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1. PERSONAL DATA

Name: OSVALDO SIMEONE
Place and date of birth: Rome, Italy, July 23 1977
Citizenship: Italian

2. VITAE

- 2007-** *Sept. 2007-*: Assistant professor at New Jersey Institute of Technology (NJIT), Newark, NJ, USA.
- 2006** *Sept. 2005 – August 2007*: Post-Doc research assistant and adjunct professor at NJIT.
- 2005** *May*: Receives the Ph.D. degree from Politecnico di Milano, Milan, Italy, in Information Engineering (duration of the program: three years).
- 2002** *February-September*: Visiting researcher at Center for Communications and Signal Processing Research, NJIT.
- 2001** *October*: Receives the M.Sc. degree (with honors) from Politecnico di Milano, Milan, Italy, in Telecommunication Engineering (duration of the program: five years).

3. RESEARCH ACTIVITY

3.1. Publications

(see web.njit.edu/~simeone for pdf files)

3.1.1. Theses

O. Simeone, Linear signal processing for single/multi-user MIMO communication systems over frequency-selective channels, Ph.D. dissertation, Politecnico di Milano, 2005.

O. Simeone, Multi-slot space-time channel estimation for wireless communication systems, Master thesis, Politecnico di Milano, 2001.

3.1.2. Book chapters

[BC.1] O. Somekh, O. Simeone, Y. Bar-Ness, A. Haimovich, U. Spagnolini and S. Shamai, "An information theoretic view of distributed antenna processing in cellular systems," in "Distributed Antenna Systems: Open Architecture for Future Wireless Communications", Auerbach Publications, CRC Press (May 2007).

[BC.2] O. Simeone, Y. Bar-Ness and U. Spagnolini, "Cooperative cognitive radio," in "Cooperative wireless communications", to be published by Auerbach Publications, CRC Press.

[BC.3] M. Nicoli, S. Savazzi O. Simeone, R. Bosisio, G. Primolevo, L. Sampietro, C. Santacesaria, "Deployment and design of multi-antenna WiMax systems in a non-stationary interference environment," in "Current Technology Developments of WiMax Systems", to be published by Springer.

3.1.3. Magazines

[M.1] O. Simeone, U. Spagnolini, Y. Bar-Ness and S. H. Strogatz, "Distributed synchronization in wireless networks," *IEEE Signal Processing Magazine*, vol. 25, no. 5, pp. 81-97, Sept. 2008.

3.1.4. Journals

[J.1] M. Nicoli, O. Simeone, and U. Spagnolini, "Multi-slot estimation of fast-varying space-time channels in TD-CDMA systems", *IEEE Comm. Letters*, vol. 6, no. 9, pp. 376-378, Sept. 2002.

[J.2] M. Nicoli, O. Simeone, and U. Spagnolini, "Multi-slot estimation of fast-varying space-time communication channels", *IEEE Trans. Signal Processing*, vol. 51, no. 5, pp. 1184-1195, May 2003.

[J.3] M. Nicoli, O. Simeone and U. Spagnolini, "Multi-slot estimation of fast-varying frequency-selective channels", *IEEE Trans. on Communications*, vol. 51, no. 8, pp. 1337-1347, Aug. 2003.

[J.4] O. Simeone, U. Spagnolini, "Combined linear pre-equalization and BLAST equalization with channel correlation feedback", *IEEE Communications Letters*, vol. 7, no. 10, pp. 487-489, Oct. 2003.

[J.5] O. Simeone, Y. Bar-Ness and U. Spagnolini, "Pilot-based channel estimation for OFDM

systems by tracking the delay subspace”, *IEEE Trans. Wireless Commun.*, vol. 3, no. 1, pp. 315-325, Jan. 2004.

[J.6] O. Simeone, Y. Bar-Ness and U. Spagnolini, “Linear and non-linear precoding/decoding for MIMO systems with long-term channel state information at the transmitter”, *IEEE Trans. on Wireless Communications*, vol. 3, no. 2, pp. 373-378, March 2004.

[J.7] O. Simeone and U. Spagnolini, “Lower bound on training-based channel estimation error for frequency-selective block-fading Rayleigh MIMO channels”, *IEEE Trans. on Signal Processing*, vol. 52, no. 11, pp. 3265-3277, Nov. 2004.

[J.8] M. Cicerone, O. Simeone and U. Spagnolini, “Channel estimation for MIMO-OFDM systems by modal analysis/ filtering”, *IEEE Trans. Commun*, vol. 54, no. 11, pp. 2062-2074, Nov. 2006.

[J.9] I. Stanojev, O. Simeone, Y. Bar-Ness and C. You, “Performance of Multi-Relay Collaborative Hybrid-ARQ Protocols over Fading Channels,” *IEEE Comm. Letters*, vol. 10, no. 7, pp. 522-524, July 2006.

[J.10] O. Simeone and U. Spagnolini, “Distributed synchronization for wireless sensor networks with couple discrete-time oscillators,” (*invited*), *Eurasip Journal on Wireless Commun. and Networking*, special issue on “Novel Techniques for Analysis & Design of Cross-Layer Optimized Wireless Sensor Networks”, vol. 2007, Article ID 57054, 13 pages, 2007.

[J.11] Simeone, O. Somekh and Y. Bar-Ness, “Uplink throughput of TDMA cellular systems with multicell processing and Amplify-and-Forward cooperation between mobiles,” *IEEE Trans. Wireless Commun.*, vol. 6, no. 8, pp. 2941-2951, Aug. 2007.

