GEORGE K ATIA

CONTACT INFORMATION

Dept. of Electrical Eng. and Computer Science
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EDUCATION

Boston University, Ph.D. in Electrical and Computer Engineering, Jan 2009
Dissertation: *Robust Strategies for Cooperative and Cognitive Wireless Communication Systems*

Alexandria University, Egypt, M.Sc. in Electrical and Computer Engineering, June 2003
Thesis: *Performance of Adaptive Modulation Over Fading Channels in Wireless Personal Communication Systems*

Alexandria University, Egypt, B.Sc. in Electrical and Computer Engineering, May 2000.

PROFESSIONAL EXPERIENCE

Assistant Professor, (Aug 2012-Present), Department of Electrical Engineering and Computer Science, *University of Central Florida.*

Postdoctoral Research Associate, (Sep 2009 - Aug 2012), Coordinated Science Laboratory, *University of Illinois at Urbana-Champaign.*

Postdoctoral Research Associate, (May 2009 - Aug 2009), Department of Electrical and Computer Engineering, *Boston University.*

Member of Technical Staff, (Feb 2009 - May 2009), Communication Systems group, *Vanu Inc.,* Cambridge.

Research Assistant, (Sep 2003 - Jan 2009), Department of Electrical and Computer Engineering, *Boston University.*

Research Assistant and Lecturer, (Sep 2000 - June 2003), Department of Electrical and Computer Engineering*, Alexandria University, Egypt.*

AWARDS AND HONORS

Best Paper Award at the International Conference on Distributed Computing in Sensor Systems (DCOSS), Santorini, Greece, 2008.

College of Engineering Dean's award, Engineering and Science day, For research on “Outage in Cooperative Wireless Networks”, Boston University, March 2006.

Outstanding Graduate Teaching Fellow of the year award, Department of Electrical and Computer Engineering, Boston University, 2003-2004.

SERVICE ACTIVITIES

General Chair and Organizer of the *IEEE GlobalSIP Symposium on Controlled Sensing for Inference: Applications, Theory and Algorithms*, Austin Texas, Dec 2013.

Organizer of the Special Session on Controlled Sensing for Inference at *the 37th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP),* Kyoto Japan, March 2012.

Technical Program Committee Member for the networks track of *the 9th ACS/IEEE International Conference on Computer Systems and Applications.*

Technical Program Committee Member for *the 22nd Annual IEEE International Symposium on Personal, Indoor and Mobile Radio Communications.*

Session Chair at the *IEEE Annual Allerton Conference on Communication, Control and Computing.*

Reviewer for the IEEE Transactions on Communications, IEEE Transactions on Wireless Communications, IEEE Transactions on Signal Processing, IEEE Signal Processing Magazine, IEEE Transactions on Information Theory, IEEE Signal Processing Letters, Algorithmica, Globecom, WCNC, ICC, SSP, IPSN, ISIT, ICASSP, IEEE/ACM Transactions on Networking.

RESEARCH ACTIVITIES

Summary: My primary research interest and expertise lie in the areas of information sciences and statistical signal processing. Particularly, I conduct research across the interconnected disciplines of signal and information processing, wireless communications, and stochastic control driven by numerous applications including wireless sensor networks, spectrum-agile radios and more recently surveillance and reconnaissance, and compressive sensing. These are exploding areas of research today considering the contemporary issues of energy efficiency, homeland security and counter-terrorism, dynamic spectrum sharing, and distributed information processing.

Current Research Topics

- Fundamental limits of sparse signal processing and compressive sensing
- Controlled sensing for inference applications including sensor management for tracking, cache management in sensor networks and classification with multi-modal sensing
- Cooperative Wireless Communication Systems
- Dynamic Spectrum Sharing
- Structural Health Monitoring
- Brain-Computer Interfacing

PUBLICATIONS

Journal Publications

- V. Tan and G. Atia, “Strong Impossibility Results for Sparse Signal Processing,” IEEE Signal Processing Letters, vol. 21, no. 3, pp. 260-264, March, 2014.
- Sirin Nitinawarat, George Atia and Venugopal Veeravalli, “Controlled Sensing for Multihypothesis Testing,” *IEEE Transactions on Automatic Control*, vol. 58, no. 10, pp. 2451- 2464, Oct. 2013.

