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AREAS OF INTEREST

- Wireless communications with an emphasis on physical layer and signal processing algorithms.
- Design issues in large-scale wireless networks, medium access and distributed protocols.
- Cooperative communications; cognitive radios; distributed estimation in sensor networks.
- Biomedical image and signal processing. Statistical learning.

EDUCATION

- Ph.D in Electrical and Computer Engineering Aug. 2006
Cornell University, Ithaca, NY GPA : 4.00/4.00
Advisor : Prof. Anna Scaglione
- M.Sc in Electrical and Computer Engineering May 2001
Northeastern University, Boston, MA
Advisor : Prof. David Brady
- B.S. in Electrical Engineering and Mathematics (double major) May 1998
Middle East Technical University (METU) - Ankara, Turkey

WORK EXPERIENCE

- *Associate Professor, Electrical Engineering Department,* Aug. 2014- present
San Jose State University, San Jose, CA
- *Assistant Professor, Electrical Engineering Department,* Aug. 2007 - July 2014
San Jose State University, San Jose, CA
- *Postdoctoral Researcher, UC Berkeley, Berkeley, CA* Sep. 2006 - Aug. 2007
Studied fundamental limits of cooperative communication in large-scale networks. Joint work with Prof. Michael Gastpar.
- *Research Intern, DoCoMo Communications Laboratories USA, Inc.* June 2006 - Aug. 2006
Worked on the design of cooperative signaling strategies for distributed space-time codes.
- *Research/Teaching Assistant, Cornell University, Ithaca, NY.* Sep. 2002 - May 2006
- *DSP Engineer, Aware Inc., Bedford, MA.* June 2000 - Aug. 2002
Worked on the design and development of a DSL communication system. Implemented various digital signal processing blocks in C language including analog front-end, discrete multi-tone modulation (*i.e.*, OFDM) and demodulation. Worked on hardware-software integration and testing.
- *Research Assistant, Northeastern University, Boston, MA.* Sep. 1998 - May 2000

PUBLICATIONS

Available at <http://www.sjsu.edu/faculty/birsen.sirkeci/publications.htm>

- [J11] **B. Sirkeci-Mergen**, M. Keralapura, S. Coelho, S. J. Leavesley, T. C. Rich, "Generalized Total Least Squares Solutions for Linear Unmixing of Biomedical Hyperspectral Images", in preparation.
- [J10] S. Collins, and **B. Sirkeci-Mergen**, "Multiband Spectrum Searching: Optimal Strategies and Localization ROC Analysis", to be submitted to EURASIP Journal on Advances in Signal Processing.
- [J9] **B. Sirkeci-Mergen** and M. Roy, "Optimal Cooperative Communication using Multiple Levels of Amplify-and-Forward Relays", submitted to *IEEE Transactions on Vehicular Technology*.
- [J8] **B. Sirkeci-Mergen**, G. Mergen, and M. Gastpar, "Unified Analysis of Distributed Estimation over Fading Multiaccess Channels", submitted to *IEEE Transactions on Signal Processing*.
- [J7] **B. Sirkeci-Mergen**, and W. Iqbal "Optimized cooperative spectrum-sensing in clustered cognitive radio networks", *International Journal of Wireless & Mobile Networks*, vol. 5, no. 4, Aug. 2013.
- [J6] M. Sirdhar-Keralapura, M. Pourfathi, **B. Sirkeci-Mergen**, "Impact of Contrast Functions in Fast-ICA on Twin ECG Separation", *IAENG International Journal of Computer Science*, 38:1, pp38-47, Jan. 2011.
- [J5] **B. Sirkeci-Mergen** and Michael Gastpar, "On the Broadcast Capacity of Wireless Networks with Cooperative Relays", *IEEE Transactions on Information Theory*, 56(8):3847-3861, August 2010.
- [J4] Matthew Sharp, A. Scaglione, and **B. Sirkeci-Mergen**, "Randomized Cooperation in Asynchronous Dispersive Links," *IEEE Transactions on Communications*, vol. 57, no. 1, pp. 64-68, January 2009.
- [J3] **B. Sirkeci-Mergen** and A. Scaglione, "Randomized Space-Time Coding for Distributed Cooperative Communication", *IEEE Transactions on Signal Processing*, vol. 55, no. 10, pp. 5003-5017, October 2007.
- [J2] **B. Sirkeci-Mergen** and A. Scaglione, "On the Power Efficiency of Cooperative Broadcast in Dense Wireless Networks", *IEEE Journal on Selected Areas in Communications (JSAC): Special issue on Cooperative Communications and Networking*, vol.25, no. 2, Feb 2007.
- [J1] **B. Sirkeci-Mergen**, A. Scaglione and G. Mergen, "Asymptotic Analysis of Multi-Stage Cooperative Broadcast in Wireless Networks", *Joint Special Issue of the IEEE Transactions on Information Theory and IEEE/ACM Trans. On Networking*, vol. 52, no. 6, June 2006.