[J.12] O. Simeone and U. Spagnolini and Y. Bar-Ness, ““Small-world” effect of shadowing on pulse-couple distributed discrete-time phase locked loops” *IEEE Commun. Letters*, vol. 11, no. 3, March 2007.

[J.13] O. Simeone and U. Spagnolini, “Capacity of wireless ad hoc networks using opportunistic collaborative communications,” *Eurasip Journal on Wireless Commun. and Networking*, vol. 2007, Article ID 53075, 7 pages, 2007.

[J.14] O. Simeone, Y. Bar-Ness and U. Spagnolini, “Stable throughput of cognitive radios with and without relaying capability,” *IEEE Trans. Commun.*, vol. 55, no. 12, pp. 2351-2360, Dec. 2007.

[J.15] S. Savazzi, O. Simeone and U. Spagnolini, “Optimal design of non-uniform linear arrays in cellular systems with Gaussian interference,” *Eurasip Journal on Wireless Commun. and Networking*, Article ID 93421, 9 pages, 2007. doi:10.1155/2007/93421.

[J.16] O. Simeone, O. Somekh, Y. Bar-Ness and U. Spagnolini, “Throughput of low-power TDMA cellular systems with collaborative decoding at the base stations and cooperative transmission between mobiles”, *IEEE Trans. Inform. Theory*, vol. 54, no. 1, pp. 459-467, Jan. 2008.

- [J.17] J. Diaz, O. Simeone and Y. Bar-Ness, "Asymptotic Analysis of Reduced-Feedback Strategies for MIMO Gaussian Broadcast Channels", *IEEE Trans. Inform. Theory*, vol. 54, no. 3, pp. 1308-1316, March 2008..
- [J.18] O. Simeone, I. Stanojev, S. Savazzi, Y. Bar-Ness, U. Spagnolini, R. Pickholtz, "Spectrum leasing to cooperating ad hoc secondary networks," *IEEE Journ. Selected Areas Commun.*, vol. 26, no. 1, pp. 203-213, Jan. 2008.
- [J.19] O. Simeone and P. Popovski, "Secure communications via cooperative base stations," *IEEE Commun. Letters*, vol. 12, no. 3, pp. 188-190, 2008.
- [J.20] O. Simeone, U. Spagnolini, G. Scutari and Y. Bar-Ness, "Physical-layer distributed synchronization in wireless networks and applications," in *Physical Communication*, pp. 67-83, March 2008.
- [J.21] O. Simeone, O. Somekh, G. Kramer, H. V. Poor and S. Shamai (Shitz), "Throughput of cellular systems with conferencing mobiles and cooperative base-stations," *Eurasip Journal on Wireless Communications and Networking*, vol. 2008, Article ID 652325, 14 pages, 2008. doi:10.1155/2008/652325 (special issue on "Multi-user/ Multi-terminal communications")
- [J.22] J. Gambini, O. Simeone, Y. Bar-Ness and U. Spagnolini, "Packet-wise vertical handover for unlicensed multi-standard spectrum access with cognitive radios", *IEEE Trans. Wireless Commun.*, vol. 7, no. 12, pp. 5172-5176, Dec. 2008.
- [J.23] I. Stanojev, O. Simeone, Y. Bar-Ness and T. Yu, "Energy efficiency of non-collaborative and collaborative Hybrid-ARQ protocols", *IEEE Trans. Wireless Commun.*, vol. 8, no. 1, pp. 326-335, Jan. 2009.
- [J.24] O. Simeone, "Source and channel coding for homogeneous sensor networks with partial cooperation", *IEEE Trans. Wireless Commun.*, vol. 8, no. 3, pp. 1113-1117, March 2009.
- [J.25] O. Simeone, O. Somekh, H. V. Poor and S. Shamai (Shitz), "Local base station cooperation via finite-capacity links for the uplink of wireless networks", *IEEE Trans. Inform. Theory*, vol. 55, no. 1, pp. 190-204, Jan. 2009.
- [J.26] P. Popovski and O. Simeone, "Wireless secrecy in cellular systems with infrastructure-aided cooperation", *IEEE Trans. Information Forensics and Security*, vol. 4, no. 2, pp. 242-256, June 2009.

[J.27] O. Somekh, O. Simeone, Y. Bar-Ness, A. M. Haimovich, S. Shamai (Shitz), "Cooperative multi-cell zero-forcing beamforming in cellular downlink", *IEEE Trans. Inform. Theory*, vol. 55, no. 7, pp. 3206-3219, July 2009.

[J.28] O. Simeone, D. Gündüz, H. V. Poor, A. J. Goldsmith, S. Shamai (Shitz), "Compound multiple access channels with partial cooperation", *IEEE Trans. Inform. Theory*, vol. 55, no. 6, pp. 2425-2441, June 2009.

[J.29] O. Simeone, O. Somekh, H. V. Poor and S. Shamai (Shitz), "Downlink multicell processing with limited backhaul capacity," *EURASIP Journal on Advances in Signal Processing*, special issue on "Multiuser MIMO Transmission with Limited Feedback, Cooperation, and Coordination".

[J.30] O. Simeone, O. Somekh, H. V. Poor, and S. Shamai (Shitz), "Distributed MIMO systems for nomadic applications over a symmetric interference channel," to appear in *IEEE Trans. Inform. Theory*.

3.1.5. Conference proceedings

[C.1] O. Simeone and U. Spagnolini, "Multi-slot estimation of space-time channels", *IEEE International Conference on Communications (ICC 2002)*, New York City, April 28-May 2, 2002.

