vitae: SAVAZZI STEFANO

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Short Bio.

- Dec. 2004 MSc degree Telecommunication Engineering (Ingegneria delle Telecomunicazioni): 100 (cum laude), avg. degree 29.0/30 – Politecnico di Milano. Title of the thesis: "Analysis of the channel capacity for SIMO systems under Gaussian interference" (EU patent filed). Advisor: Prof. Umberto Spagnolini

- April 2008, PhD. degree (cum laude) in Information Engineering (Ingegneria dell'Informazione) Dipartimento di Elettronica e Informazione, Politecnico di Milano. PhD. thesis: "Analysis and design of cooperative networks in fading channels". Supervisor: Prof. Umberto Spagnolini. Reviewer: Prof. Anna Scaglione (School of Electrical and Computer Eng., Cornell University, Ithaca, NY, US).
 - Awarded by the "Dimitris N. Chorafas Foundation Award" for the best PhD dissertations (outstanding research).
- Post-Doc Researcher at Politecnico di Milano, working on project InSyEme: Integrated Systems for Emergency (FIRB), Research Area: Internet of Things. The project is aimed at investigating and experimenting novel tools and methodologies for the realization of systems for the prevention and management of emergencies in case of natural disasters, by exploiting a Mobile Grid Computing paradigm.
- Permanent position as Researcher at Italian National Research Council (IEIIT institute) and assistant professor at Politecnico di Milano DEIB, 2012
- Cooperations
 - 1. Nokia-Siemens Networks: "Array processing techniques for WMAN systems based on IEEE 802.16 standard" [2004-2005].
 - 2. EU-WINNER [2005] https://www.ist-winner.org
 - 3. Newcom++ [2008] http://www.newcom-project.eu/. Title of the contract: Cooperative systems for WSN, Period: from 01/07/2008 to 31/12/10
 - 4. COST2100 [2008] http://www.cost2100.org/
 - 5. FIRB-InSyEME: [2008 2010] www.unifi.it/insyeme/
 - 6. DIWINE FP7 [2013-2016] http://www.diwine-project.eu/

- Visiting Researcher
 - 1. <u>Signals and Systems Dept., Uppsala University</u> [March-July 2005] . Minor Thesis: "Comparative Analysis of Spatial Multiplexing techniques in outdoor MIMO-OFDMA systems" Supervisor: Prof. Mikael Sternad. Funding: EU-WINNER.
 - 2. <u>Electrical and Computer Engineering Dept.</u>, <u>University of California San Diego</u> UCSD [June-September 2007]
 - 3. Senior Researcher at <u>Telecommunication Research Center (ftw.)</u>, <u>Technical University of Vienna</u>, <u>Austria</u> April-August 2010. SISE funding (national research network)

Research activities

Cross-layer design and optimization of cooperative networks [2006 –]

The activity (started during the PhD.) is focused on the cross-layer design and optimization of cooperative wireless network systems. Cooperative systems can be interpreted as *virtual* multiantenna systems (Virtual-MIMO [C5]-[C10]) where wireless devices (relays) take the role of virtual antennas to employ collaborative encoding/decoding of the information. The implementation of these technologies is crucial whenever hardware and cost constraints prevent the use of radio terminals equipped with multiple antennas. Within this activity, a unified model for the performance evaluation of cooperative networks has been developed and tested. The developed model embraces *i*) arbitrary distributed (flat) fading for decode-and-forward relays - [J5] and amplify and forward relays [J8]); *ii*) time-varying fading with arbitrary Doppler environments [J9][J11] (this specific activity has been developed in part at the Electrical and Computer Engineering Dept., UCSD).

Based on these models design rules for cooperative systems can be developed to optimize performances. Optimal design of randomized distributed space-time coding [J2] is shown to minimize the overhead that is necessary to coordinate the relays serving as virtual antennas. Cooperative systems have been applied in the context of spectrum leasing scenarios where primary users can decide to lease resources to secondary terminals in exchange of cooperation. The performance evaluation of these system has been carried out in [J4].

For those systems (e.g., wireless sensor networks) where maximizing battery lifetime is crucial a distributed power allocation algorithm has been proposed in [J1]. Partner selection algorithms have been also proposed and optimized by analyzing the impact of the propagation environment (cooperation with Telecommunication Research Center, ftw. The specific case-study of indoorto-outdoor (I2O) cooperative networks have been analyzed in [C15] [C16].