- Cem Aksoylar, George Atia and Venkatesh Saligrama, "Sparse Signal Processing with Linear and Non-Linear Observations: A Unified Shannon Theoretic Approach," *Submitted to the IEEE Trans. on Inf. Theory, [Online] Available at: http://arxiv.org/abs/1304.0682*, 2013.
- George Atia and Venkatesh Saligrama, "Boolean Compressed Sensing and Noisy Group Testing," *IEEE Transactions on Information Theory*, vol. 58, no. 3, Mar. 2012.
- George Atia, Venugopal Veeravalli and Jason Fuemmeler, "Sensor Scheduling for Energy-Efficient Tracking in Sensor Networks," *IEEE Transactions on Signal Processing*, vol. 59, no. 10, pp. 4923-4937, Oct. 2011.
- Jason Fuemmeler, George Atia and Venugopal Veeravalli, "Sleep Control for Tracking in Sensor Networks*," IEEE Transactions on Signal Processing*, vol. 59, no.9, pp. 4354-4366, Sep. 2011.
- Hany Morcos, George Atia, Azer Bestavros, and Ibrahim Matta, "An Information Theoretic Framework for Field Monitoring Using Autonomously Mobile Sensors," *Ad Hoc Networks: Special Issue on Distributed Computing in Sensor Systems*, 9, pp. 1049-1058, May 2011.
- Anant Sahai, Kristen Woyach, George Atia, and Venkatesh Saligrama, "A Technical Perspective on Light-Handed Regulation for Cognitive Radios," *IEEE Communications Magazine*, pp. 96-102, Mar. 2009.
- George Atia, Masoud Sharif and Venkatesh Saligrama, "On Optimal Outage in Relay Channels with General Fading Distributions*," IEEE Trans. Information theory, Special Issue on Models, Theory and Codes for Relaying and Cooperation in Communication Networks*, vol. 53, no. 10, pp. 3786-3797, Oct. 2007.

Conference Publications

- G. Atia and S. Aeron, "Asymptotic Optimality Results for Controlled Sequential Estimation", Proc. Of the 51st Allerton Conference on Communication, Control and Computing, Monticello IL, Oct. 2013.
- G. Atia and S. Aeron, "Controlled Sensing for Sequential Estimation", Proc. of the GlobalSIP symposium on Controlled Sensing for Inference, Austin TX, Dec. 2013.
- Cem Aksoylar, George Atia and Venkatesh Saligrama, "Sparse Signal Processing with Linear and Non-Linear Observations: A Unified Shannon Theoretic Approach", Proc. Of the Information Theory Workshop (ITW), Sept. 2013.
- Mina Guirguis and George Atia, "Stuck in Traffic (SiT) Attacks: A Framework for Identifying Stealthy Attacks that Cause Traffic Congestion", *IEEE 77th Vehicular Technology Conference VTC2013*, Dresden, Germany, June 2013.
- Cem Aksoylar, George Atia and Venkatesh Saligrama, "Compressive Sensing Bounds Through a Unifying Framework for Sparse Models", *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Vancouver, Canada, May 2013.
- Jonathan Ligo, George Atia and Venugopal Veeravalli, "A Controlled Sensing Approach To Graph Classification," *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP),* Vancouver, Canada, May 2013.
- George Atia and Venugopal Veeravalli, "Controlled Sensing for Sequential Multihypothesis Testing," *Proceedings of the International Symposium on Information Theory (ISIT),* Cambridge MA, June 2012.