[C.2] M. Nicoli, O. Simeone, and U. Spagnolini, "A multi-slot method to estimate the fast-varying channels in TD-CDMA systems", *XI European Signal Processing Conference (EUSIPCO 2002)*, Toulouse, September 3-6, 2002.

[C.3] M. Aldrovrandi, M. Nicoli, O. Simeone, U. Spagnolini, "Subspace tracking methods for channel estimation in TD-SCDMA systems", *European Conference on Wireless Technology (ECWT 2002)*, Milan, September 26-27, 2002.

[C.4] O. Simeone, Y. Bar-Ness, U. Spagnolini, "Subspace based methods for channel estimation in OFDM systems", *European Conference on Wireless Technology (ECWT 2002)*, Milan, September 26-27, 2002.

[C.5] O. Simeone, U. Spagnolini, "Lower bounds on the channel estimation error for fast-varying frequency-selective Rayleigh MIMO channels", *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP '03)*, vol. 5, pp. 69-72, April 6-10, 2003.

[C.6] M. Nicoli, O. Simeone, U. Spagnolini, "Multi-slot estimation of fast-varying space-time communication channels", *COST 273 6th Meeting of the Management Committee*, Document number TD(03)042, 12 pages, Barcelona, 15-17 Jan. 2003.

- [C.7] O. Simeone, M. Nicoli, U. Spagnolini, "Subspace tracking for uplink/downlink array processing in CDMA systems", *IEEE Telecommunications Conference (GLOBECOM 2003)*, vol. 2, pp. 824-828, San Francisco, Dec. 1-5, 2003.
- [C.8] O. Simeone, U. Spagnolini, "Lower bound on the channel estimation MSE for fast-varying block-fading Rayleigh MIMO channels," *COST 273 7th Meeting of the Management Committee*, Document TD(03)084, 8 pages, Paris, May 22-23, 2003.
- [C.9] O. Simeone, U. Spagnolini, Y. Bar-Ness, "Linear and non-linear precoding/decoding for MIMO systems using the fading correlation at the transmitter", *IEEE Signal Processing Advances on Wireless Communications (IEEE SPAWC 2003)*, Rome, June 15-18, 2003.
- [C.10] M. Cicerone, O. Simeone, N. Geng, U. Spagnolini, "Modal analysis/filtering to estimate time-varying MIMO-OFDM channels, *ITG Workshop on Smart Antennas (WSA)*, March 18-19, Munich, 2004.
- [C.11] O. Simeone, U. Spagnolini, "Channel estimation for block-fading frequency-selective Rayleigh MIMO channels: performance limits", *IEEE Vehicular Technology Conference*, May 17-19, Milan, 2004.
- [C.12] O. Simeone, U. Spagnolini, "Adaptive pilot pattern for OFDM systems", *IEEE International Conference on Communications*, June 20-24, Paris, 2004.
- [C.13] G. Primolevo, O. Simeone, U. Spagnolini, "Effects of imperfect channel state information on the capacity of broadcast OSDMA-MIMO systems", *IEEE Signal Processing Advances on wireless communications*, July 11-14, Lisbon, 2004.
- [C.14] G. Primolevo, O. Simeone, U. Spagnolini, "Channel aware scheduling for broadcast MIMO systems with orthogonal linear precoding and fairness constraints", *IEEE International Conference on Communications*, May 17-20, Korea, 2005.
- [C.15] S. Savazzi, O. Simeone, U. Spagnolini, "Optimal design of linear arrays in a TDMA cellular system with Gaussian interference", *IEEE Signal Processing Advances on wireless communications*, June 5-8, New York City, 2005.
- [C.16] R. Bosisio, G. Primolevo, O. Simeone and U. Spagnolini, "Fair scheduling and orthogonal linear precoding/decoding in broadcast MIMO systems" (invited), *IEEE International Symposium on Personal Indoor and Mobile Radio Communications*, Sept. 11-14, Berlin, 2005.
- [C.17] J. Diaz, O. Simeone, O. Somekh and Y. Bar-Ness, "Scaling law of the sum-rate for multiantenna broadcast channels with deterministic or selective binary feedback", to appear in *Proc. IEEE Information Theory Workshop*, 2006.
- [C.18] I. Stanojev, O. Simeone and Y. Bar-Ness, "Performance analysis of collaborative H-ARQ over fading channels", in *Proc. IEEE Sarnoff Symposium*, 2006.