Cooperations:

- 1. Telecommunication Research Center (ftw.), Technical University of Vienna (TUV) [2008]
- 2. Centre Tecnologic de Telecomunicacions de Catalunya (CTTC), Barcellona, Spagna, [2006]
- 3. New Jersey Information Science and Technology University (NJIT), University Heights, Newark, New Jersey, [2005]

Design of wireless systems for geophysical exploration and monitoring [2008-]

The activity is focused on the design of wireless communication systems for geophysical applications (land seismic oil/gas exploration, monitoring of geological structures). The contributions are twofold:

1) A cluster-mesh radio architecture (based standard ECMA-368 and IEEE 802.15.3) is proposed and analyzed based on the joint exploitation of the Ultra-Wide-Band (UWB) technology for short-range communication among geophones and narrowband technology (WiFi) for point-to-point long range communication towards the storage site. [J5][C17][C18].

2) Seismic data compression algorithms have been proposed and analyzed for cable-free land acquisitions. The high channel count of next generation land acquisitions and the limited availability of the radio spectrum increase the costs for radio transmission. The design of source (and channel) encoding is of strategic importance to miminize the data-rate per seismic channel. Seismic data compression and coding strategies are developed for different acquisition settings and cable-free system configurations. Performance of compression algorithms are evaluated based on real seismic data-sets (cross-spread config.). Data courtesy of eni and WesternGeco [J11][J12].

Cooperations:

- 1. eni, SAIPEM http://www.saipem.com/site/Home.html (contact. Guardiano Sergio, Instrumentation, Control and Telecommunications Dept. SMAUT)
- 2. Western-Geco *http://www.westerngeco.com/* (contact, Claudio Bagaini, Principal Geophysicist WesternGeco AS Oslo Technology Center, Schlumberger)
- 3. Center for Wireless Communication (CWC), Oulu University, Finland [2008]
- 4. iSeis Technology supplier for seismic equipment, *http://www.i-seis.com.* (contact: R. Heath, cofounder VibTech ltd.)

Design of wireless systems for closed-loop critical industrial control and monitoring [2012-] The activity investigates the development of advanced integrated wireless sensor network platforms for communication and control with special focus on critical industrial applications. Particular focus is on scenarios where the network cloud of smart devices needs to accomplish specified tasks under very stringent delay and physical resource constraints. The activity will be carried out in cooperation with the FP7 Dense Cooperative Wireless Cloud Network - DIWINE EU consortium

Cooperations

- 1. Saipem a subsidiary of eni S.p.A (contatto Sergio Guardiano SMAUT department)
- 2. Pepperl-Fuchs Italy (contatto: S. Galimberti R&D)
- 3. DIWINE FP7 EU

Multi-user (interference-aware) scheduling for MIMO-OFDMA sysytems [2005-2008]

MSc thesis (cooperation with Nokia-Siemens Networks, 2004/2005): developed a method for optimizing the antenna spacings for multi-antenna systems subject to co-channel (Gaussian) interference [BR1] [J3][B1][C1]. The activity carried out at Uppsala University was focused on the development of efficient strategies for multi-user scheduling for MIMO-OFDMA systems (interference-aware scheduling) based on zero-forcing beamforming [J6] (funding: EU-WINNER https://www.ist-winner.org).

Cooperations:

- 1. Signals and Systems Department, Uppsala University, Uppsala, Svezia (2005 2008)
- 2. Nokia-Siemens Networks, Cassina de' Pecchi, Milano (2004-2005)

Awards

<u>Chorafas Foundation Award</u> (2008) best doctorate student with outstanding PhD thesis, 2008). <u>http://vpaa.epfl.ch/webdav/site/vpaa/shared/Prix%20de%20recherche/History-DNChorafas.pdf</u> or <u>http://home.dei.polimi.it/savazzi/ChorafasPrize.pdf</u>

StartCup Milano-Lombardia (Business plan competition, June 2008)

Teaching activities

- 1. "Communication systems" 4 editions: 2007-2013
- 2. "Telecommunications" 2008-2009
- 3. "Statistical Signal Processing" 2006-2007
- 4. "Fundamental of signal and systems" 2007-2008: (10h tutoring on Matlab)

Co-tutoring for BSc and MSc thesis:

- 1. D. Marzatico, "Wireless Sensor Networks" B.Sc. Thesis, Politecnico di Milano, 2007
- 2. P. Bestagini, "Adaptive transmit power allocation for low-power wireless systems" B.Sc. Thesis, Politecnico di Milano, 2008
- 3. C. Galli, "Cooperative transmissions for ad-hoc networks" M.Sc. Thesis, Politecnico di Milano, 2006.
- 4. P. Castiglione, "Coded cooperation over time-variant channels" M.Sc. Thesis, Politecnico di Milano ftw, Technical University of Vienna, 2008.
- 5. I. L'Abbate, "UWB sensor networks: performance analysis and energy aware design" M.Sc. Thesis, Politecnico di Milano CWC, Oulu University, 2010.
- 6. M. Spadacini, "Rete di sensori wireless per sistemi anti-intrusione" M.Sc. Thesis, 2011 (in collaboration with Comelit SpA)
- 7. M. Riva, "Device-free mobile positioning in ad-hoc wireless networks" M.Sc. Thesis, 2012
- 8. F. Carminati, "Passive radio localization: channel modeling and algorithms" M.Sc. Thesis 2013

Pubblications

H-index 8, total citation number: 440 see http://scholar.google.com/citations?user=osj_V88AAAAJ

Monographs

S.Savazzi "Cooperative networks in fading channels. A unified framework for performance analysis and design" VDM Verlag Dr. Muller, ISBN: 978-3-639-23396-4, Publication date: 17 Feb. 2010 (www.amazon.com).

International journals (ordered by topic)

- [J1] S.Savazzi and U. Spagnolini, "Energy Aware Power Allocation Strategies for Multihop-Cooperative Transmission Schemes," *IEEE Journal on Selected Areas in Communication*, *Special Issue on Cooperative Communication and Networking*, vol. 25, no 2, pp. 318-327, February 2007
- [J2] S.Savazzi, U. Spagnolini, "Distributed Orthogonal Space-Time Coding: design and outage analysis for randomized cooperation," *IEEE Trans. On Wireless Communications*, vol. 6, no. 12, pp. 4546-4557, December 2007

- [J3] S.Savazzi, O. Simeone and U. Spagnolini, "Optimal design of non-uniform linear arrays in cellular systems by out-of-cell interference minimization" *EURASIP Journal on Wireless Communication and Networking*, vol. 2007, Article ID 93421, 9 pages, 2007, doi:10.1155/2007/93421.
- [J4] O. Simeone, I. Stanojev, S. Savazzi, Y. Bar-Ness, U. Spagnolini and R. Pickholtz,, "Spectrum leasing to cooperating secondary ad hoc networks," *IEEE Journal on Selected Areas in Communications, Special Issue on Cognitive Radio: Theory and Applications*, vol. 26, no. 1, pp. 203-213, January 2008
- [J5] S. Savazzi and U. Spagnolini, "Cooperative fading regions for decode and forward relaying," *IEEE Trans. On Information Theory*, vol. 54, no.11, pp. 4908-4924, November 2008.
- [J6] S. Savazzi, M. Nicoli and M. Sternad, "A comparative analysis of spatial multiplexing techniques for outdoor MIMO-OFDM systems with limited feedback constraint," *IEEE Trans. On Vehicular Technology*, vol 57, no. 6, pp. 218-230, January 2009. [2 citation]
- [J7] S.Savazzi and U.Spagnolini, "Optimizing training lengths and training intervals in continuous time-varying fading channels," *IEEE Trans. On Signal Processing*, pp. 1098-1113, vol. 57, no. 3 March 2009. [5 citations]
- [J8] S.Savazzi and U.Spagnolini, "Design criteria of two-hop based wireless networks with non-regenerative relays in arbitrary fading channels," *IEEE Trans. On Communication*, pp. 1463-1473, vol. 57, no. 5, May 2009 [6 citations].
- [J9] S.Savazzi and U.Spagnolini, "On the pilot spacing constraints for continuous time-varying fading channels," *IEEE Trans. on Communications*, pp. 3209-3213 vol. 57, no. 11, November 2009.
- [J10] S.Savazzi and U.Spagnolini, "Wireless Geophone Networks for high density land acquisitions: technologies and future potential," The Leading Edge, Special Section: Seismic Acquisition, pp. 259-262, July 2008
- [J11] S.Savazzi, V.Rampa and U.Spagnolini, "High-Density Wireless Geophone Networks for Oil and Gas Monitoring and Exploration," *European Research Consortium for Informatics and Mathematics*, Number 76, pp. 43-45, January 2009. Available at www.ercim.org []
- [J12] S. Savazzi, U. Spagnolini, "Land Cable-less Systems for Telemetry Services: Current Limitations and Emerging Technologies," *First Break*, February 2011.
- [J.13] S. Savazzi, U. Spagnolini, "Seismic data compression for cable-free land acquisition" *Geophysics*, October 2011.
- [J.14] S. Savazzi, U. Spagnolini, L. Goratti, D. Molteni, M. Latva-aho, M. Nicoli, "Ultra-Wide Band Sensor Networks in Oil and Gas Explorations," IEEE Communications Magazine, to appear 2013
- [J.15] P. Castiglione, S. Savazzi, M. Nicoli, T. Zemen, "Partner selection in indoor-to-outdoor cooperative networks: an experimental study," IEEE Journal on Selected Areas in Communications, Theories and Methods for Advanced Wireless Relays, vol. 31, no. 8, Aug. 2013.