- [C28] S. Moballegh, **B. Sirkeci-Mergen**, "Analysis of Cooperative Communication In One-dimensional Dense Ad-hoc Networks" to be published in Proceedings of IEEE ICC 2015 - Workshop 13, London, UK, June 1015.
- [C27] S. Sisodia, **B. Sirkeci-Mergen**, A. Singh, "Respiration Rate Monitoring using Smartphones Accelerometer" in Proceedings of International Conference on Emerging Technologies in Electronics & Communication (ICETEC), December, 2013, Punjab, India (**received best session paper award**).
- [C26] S. Collins, and **B. Sirkeci-Mergen**, "Localization ROC Analysis for Multiband Spectrum Sensing in Cognitive Radios", in Proceedings of Milcom 2013, San Diego, CA, Nov. 18-20, 2013.
- [C25] **B. Sirkeci-Mergen**, M. Keralapura, S. Coelho, S. J. Leavesley, T. C. Rich, "Linear Unmixing of Hyperspectral Images for Analysis of Fluorescently-labelled Cells with Imperfect Endmember Spectra", in Proceedings of International Symposium on Biomedical Imaging (ISBI), April 7-11, 2013, San Francisco, CA.
- [C24] **B. Sirkeci-Mergen**, "SNR Advantage of Group Transmissions in Multihop Networks with Amplify-and-forward Relays", Asilomar Conference on Signals, Systems and Computers, 2012.
- [C23] Y. Quan, **B. Sirkeci-Mergen**, A. Singh, "Distributed Space-time Codes with Preprocessing over Multiple Stages of Relays", Proceedings of International Conference for Future Challenges in Wireless Communications, Optical Communications and Networks, Nov 27-29, 2010, Chandigarh, India.
- [C22] X. Liu, **B. Sirkeci-Mergen**, "Group-Orthogonal MAC for Cooperative Spectrum Sensing in Cognitive Radios", Proceedings of IEEE Milcom 2010, San Jose, CA.
- [C21] B. Yammanuru, **B. Sirkeci-Mergen**, "Multistage Cooperative Broadcast Using Amplify-and-Forward Relays", Proceedings of IEEE Milcom 2010, San Jose, CA.
- [C20] M. Sirdhar-Keralapura, M. Pourfathi, **B. Sirkeci-Mergen** "Independent component analysis with data-centric contrast functions for separating maternal and twin fetal ECG", accepted to be published in the proceedings of WCECS 2010 International Conference on Electrical Engineering and Applications 2010 in San Francisco, USA (**received best student paper award**).