- [C.19] O. Simeone and U. Spagnolini, "Capacity region of wireless ad hoc networks using opportunistic collaborative communications", in Proc. IEEE International Conference on Communications, 2006.
- [C.20] M. Nicoli, L. Sampietro, C. Santacesaria, S. Savazzi, O. Simeone and Umberto Spagnolini, "Throughput optimization for non-uniform linear antenna arrays in multicell WiMAX systems", in Proc. International ITG - IEEE Workshop on Smart Antennas, 2006.
- [C.21] O. Simeone, O. Somekh, Y. Bar-Ness and U. Spagnolini "Information theoretic analysis of multicell decoding and Amplify-and-Forward cooperation between mobiles for TDMA cellular systems", in Proc. Conference on Information Sciences and Systems, 2006.
- [C.22] N. Varanese, O. Simeone, Y. Bar-Ness and U. Spagnolini, "A power allocation strategy for multi-antenna amplify-and-forward fading relay channels", in Proc. Conference on Information Sciences and Systems, 2006.
- [C.23] O. Somekh, O. Simeone, A. Haimovich and Y. Bar-Ness, "Sum-Rate Analysis of General OFDM Downlink Channels with 1-bit Feedback per Sub-Carrier", in Proc. Conference on Information Sciences and Systems, 2006.
- [C.24] O. Simeone, O. Somekh, Y. Bar-Ness and U. Spagnolini, "Throughput of low power cellular systems with collaboration at base stations and mobiles", MSRI Workshop on Mathematics of Relaying and Cooperation in Communication Networks, 2006.
- [C.25] I. Stanojev, O. Simeone and Y. Bar-Ness, "Performance Analysis of Collaborative Hybrid-ARQ Incremental Redundancy Protocols over Fading Channels", in Proc. IEEE Signal Processing Advances on wireless communications, 2006.
- [C.26] N. Varanese, O. Simeone, Y. Bar-Ness and U. Spagnolini "Achievable rates of multi-hop and cooperative MIMO Amplify-and-Forward relay systems with full CSI", in Proc. IEEE Signal Processing Advances on wireless communications, 2006.
- [C.27] J. Diaz, O. Simeone and Y. Bar-Ness, "Sum-rate of MIMO broadcast channels with one bit feedback", in Proc. IEEE International Symposium on Information Theory, 2006.
- [C.28] M. Cremaschi, O. Simeone and U. Spagnolini, "Distributed timing synchronization for sensor networks with coupled discrete-time oscillators", in Proc. International Workshop on Wireless Ad Hoc and Sensor Networks 2006.
- [C.29] J. Diaz, O. Simeone and Y. Bar-Ness, "How many bits of feedback is multiuser diversity worth in MIMO downlink?", in Proc. IEEE International Symposium on Spread Spectrum Techniques and Applications, 2006 (invited).

- [C.30] G. Primolevo, O. Simeone and U. Spagnolini, "Towards a joint optimization of scheduling and beamforming in MIMO downlink", in Proc. IEEE International Symposium on Spread Spectrum Techniques and Applications, 2006 (invited).
- [C.31] M. Nicoli, M. Sala, O. Simeone, L. Sampietro and C. Santacesaria, "Adaptive array processing for time-varying interference mitigation in IEEE 802.16 systems," in Proc. IEEE International Symposium on Personal Indoor and Mobile Radio Communications, Sept. 2006.
- [C.32] O. Somekh, O. Simeone, Y. Bar-Ness and A. Haimovich, "Distributed multi-cell zero-forcing beamforming in cellular downlink channels," in Proc. IEEE Globecom, Nov. 2006.
- [C.33] O. Simeone, O. Somekh, Y. Bar-Ness and U. Spagnolini, "Low-SNR analysis of cellular systems with cooperative base stations and mobiles," in Proc. Asilomar Conference on Signals, Systems and Computers, Nov. 2006.
- [C.34] A. del Coso, O. Simeone, Y. Bar-Ness and C. Ibars, "Outage Capacity of Two-Phase Space-Time Coded Cooperative Multicasting," in Proc. Asilomar Conference on Signals, Systems and Computers, Nov. 2006.
- [C.35] Bo Niu, O. Simeone, O. Somekh and A. Haimovich, "On the Sum-Rate of Broadcast Channels with Outdated 1-Bit Feedback," in Proc. Asilomar Conference on Signals, Systems and Computers, Nov. 2006.
- [C.36] O. Simeone, Y. Bar-Ness and U. Spagnolini, "Stability analysis of the cognitive interference channel," in Proc. Asilomar Conference on Signals, Systems and Computers, Nov. 2006.
- [C.37] O. Simeone, Y. Bar-Ness and U. Spagnolini, "Stable throughput of cognitive radios with relaying capability," in Proc. Forty-Fourth Annual Allerton Conference on Communication, Control, and Computing, Sept. 2006.
- [C.38] A. del Coso, O. Simeone, Y. Bar-Ness and C. Ibars, "Space-Time Coded Cooperative Multicasting with Maximal Ratio Combining and Incremental Redundancy," in Proc. IEEE ICC 2007, July 2007.
- [C.39] I. Stanojev, O. Simeone and Y. Bar-Ness, "On the Energy Efficiency of Hybrid-ARQ Protocols," in Proc. IEEE ICC 2007, July 2007.
- [C.40] I. Stanojev, O. Simeone and Y. Bar-Ness, "Optimal design of a multi-antenna access point with decentralized power control using game theory," in Proc. IEEE DySPAN 2007, May 2007.
- [C.41] O. Simeone and Y. Bar-Ness "Game-theoretic view on the interference channel with random access," in Proc. IEEE DySPAN 2007, May 2007.
- [C.42] O. Simeone and U. Spagnolini, "Estimation of block-fading channels with reduced-rank correlation matrix," in Proc. CISS 2007, March 2007.