- [J.16] L. Goratti, E. Yaprak, S.Savazzi, C. P. Raez, "An urn occupancy approach for modelling the energy consumption of distributed beaconing," IEEE/ACM Trans. on Networking, to appear 2013
- [J.17] S. Savazzi, S. Guardiano, U. Spagnolini, "Wireless sensor network modeling and deployment challenges in oil and gas refinery plants" International Journal of Distributed Sensor Networks, Special issue on Planning and Deployment of Wireless Sensor Networks, Hindawi Publishing Co. ISSN: 15501477, April 2013
- [J.18] S. Savazzi, "Wireless Virtual Multiple Antenna Networks for Critical Process Control: protocols and experiments" *International Journal of Distributed Sensor Networks*, Special issue on Advanced Sensor Technology and Applications in Industrial Control Systems (pdf), Hindawi Publishing Co. ISSN: 15501477, in press 2013

Book Chapters

[B1] M.Nicoli, S.Savazzi, O.Simeone, R.Bosisio, G.Primolevo, C.Santacesaria, "Deployment and design of multi-antenna WiMax systems in non-stationary interference," Book Chapter of Current Technology Developments of WiMax Systems, ISBN: 978-1-4020-9299-2, edited by Dr. Maode Ma, Springer, 2009.

Conference Proceedings

- [C1] S.Savazzi, O.Simeone and U. Spagnolini, "Optimal design of linear arrays in a TDMA cellular system with Gaussian interference" *Proc. IEEE SPAWC*, June 2005 [6 citations].
- [C2] S.Savazzi, M. Nicoli and M.Sternad, "Spatial multiplexing for outdoor MIMO-OFDM systems with limited feedback constraint" *Proc. of IEEE International Conference on Communication*, 11-15 June, 2006 [1 citations]
- [C3] M. Nicoli, L. Sampietro, C. Santacesaria, S. Savazzi, O. Simeone and U. Spagnolini, "Throughput optimization for non-uniform linear antenna arrays in multicell WiMAX systems" *International ITG IEEE Workshop on Smart Antennas*, March 2006 [4 citations].
- [C4] S.Savazzi and U. Spagnolini, "Energy Aware Power Allocation Strategies for Multihop-Cooperative Transmission Schemes" *Proc. Conference on Information Sciences and Systems CISS-IEEE*, 22-24 March 2006.
- [C5] A. del Coso, S.Savazzi, U. Spagnolini and C. Ibars, "Virtual MIMO Channels in Cooperative Multihop Wireless Sensor Networks" *Proc. IEEE Conference on Information Sciences and Systems CISS*, 22-24 March 2006
- [C6] C. Galli, S.Savazzi, U. Spagnolini, "A multihop-cooperative transmission protocol for energy limited WPAN systems," *Proc. 6th Scandinavian Workshop on Wireless Ad-hoc Networks*, 3-4 May 2006 [http://www.wireless.kth.se/adhoc06/program.shtml]
- [C7] S.Savazzi, U. Spagnolini, "Design of Distributed Randomized Orthogonal Space-Time Coding schemes for Cooperative H-ARQ," *Proc. 40th IEEE Asilomar Conf. on Signals, Systems and Computer*, Nov 2006.