- [C19] S. Venkatesh, N. Phipps, **B. Sirkeci-Mergen**, M. Sridhar-Keralapura, "An Optimized Fast-ICA Implementation for Separating Twin Electrocardiograms from Abdominal Recordings for Detecting Congenital Heart Defects", CSU Biotechnology Symposium, Jan. 2010 (poster presentation).
- [C18] **B. Sirkeci-Mergen**, V. Sawant, R.H. Morelos-Zaragoza, "Trade-Off Analysis of Energy Detectors and Partitioned Search for Primary Detection", Proceedings of 18th International Conference on Computer Communications and Networks, ICCCN 2009, page(s) 1-4.
- [C17] G. Mergen, **B. Sirkeci-Mergen**, M. Gastpar, "Sufficient-Statistics Based Multiple Access over Wireless Fading Channels", GLOBECOM 2008, page(s) 1-5.
- [C16] **B. Sirkeci-Mergen** "Distributed Space-time Codes with Relay Preprocessing for Low SNR Source-Relay Links", Asilomar Conference on Signals, Systems and Computers, 2008.
- [C15] **B. Sirkeci-Mergen**, Michael Gastpar, "On The Scaling of the Broadcast Capacity of Extended Wireless Networks with Cooperative Relays", Asilomar Conference on Signals, Systems and Computers, 2007 (invited).
- [C14] **B. Sirkeci-Mergen**, Michael Gastpar, "On the Cooperative Broadcast Capacity of High Density Wireless Networks", The 2007 Information Theory and Applications Workshop, Jan 29-Feb 02, 2007, San Diego, CA (invited).
- [C13] **B. Sirkeci-Mergen** and A. Scaglione, "On the Optimal Power Allocation for Broadcasting in Dense Cooperative Networks", 2006 IEEE International Symposium on Information Theory (ISIT), July 9-14, 2006, Seattle, Washington.
- [C12] A. Scaglione, **B. Sirkeci-Mergen**, S. Geirhofer and L. Tong "Randomized Distributed Multi-antenna Systems in Multi-path channels", Proc. of 14th European Signal Processing Conference (EUSIPCO06), Sep. 2-8, 2006, Florence, Italy (Invited paper).
- [C11] **B. Sirkeci-Mergen** and A. Scaglione, "Randomized Space-Time Coding for Distributed Cooperative Communication", Proc. of IEEE International Conference on Communications (ICC), June 11-15, 2006, Istanbul, Turkey.
- [C10] **B. Sirkeci-Mergen** and A. Scaglione, "Randomized Space-Time Coding for Distributed Cooperative Communication: Fractional Diversity", Proc. of 2006 IEEE International conference on Acoustics, Speech, and Signal Processing (ICASSP), May 14-19, 2006, Toulouse, France.
- [C9] A. Scaglione, S. Kirti and **B. Sirkeci-Mergen**, "Error Propagation in Dense Wireless Networks with Cooperation", Proc. of Information Processing in Sensor Networks (IPSN), April 19-21, 2006, Nashville, TN.
- [C8] Y.W. Hong , A. Scaglione A., R. Manohar, **B. Sirkeci-Mergen**, "Dense Sensor Networks are also Energy Efficient: When more is less ", Milcom 2005, Oct. 17-20, 2005, Atlantic City, NJ (**received the Fred Ellersick Award given to the best unclassified paper**).
- [C7] **B. Sirkeci-Mergen** and A. Scaglione, "Randomized Distributed Space-Time coding for Cooperative Communication in Self-organized Networks", IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC), June 5-8, 2005, New York, NY.
- [C6] **B. Sirkeci-Mergen** and A. Scaglione, "A Continuum Approach to Dense Wireless Networks with Cooperation", Proc. of IEEE INFOCOM, Miami, FL, March 13-17, 2005.
- [C5] **B. Sirkeci-Mergen** and A. Scaglione, "Message Propagation in a Cooperative Network with Asynchronous Reception", Proceeding of the 2005 International Conference on Acoustics, Speech, and Signal Processing (ICASSP), March 19-23, 2005, Philadelphia, PA.
- [C4] **B. Sirkeci-Mergen** and A. Scaglione, "Coverage Analysis of Cooperative Broadcast in Wireless Networks", IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC), July 11-14 2004, Lisbon, Portugal.
- [C3] **B. Sirkeci-Mergen** and A. Scaglione, "Signal Acquisition for Cooperative Transmissions in Multi-Hop Ad-Hoc Networks", Proceeding of the 2004 International Conference on Acoustics, Speech, and Signal Processing (ICASSP), May 2004, Montreal, Canada.
- [C2] Y.W. Hong, **B. Sirkeci** and A. Scaglione, "Swarming Activities to Distribute Information in Large Sensor Networks", in Proc. MILCOM Conference, October 13-16, 2003, Boston, MA.
- [C1] **B. Sirkeci**, D. Brady and J. Burman, "Restricted Total Least Squares Solutions for Hyperspectral Imagery", 2000 International Conference on Acoustics, Speech, and Signal Processing (ICASSP), June 5-9 2000, Istanbul, Turkey.