- [C.43] T. Betran, O. Simeone and Y. Bar-Ness, "Detecting Primary Transmitters via Cooperation and Memory in Cognitive Radio," in Proc. CISS 2007, March 2007.
- [C.44] O. Simeone, J. Gambini, U. Spagnolini and Y. Bar-Ness, "Cooperation and cognitive radio," in Proc. IEEE ICC 2007, July 2007.
- [C.45] O. Somekh, O. Simeone, V. Poor and S. Shamai, "Cellular systems with full-duplex Amplify-and-Forward relaying and cooperative base stations," in Proc. IEEE ISIT 2007, July 2007.
- [C.46] J. Gambini, O. Simeone, U. Spagnolini and Y. Bar-Ness, "Cooperative cognitive radios with optimal primary detection and packet acceptance control," in Proc. IEEE SPAWC 2007, July 2007.
- [C.47] O. Simeone, U. Spagnolini and Y. Bar-Ness, "On pulse-coupled discrete-time phase locked loops for wireless networks," in Proc. IEEE SPAWC 2007, July 2007 (BEST PAPER AWARD).
- [C.48] A. Bosisio and O. Simeone, "Comparison between radiative transfer and ray tracing for indoor propagation," in Proc. IEEE ICEAA 2007, June 2007.
- [C.49] S. Yoon, O. Somekh, O. Simeone and Y. Bar-Ness, "A comparison of opportunistic transmission schemes with reduced channel information feedback in OFDMA downlink," in IEEE Proc. PIMRC 2007, Sept. 2007.
- [C.50] O. Simeone, U. Spagnolini and Y. Bar-Ness, "A resilient synchronization algorithm for wireless ad hoc and sensor networks based on distributed discrete-time PLLs," in Proc. IEEE WRECOM 2007 (BEST PAPER AWARD).
- [C.51] O. Somekh, O. Simeone, Y. Bar-Ness and Wei Su, "Detecting the number of transmit antennas with unauthorized or cognitive receivers in MIMO systems," in Proc. IEEE MILCOM 2007.
- [C.52] J. Gambini, O. Simeone, Y. Bar-Ness and U. Spagnolini, "Stability analysis of a cognitive multiple access channel with primary QoS constraints," in Proc. Asilomar Conference on Signals, Systems and Computers, 2007.
- [C.53] O. Simeone and G. Scutari, "Pulse-coupled distributed PLLs in heterogeneous wireless networks," in Proc. Asilomar Conference on Signals, Systems and Computers, 2007.
- [C.54] Bo Niu, O. Simeone, O. Somekh, A. Haimovich, "Throughput of Two-Hop Wireless Networks with Relay Cooperation," in Proc. Forty-Fifth Annual Allerton Conference on Communication, Control, and Computing, 2007.
- [C.55] O. Simeone, O. Somekh, Y. Bar-Ness, H. V. Poor and S. Shamai, "Capacity of linear two-hop mesh networks with rate splitting, decode-and-forward relaying and cooperation," in Proc. Forty-Fifth Annual Allerton Conference on Communication, Control, and Computing, 2007.

- [C.56] S. Shamai, O. Somekh, O. Simeone, A. Sanderovich, B.M. Zaidel and H. V. Poor, "Cooperative multi-cell networks: impact of limited-capacity backhaul and inter-users links," in Proc. Joint Workshop on Coding and Communications, Dürnstein, Austria, October 14 - 16, 2007.
- [C.57] O. Simeone, O. Somekh, H. V. Poor and S. Shamai (Shitz), "Distributed MIMO in multi-cell wireless systems via finite-capacity links," in Proc. IEEE 3rd International Symposium on Communications, Control and Signal Processing (ISCCSP 2008), March 12–14, 2008 (invited paper).
- [C.58] O. Simeone, O. Somekh, G. Kramer, S. Shamai (Shitz) and H. V. Poor, "Cellular systems with multicell processing and conferencing links between mobile stations," in Proc. Information Theory and Applications Workshop, Jan. 27- Feb. 1, San Diego, CA, 2008 (invited paper).
- [C.59] S. Shamai (Shitz), O. Simeone, O. Somekh, and H. V. Poor, "Joint multi-cell processing for downlink with limited-capacity backhaul," in Proc. Information Theory and Applications Workshop, Jan. 27- Feb. 1, San Diego, CA, 2008 (invited paper).
- [C.60] O. Somekh, O. Simeone, A. Sanderovich, B. M. Zaidel, H. V. Poor, and S. Shamai (Shitz) "On the impact of limited-capacity backhaul and inter-users links in cooperative multicell networks," in Proc. CISS, 2008 (invited paper).
- [C.61] O. Somekh, O. Simeone, B. M. Zaidel, H. V. Poor, and S. Shamai (Shitz), "On the spectrum of large random Hermitian finite-band matrices," in Proc. Information Theory and Applications Workshop, Jan. 27- Feb. 1, San Diego, CA, 2008.
- [C.62] J. Gambini, O. Simeone, U. Spagnolini, Y. Bar-Ness and Y. Kim, "Cognitive radio with secondary packet-by-packet vertical handover," in Proc. IEEE ICC 2008.
- [C.63] I. Stanojev, O. Simeone and Y. Bar-Ness, "Spectrum leasing via distributed cooperation in cognitive radio," in Proc. IEEE ICC 2008.
- [C.64] I. Stanojev, O. Simeone and Y. Bar-Ness, "On the optimal number of hops in linear wireless ad hoc networks with hybrid ARQ," in Proc. 6th Intl. Symposium on modeling and optimization in mobile, ad hoc and wireless networks (WiOpt'08), 2008.
- [C.65] P. Popovski and O. Simeone, "Wireless secrecy with infrastructure-aided cooperation," in Proc. IEEE Information Theory Workshop, May 5-9, Porto, Portugal, 2008.
- [C.66] O. Somekh, O. Simeone, H. V. Poor, and S. Shamai (Shitz), "Cellular Systems with Full-Duplex Compress-and-Forward Relaying and Cooperative Base-Stations'," in Proc. IEEE International Symposium Inform. Theory (ISIT 2008), Toronto, Canada, July 6-11, 2008.