- [C8] S.Savazzi, U. Spagnolini, "Cooperative Space-Time coded transmissions in Nakagami-m fading channels," *Proc. IEEE GLOBECOM*, Nov 2007 [6 citations].
- [C9] S.Savazzi, U.Spagnolini, "Training structure design optimization for continuous time-varying fading channels," *Proc. IEEE WCNC*, April 2008.
- [C10] S.Savazzi, U.Spagnolini, "Virtual MIMO channels: diversity and outage analysis in arbitrary fading channels," Proc. of 1st COST2100 Workshop on MIMO and Cooperative Communications, Trondheim, Norway, June 3-4, 2008. [1 citations] [http://www.cost2100.org/uploads/File/Workshop/Proceedings/W08101.pdf]
- [C11] P. Castiglione, M. Nicoli, S. Savazzi and Thomas Zemen, "Cooperative Regions For Coded Cooperation Over Time-Varying Fading Channels," *International ITG IEEE Workshop on Smart Antennas*, March 2009
- [C12] S. Savazzi, U. Spagnolini, "Synchronous Ultra-Wide Band Wireless Sensor Networks for oil and gas exploration," *IEEE Symposium on Computers and Communications (ISCC'09)*, Sousse, Tunisia, July 5-8 2009.
- [C13] S. Savazzi, L. Goratti, U. Spagnolini, M. Latva-aho, "Short-range Wireless Sensor Networks for high density seismic monitoring," Proc. of WWRF 22th meeting 5-7 May 2009, Paris, France.
- [C14] S. Savazzi, U. Spagnolini, M. Nicoli, D. Fontanella, "Self-configuring wireless sensor networks for seismic applications," joint Newcomm++ AcoRN Workshop, Barcelona, March 30-April 1, 2009.
- [C15] P. Castiglione, S. Savazzi, M. Nicoli, T. Zemen, "Impact of fading statistics on partner selection in indoor-to-outdoor cooperative networks," *Proc. IEEE Int. Conf. on Communications*, Cape Town, South Africa, May 2010 [3 citations]
- [C16] P. Castiglione, S. Savazzi, M. Nicoli, G. Matz, "Partner Selection in Cooperative Networks: Efficiency vs. Fairness in Ricean Fading Channels," *Proc. 4th Intern. Symp. on Comm., Control and Signal Processing*, Limassol, Cyprus, March 3-5, 2010.
- [C17] R. Heath, S. Savazzi, U. Spagnolini "Cable-free systems are they just faking it?" *Proc. of EAGE Land Seismic Workshop*, Cairo, Egypt, 17 19 May 2010.
- [C18] D. Molteni, S. Savazzi, U. Spagnolini, "Cross Layer Optimization for Efficient Data Aggregation in Multi-hop Wireless Sensor Networks," *Proc. of ACM-IWCMC, Workshop Emergency Management-Communication and Computing Platforms*, Caen, France, July 2010.
- [C19] I. L'Abbate, S. Savazzi, L. Goratti, U. Spagnolini, M. Latva-aho "Multi-Band UWB Sensor Networks for high density sub-surface diagnostic: Energy Consumption and Network Set-Up Delay," *Proc. of ACM-IWCMC, Workshop Emergency Management-Communication and Computing Platforms*, Caen, France, July 2010.
- [C20] S. Savazzi, D. Molteni, U. Spagnolini "Energy-Aware Compress and Forward systems for Wireless Monitoring of Time-Varying Fields," *Proc. of IEEE Int. Symp. on Personal, Indoor and Mobile Radio Comm. PIMRC*, Istanbul, Turkey, 26-29 Sept. 2010.