THESES

- [T2] **B. Sirkeci**, “Distributed Cooperative Communication in Large-Scale Wireless Networks”, PhD Thesis, Cornell University, Ithaca, NY, 2006.
- [T1] **B. Sirkeci**, “Total least squares approaches for spectral unmixing of hyperspectral imagery”, Master Thesis, Northeastern University, Boston, MA, 2001.

BOOK CHAPTERS

- [B3] **B. Sirkeci-Mergen**, A. Scaglione, and M. Gastpar “ Cooperative Broadcast in Large-Scale Wireless Networks”, published in “Cooperative Communications for Improved Wireless Network Transmission: Framework for Virtual Antenna Array Applications”, M. Uysal, 2010.
- [B2] A. Scaglione, Y.-W. Hong and **B. Sirkeci-Mergen**, “Cooperative strategies in dense sensor networks” published in “Sensor Networks: Where Theory Meets Practice”, G. Ferrari, Springer, 2009.
- [B1] **B. Sirkeci-Mergen** and A. Scaglione, “Randomized cooperative transmission in large scale sensor networks”, published in “Wireless Sensor Networks: Signal Processing and Communications Perspectives”, A. Swami, Q. Zhao, Y. Hong, and L. Tong, Wiley, 2007.

PATENTS

- Methods and Systems for Space-time Coding for Distributed Cooperative Communication. Joint inventor with A. Scaglione, Cornell Research Foundation, Inc. (Issued on Jul 31, 2012 with Patent No. 8,233,558).

PROFESSIONAL ACTIVITIES

- **Panelist for NSF:** 2014
- **Conferences Organizing Activities:** Local/Events Chair for ICME 2013, Session Chair for Milcom 2010.
- **Technical Program Committee (TPC) Member:** GC’15 - Wireless Communication, PIMRC’13 - MAC and Cross-Layer Design Track, GC13 AHSN, GC12 CogRN, ISWCS’12, VTC 2011-Fall, Globecom 2011 WC, WiMob 2011, ICC 2011 - WNS, VTC-2010 Fall/Spring CRCC, PIMRC 2010 - Track 2, WCNC 2010 PLT and CRCCT, Globecom 2010-WC, ICCCN 2009, ICC 2009 WCS, Globecom 2009 CTS, Globecom 2009 WCS, WCNC 2008, WCNC 2009-Phy, PIMRC 2008- Ambassador for USA.
- **Reviewer Activities:**
 - Regular reviewer for journals: IEEE Trans. on Signal Processing, IEEE Trans. on Communication, IEEE Trans. on Info. Theory, IEEE Trans. on Wireless Communication, IEEE JSAC, ACM Trans. Networking, IEEE Trans. on Vehicular Technology, EURASIP Journal on Wireless Communications and Networking.
 - Regular reviewer for conferences: INFOCOM, ICC, ICASSP, SPAWC, Globecom, WCNC, ISIT.

HONORS

- Received *Applied Materials Award for Excellence in Teaching* in the College of Engineering at SJSU, 2014.
- Received *Best Session Paper Award* in ICETEC 2013.
- Received *Outstanding Organizing Committee Member Award* for local arrangements in IEEE ICME 2013.
- Ranked among finalist in *Darpa Spectrum Challenge* competition, 2013.
- Advised the *Best Thesis* in the Electrical Engineering at San Jose State University (student: Steven Collins), May 2013.
- Received the *Best Student Paper award* in WCECS 2010.
- Received the *Fred Eilersick Award*, which is given to the best unclassified paper in Milcom 2005.
- Graduated with high honors from the double major program in ECE and Math. Departments, METU, 1998.
- Received METU fellowship from 9/1994 to 5/1998.
- Ranked 142nd in about 1.5 million students in Nationwide University Entrance Exam, Turkey, 1994.
- Ranked 1st in Regional Chess Tournament in Usak/Turkey among middle school students, 1991.