- [C.67] O. Simeone, O. Somekh, H. V. Poor, and S. Shamai (Shitz), "Distributed MIMO systems with oblivious antennas," in Proc. IEEE International Symposium Inform. Theory (ISIT 2008), Toronto, Canada, July 6-11, 2008.
- [C.68] O. Simeone, O. Somekh, H. V. Poor, and S. Shamai (Shitz), "Enhancing uplink throughput via local base station cooperation", in Proc. Asilomar Conference on Signals, Systems and Computers, Oct. 26-29, 2008 (invited paper).
- [C.69] O. Simeone, O. Somekh, G. Kramer, H. V. Poor and S. Shamai (Shitz), "Three-user Gaussian multiple access channel with partially cooperating encoders," in Proc. Asilomar Conference on Signals, Systems and Computers, Oct. 26-29, 2008 (invited paper).
- [C.70] N. Varanese, O. Simeone, Y. Bar-Ness and U. Spagnolini, "Distributed Frequency-Locked Loops for wireless networks," in Proc. ISSSTA 2008, Aug. 25-28, 2008, Bologna, Italy.
- [C.71] J. Gambini, O. Simeone and U. Spagnolini, "Cognitive relaying and opportunistic spectrum sensing in unlicensed multiple access channels," in Proc. ISSSTA 2008, Aug. 25-28, 2008, Bologna, Italy.
- [C.72] U. Spagnolini, N. Varanese, O. Simeone and Y. Bar-Ness, "Distributed digital locked loops for time/frequency locking in packet-based wireless communication," in Proc. IEEE PIMRC 2008, Cannes, France, Sept. 15-18, 2008 (invited paper).
- [C.73] S. Shamai (Shitz), O. Simeone, O. Somekh, A. Sanderovich, B. M. Zaidel, and H. V. Poor, "Information-theoretic implications of constrained cooperation in simple cellular models," in Proc. IEEE PIMRC 2008, Cannes, France, Sept. 15-18, 2008 (invited paper).
- [C.74] O. Simeone, "Exploiting partial cooperation for source and channel coding in sensor networks," in Proc. IEEE Global Communications Conference (IEEE GLOBECOM 2008), New Orleans, LA, Nov. 30 – Dec. 4, 2008.
- [C.75] O. Somekh, O. Simeone, H. V. Poor, S. Shamai (Shitz), "The two-tap input-erasure Gaussian channel and its application to cellular communications," in Proc. Allerton Conference on Communication, Control, and Computing, Monticello, IL, Sept. 23 - 26, 2008 (invited paper).
- [C.76] O. Simeone, O. Somekh, G. Kramer, H. V. Poor, S. Shamai (Shitz), "Uplink sum-rate analysis of a multicell system with feedback," in Proc. Allerton Conference on Communication, Control, and Computing, Monticello, IL, Sept. 23 - 26, 2008.
- [C.77] O. Simeone, D. Gündüz, A. Goldsmith, S. Shamai (Shitz), H. V. Poor, "Compound multiple access channels with conferencing decoders," in Proc. Allerton Conference on Communication, Control, and Computing, Monticello, IL, Sept. 23 - 26, 2008.

- [C.78] O. Simeone, O. Somekh, E. Erkip, S. Shamai (Shitz), H. V. Poor, "A broadcast approach to robust communications over unreliable multi-relay networks," in Proc. Information Theory and Applications (ITA) Workshop, La Jolla, CA, Feb. 8 - 13, 2009.
- [C.79] O. Sahin, E. Erkip and O. Simeone, "Interference channel with a relay: Models, relaying strategies, bounds," in Proc. Information Theory and Applications (ITA) Workshop, La Jolla, CA, Feb. 8 - 13, 2009.
- [C.80] F. Iannello and O. Simeone, "Throughput Analysis of Type-I HARQ Strategies in Two-Way Relay Channels," in Proc. Conference on Information Sciences and Systems (CISS), Baltimore, MA, Mar. 18-20, 2009.
- [C.81] T. ElKourdi and O. Simeone, "Impact of Secondary MAC Cooperation on Spectrum Sharing in Cognitive Radio Networks," in Proc. Conference on Information Sciences and Systems (CISS), Baltimore, MA, Mar. 18-20, 2009.
- [C.82] O. Simeone and A. Yener, "The cognitive multiple access wire-tap channel," in Proc. Conference on Information Sciences and Systems (CISS), Baltimore, MA, Mar. 18-20, 2009.
- [C.83] O. Simeone, O. Somekh, E. Erkip, S. Shamai (Shitz), H. V. Poor, "Multi-relay channel with non-ergodic link failures," in Proc. IEEE Information Theory Workshop on Networking and Information Theory (ITW 2009), Volos, Greece, June 10-12, 2009.
- [C.84] D. Gündüz, O. Simeone, H. V. Poor, A. J. Goldsmith and S. Shamai (Shitz), "Relaying simultaneous multicast messages," in Proc. IEEE Information Theory Workshop on Networking and Information Theory (ITW 2009), Volos, Greece, June 10-12, 2009.
- [C.85] D. Gündüz, O. Simeone, H. V. Poor, A. J. Goldsmith and S. Shamai (Shitz), "Relaying simultaneous multicasts via structured codes," in Proc. IEEE International Symposium on Information Theory (ISIT 2009), Seoul, Korea, June - July 3, 2009.
- [C.86] O. Sahin, O. Simeone and E. Erkip, "Interference channel aided by an infrastructure relay," in Proc. IEEE International Symposium on Information Theory (ISIT 2009), Seoul, Korea, June - July 3, 2009.
- [C.87] F. Iannello and O. Simeone, "On the throughput region of single and two-way multi-hop fading networks with relay piggybacking," in Proc. IEEE International Workshop on Signal Processing Advances for Wireless Communications, Perugia, Italy, June 21- 24, 2009.