- [C.21] S. Savazzi, L. Goratti, D. Fontanella, M. Nicoli, U. Spagnolini, "*Pervasive UWB sensor networks for oil explorations*," Proc. of IEEE ICUWB, Bologna, Sept. 2011.
- [C.22] L. Goratti, A. Rabbachin, S. Savazzi, M. Latva-aho, "Analysis of Multi-Band UWB Distributed Beaconing over Fading Channels," Proc. of IEEE ICUWB, Bologna, Sept. 2011.
- [C.23] S. Savazzi, S. Guardiano, U. Spagnolini, "Wireless Critical Process Control in oil and gas refinery plants," Proc of IEEE International Conference on Industrial Technology (ICIT 2012), Kos Island, Greece, March 2012.
- [C.24] S. Savazzi, M. Nicoli, M. Riva, "Radio Imaging by Cooperative Wireless Network: localization algorithms and experiments," Proc. of IEEE Wireless Communications and Networking Conference (WCNC 2012), Paris, France, April 2012.
- [C.25] J. Gambini, S. Savazzi, P. Castiglione, U. Spagnolini, G. Matz, "Wireless over Cable in femtocell systems: a case study from indoor channel measurements," Proc. of IEEE Wireless Communications and Networking Conference (WCNC 2012), Workshop on Broadband femtocells technologies, Paris, France, April 2012.
- [C.26] M. Spadacini, S. Savazzi, M. Nicoli, S. Nicoli, "Wireless Networks for Smart Surveillance: technologies, protocol designs and experiments," (pdf) Proc. of IEEE Wireless Communications and Networking Conference (WCNC 2012), Workshop on Internet of Things Enabling Technologies, Paris, France, April 2012
- [C.27] S. Savazzi, S. Guardiano, U. Spagnolini, "Wireless channel characterization and modeling in oil and gas refinery plants," (pdf), Proc. of IEEE International Conference on Industrial Technology (ICIT 2013), Cape Town, South Africa, 25-27 Feb. 2013.

Patents

[BR1] M.Nicoli, L.Sampietro, C.Santacesaria, S.Savazzi, O.Simeone, and U.Spagnolini, "Method for optimizing the spacing between receiving antennas of an array usable for counteracting both interference and fading in cellular systems" Publication date 29 Ago. 2007.

Invited talks

- S. Savazzi "Optimal design of linear array in cellular systems with gaussian interference" at Signals and Systems Department, Uppsala University, Sweden 8 Aprile 2005
- S. Savazzi "MIMO-OFDM channel estimation through modal analysis and filtering" at Signals and Systems Department, Uppsala University, Sweden 8 Aprile 2005
- S. Savazzi: "Cooperative transmissions: diversity and outage analysis in fading channels" NEWCOM++ WPR6 Second Meeting, UCL, Louvain-la-Neuve, Belgium, 18 Giugno 2008.
- S. Savazzi "Cooperative fading regions in ad hoc wireless networks" at Forschungszentrum Telekommunikation Wien, (ftw.), Vienna, 6 Marzo 2009. [Invited Talk]
- S. Savazzi "Synchronous monitoring networks for emergency management". Workshop del Progetto FIRB: Integrated Systems for Emergency, InSyEME, Roma, 2-3 Aprile 2009. http://www.unifi.it/insyeme/CMpro-v-p-41.html
- V. Rampa, S. Savazzi, U. Spagnolini, "Wireless monitoring networks for industrial applications" Workshop "Tecnologie Abilitanti e Sistemi per la Sicurezza: il contributo delle

Università e dei Centri di Ricerca" TechFor 2010, Fair Centre, Rome, 17-20 May 2010.

S. Savazzi, S. Guardiano, "Wireless Networks for Closed-Loop Process Control: emerging technologies and architectures" mcT2011 – Technologie per il Petrolchimico, San Donato, Milano, 24 November 2011

Tech. Reports

- [T.1] R. Bosisio, M.Nicoli, S.Savazzi, O.Simeone, and U.Spagnolini, "Array Processing Techniques for IEEE 802.16 WMAN Systems," Technical Report, joint activity Siemens MC Politecnico di Milano, 2005
- [T.2] M. Nicoli, S.Savazzi, and U.Spagnolini, "Spatial Multiplexing and adaptive transmission in downlink MIMO OFDM systems," joint activity within NEWCOM Dep. 1 Uppsala University CNIT Politecnico di Milano Signals and Systems, Uppsala University, June 13-14 2005

Editorial work

Revisor for international journals: IEEE Transactions on Signal Processing, IEEE Transactions on Wireless Communications, IEEE Transactions on Communications, IEEE Transactions on Mobile Computing, IEEE Transactions on Vehicular Technology, IEEE Electronic Letters, JCN, Eurasip JWCN, Computer Communications Elsevier, European Transaction on Telecommunication).

Technical Program Committee (TPC) Member for

- 1. IEEE 72nd Vehicular Technology Conference, Ottawa, Canada (2010): "Cognitive Radio and Cooperative Communications Track"
- 2. IWCMC, Caen, France (2010): "Emergency Management-Communication and Computing Platforms" Workshop.
- 3. IEEE PIMRC 2011
- 4. IEEE ICC 2012 Cognitive Radio and Networks Symposium.