[C.88] I. Stanojev, O. Simeone, U. Spagnolini, R. Pickholtz and Y. Bar-Ness, “An auction-based incentive mechanism for non-altruistic cooperative ARQ via spectrum-leasing,” in Proc. IEEE GLOBECOM 2009, Honolulu, Hawaii, USA, Nov. 30-Dec. 4, 2009.

[C.89] M. Levorato, O. Simeone and U. Mitra, “Interference management via rate splitting and HARQ over time-varying fading channels,” in Proc. ACM CoRoNet'09, Beijing, China, Sept. 21, 2009.

[C.90] O. Somekh, O. Simeone, H.V. Poor and S. Shamai (Shitz), “Throughput of cellular uplink with dynamic user activity and cooperative base-stations’,” in Proc. IEEE Information Theory Workshop (ITW 2009), Taormina, Italy, Oct. 11-16, 2009.

[C.91] O. Simeone, O. Somekh, E. Erkip and S. Shamai (Shitz), “Robust communication against femtocell access failures,” in Proc. IEEE Information Theory Workshop (ITW 2009), Taormina, Italy, Oct. 11-16, 2009.

[C.92] M. Levorato, O. Simeone, U. Mitra and M. Zorzi, “Cooperation and coordination in cognitive networks with packet retransmission,” in Proc. IEEE Information Theory Workshop (ITW 2009), Taormina, Italy, Oct. 11-16, 2009.

[C.93] O. Simeone, D. Gündüz and S. Shamai (Shitz), “Compound relay channel with informed relay and destination,” in Proc. Forty-Seventh Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL, Sept. 30 – Oct. 2, 2009.

3.1.6. International patents

[P.1] M. Aldrovrandi, M. B. Nicoli, O. Simeone, U. Spagnolini, “Method and device for channel estimation in digital radio communications”, pending patent, no. EP 02425260.3, April 23, 2002.

[P.2] L. Moretti, M. Nicoli, O. Simeone, U. Spagnolini. “Method for the estimation and tracking of channel modes in multicarrier communication systems”, pending patent, no. EP 03425721.2, November 5, 2003.

[P.3] M. Nicoli, L. Sampietro, C. Santacesaria, O. Simeone, U. Spagnolini, “Method to improve the channel estimate in broadband SIMO/MIMO cellular radio networks during abrupt interference variations”, pending patent, February 16, 2006.

[P.4] M. Nicoli, L. Sampietro, C. Santacesaria, S. Savazzi, O. Simeone, U. Spagnolini, “Method for optimizing the spacing between receiving antennas of an array usable for counteracting both interference and fading in cellular systems”, pending patent, February 16, 2006.

- [P.5] Y. Bar-Ness , N. Varanese, O. Simeone “Power allocation for MIMO amplify-and-forward relay channel”, pending patent (filed by Samsung in South Korea), Sept. 2006.
- [P.6] Y. Bar-Ness, I. Stanojev, O. Simeone, “Method and apparatus for collaborative hybrid ARQ in a relay systems”, pending patent (filed by Samsung in South Korea), Sept. 2006.
- [P.7] Y. Bar-Ness, I. Stanojev, O. Simeone, “Optimal Design of a Multi-Antenna Access Point with decentralized power control,” pending patent, filed Dec. 2007.
- [P.8] Y. Bar-Ness, O. Simeone, “Stable Throughput of Cognitive Radio with and without Relaying Capability”, pending patent, filed, Dec. 2007.
- [P.9] Y. Bar-Ness, O. Simeone, U. Spagnolini, “Pulse-coupled distributed discrete-time phase locked loops for secure synchronization in wireless ad hoc/ sensor networks”, pending patent, filed, Dec. 2007.
- [P.10] A. Haimovich, O. Simeone, B. Niu, O. Somekh, “Method and system for sum-rate of broadcast channels with outdated 1-bit feedback”, pending patent, filed, June 2008.

3.1.7. Other publications

- [O.1] Review of the book “Intuitive probability and random process using MATLAB” by Steven Kay”, IEEE Control Systems Magazine, vol. 27, no. 3, pp. 100-105, June 2007.

3.2. Research contracts, grants, collaboration with industry

- 2009-2012: PI in the U.S. NSF grant no. CCF-0914899 entitled "Distributed Spectrum Leasing via Cross-Layer Cooperation" (7/15/2009-6/30/2012), with co-PI Prof. Eylem Ekici from Ohio State University.
- 2002-2005: Researcher in an collaboration between Politecnico di Milano and Siemens I.C.N. (Supervisor: Prof. Umberto Spagnolini).
- 2005-2007: Researcher in collaboration between New Jersey Institute of Technology and Samsung Electronics Co. LTD. (Supervisor: Prof. Y. Bar-Ness, renewed to period 2007-2008). Within this collaboration, publications [J.9] [C.25]-[C.27] [C.26] [C.39] and patents [P.5] [P.6] have been produced.
- 2002-2005: Researcher in the NEWCOM project (European Community).
- 2003-2004: Researcher in the PRIN 2002 project (Italian Ministry of Education, University and Research), Title: “MC-CDMA: a radio interface for fourth generation wireless systems”, Supervisor: Prof. Silvano Pupolin.

- Research contract, 06/04/2003-12/10/2003, Dipartimento di Elettronica e Informazione, Politecnico di Milano, Milan, Italy, Title: “Indoor localization techniques for wireless systems”.
- Research contract, 03/10/2004-04/08/2005, Dipartimento di Elettronica e Informazione, Politecnico di Milano, Milan, Italy, Title: “Channel-aware scheduling for MIMO systems”.
- Research contract, 03/01/2005-06/01/2005, Dipartimento di Elettronica e Informazione, Politecnico di Milano, Milan, Italy, Title: “Cross-layer optimization of linear precoding and scheduling for multiuser MIMO systems”.

4. AWARDS

- Best paper award of the IEEE Signal Processing Advances in Wireless Communications conference, June 17-20, 2007, Helsinki, Finland (“On pulse-coupled discrete-time phase locked loops for wireless networks”).
- Best paper award of the IEEE IEEE Conference on Wireless Rural and Emergency Communications, Oct. 1-2, 2007, Rome, Italy (“A resilient synchronization algorithm for wireless ad hoc and sensor networks based on distributed discrete-time PLLs”).

5. TEACHING ACTIVITY

5.1. Courses

5.1.1 Courses taught in part (as teaching assistant, 40 hours):

Statistical signal processing, prof. Umberto Spagnolini, Politecnico di Milano, 2003-2004.

Communication systems, prof. Umberto Spagnolini, Politecnico di Milano, 2003-2004 and 2004-2005.

5.1.2 Courses taught:

Communications systems I (ECE 481), undergraduate course, NJIT, Newark, NJ, USA, Fall 2005.

Random signal analysis I (ECE 673), graduate course, NJIT, Spring 2006 and Fall 2007.

Information theory (ECE 776), graduate course, NJIT, Spring 2007, Fall 2008.

Optimization for wireless networks (ECE 788), graduate course, NJIT, Fall 2007.

Digital communications (ECE 755), graduate course, NJIT, Spring 2008, Spring 2009.

Network Information Theory (ECE 788), graduate course, NJIT, Fall 2010.0

5.2. M. Sc. Thesis

Supervised

- [T. H. ElKourdi](#), “Optimal Desing of Cognitive Radio Networks”, thesis (NJIT), 2008.
- H. Elwalily, research assistant (NJIT), “Software-radio testbed”.
- R. Pai, “Performance of LDPC codes for WiMAX systems”, project (NJIT), 2008.
- W. A. Nieves “Distributed signal processing with a wireless sensor testbed” , thesis (NJIT), 2008.

Co-Supervised

- M. Cicerone, Modal analysis/filtering to estimate time-varying MIMO-OFDM channels, M.Sc. thesis, Politecnico di Milano, April 2004.
- M. Maldarizzi, S. La Falce, Performance analysis of beamforming algorithms for cellular systems over fading channels (Analisi delle prestazioni degli algoritmi per il beamforming in sistemi cellulari e canali con fading), M.Sc. thesis, Politecnico di Milano, April 2004.
- G. Primolevo, Precoding for multi-user MIMO systems with fairness/QoS constraints (*Precodifica per sistemi MIMO multiutente con vincoli di fairness/QoS*), M.Sc. thesis, Politecnico di Milano, April 2004.
- S. Savazzi, Capacity of SIMO systems with spatial fading correlation and co-channel interference (Analisi della capacità di sistemi SIMO con correlazione spaziale e interferenza cocanale), M.Sc. thesis, Politecnico di Milano, Dec. 2004.
- I. Rizzo, Analysis of the electromagnetic propagation in random media through ray tracing (Analisi della propagazione elettromagnetica in ambienti random con la tecnica ray tracing), M.Sc. thesis, Politecnico di Milano, Dec. 2004.
- M. Sala, Analysis of the performance of WiMax cellular systems with multiple antenna reception, M.Sc. thesis, Politecnico di Milano, April 2005.
- A. Rinaldo, Frequency Offset estimation and ICI mitigation in WiMax channels, M.Sc. thesis, Politecnico di Milano, Dec. 2005.
- N. Varanese, Capacity analysis of multiantenna relay channels, M.Sc. thesis, Politecnico di Milano, April 2006.
- . Stanojev, Performance analysis of Collaborative H-ARQ protocols, M.Sc. thesis, New Jersey Institute of Technology, May 2006.
- J. Gambini, A cross-layer view of cognitive radio networks, M.Sc. thesis, Politecnico di Milano, July 2007.

5.3. Undergraduate Senior Projects

G. Ercilasun and J. Silva, “Wireless security via multiple antenna base stations”.

5.4. Professional courses

[C.1] “Long-term radio technologies and all-IP”, in collaboration with Prof. U. Spagnolini, Vodafone, Italy, June 2007.

6. EDITORIAL WORK

- Associate editor of IEEE Trans. Wireless Commun. (since June 2007).
- TPC for: IEEE ISSSTA 2008, COST2100 fist workshop, IEEE ICCCN 2008, IEEE VTC2009-Spring IEEE Globecom 2009, IEEE International Workshop on Cross-layer Design 2009.
- Reviewer for: IEEE Trans. Commun.; IEEE Trans. Signal Processing (*appreciated reviewer* for the period 2002-2006); IEEE Trans. Wireless Commun.; IEEE Comm. Letters; IEEE Control System Magazine; IEEE Signal Processing Letters; Circuits, Systems & Signal Processing; IEE Proc. Communications; IEE Electronics Letters; IEEE Trans. Mobile Computing.