- Sirin Nitinawarat, George Atia and Venugopal Veeravalli, "Controlled Sensing for Hypothesis Testing," *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Kyoto Japan, Mar. 2012.
- George Atia and Venkatesh Saligrama, "A Mutual Information Characterization for Sparse Signal Processing," *The 38th International Colloquium on Automata, Languages and Programming (ICALP),* Switzerland, Jul. 2011.
- Sirin Nitinawarat, George Atia and Venugopal Veeravalli, "Efficient Target Tracking Using Mobile Sensors," *Proceedings of the Fourth International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Jul. 2011.
- George Atia and Venugopal Veeravalli, "Sensor Scheduling for Energy Efficient Tracking in Cluttered Environments," *Information Theory Workshop ITA,* UCSD, San Diego, Feb. 2011.
- George Atia, Jason Fuemmeler and Venugopal Veeravalli, "Sensor Scheduling for Energy-Efficient Target Tracking in Sensor Networks," *Proceedings of the 44th Asilomar Conference on Signals, Systems and Computers,* pp. 1903-1907, Nov. 2010.
- George Atia and Venkatesh Saligrama, "Noisy Group Testing: An Information Theoretic Approach," In *Proceedings of the 47th Annual IEEE Allerton Conference on Communication, Control and Computing,* Monticello IL, Sep. 2009.
- George Atia, Andreas Molisch, "Cooperative Relaying with Imperfect Channel State Information," *Proceedings of the IEEE Global Telecommunications Conference GLOBECOM*, pp.1-6, Dec. 2008.
- George Atia, Venkatesh Saligrama and Anant Sahai, "Codes to Unmask Spectrum Violators in Cognitive Radio Systems," *Proceedings of the 42nd Asilomar Conference on Signals, Systems and Computers,* Pacific Grove, pp.1574-1578, Nov. 2008.
- George Atia, Anant Sahai, Venkatesh Saligrama, "Spectrum Enforcement and Liability Assignment in Cognitive Radios", *Proceedings of IEEE Dynamic Spectrum Access Networks (DySpan),* pp.1-12, Oct. 2008.
- Kristen Woyach, Anant Sahai, George Atia, Venkatesh Saligrama, "Crime and Punishment for Cognitive Radios", *46th Annual IEEE Allerton Conference on Communication, Control and Computing*, Monticello IL, pp.236-243, Sep. 2008.
- Hany Morcos, George Atia, Azer Bestavros, Ibrahim Matta, "An Information Theoretic Framework for Field Monitoring using Autonomously Mobile Sensors," *Proceedings of the International Conference on Distributed Computing in Sensor Networks*, pp.332-345, Santorini, Greece, Jun. 2008. (Best Paper Award)
- George Atia, Shuchin Aeron, Erhan Ermis, Venkatesh Saligrama, "On Throughput Maximization and Interference Avoidance in Cognitive Radios," *Fifth IEEE Consumer Communications and Networking Conference CCNC, 2nd IEEE Workshop on Cognitive Radios*, pp.963-967, Las Vegas, Jan. 2008.
- George Atia, Erhan Ermis, Shuchin Aeron, Venkatesh Saligrama, "On Cooperative Spectrum Sensing in Cognitive Radios," *45th Annual IEEE Allerton Conference on Communication, Control and Computing,* Monticello IL, Sep. 2007.
- George Atia, Erhan Ermis, Venkatesh Saligrama, "Robust Energy-Efficient Cooperative Spectrum Sensing in Cognitive Radios," *IEEE Workshop on Statistical Signal Processing SSP*, Madison WI, Aug. 2007.

- George Atia, Masoud Sharif, Venkatesh Saligrama, "Effect of Geometry on the Diversity-Multiplexing Tradeoff in Relay Channels," *IEEE Global Telecommunications Conference Globecom*, San Francisco CA, Nov. 2006.
- George Atia, Masoud Sharif, Venkatesh Saligrama, "On Optimal Outage in Relay Channels in the Low SNR Regime," *44th Annual IEEE Allerton Conference on Communication, Control and Computing,* Monticello IL, Sep. 2006.
- Masoud Sharif, Venkatesh Saligrama, George Atia, "Outage Capacity of Relay Channels in Low SNR: An Adaptive Strategy," *IEEE Communication Theory Workshop CTW*, Puerto Rico, May 2006.
- Onsy Alim, M. Mokhtar, George Atia, "Adaptive Modulation Assisted with Long Range Channel Prediction for Wideband Fading Channels," *Proceedings of the IEEE 21st NRSC*, Cairo, Mar. 2004.

Patents

Atia et al., Wireless cooperative relay network transmitting data using imperfect CSI, Patent 20090147728, Mitsubishi Electric Research Lab (MERL), June 2009.

CONTRACTS AND GRANTS

- Fundamental Limits of Sparse Signal and Information Processing, In-House Funding Award, Office of Research and Commercialization, $7500, Awarded Feb. 2013.
- A Unifying Approach for Identification of Sparse Interactions in Large Datasets, *submitted to National Science Foundation*, CISE Directorate, CCF Division, Communications and Information Foundations Program (CIF), $215,000.00, 3 years, Funded Aug. 2013.

TEACHING ACTIVITIES

University of Central Florida

- EEL6543 (Spring 2013, Spring 2014): Random Processes II
- EEL5542 (Fall 2012, Fall 2013): Random Processes I

Boston University (Graduate teaching assistant)

- EK307 (Spring 2004): Electric Circuit Theory
- SC455 (Fall 2003): Electromagnetic Systems

Alexandria University (Lecturer and Teaching Assistant)

Advanced Communication Theory, Antenna and Wave Propagation, Semiconductor Devices, Electromagnetic Systems (2000-2003)

INVITED TALKS

- Asymptotic Optimality Results for Controlled Sequential Estimation, **Allerton Conference on Communication, Control and Computing**, Monticello IL, Oct. 2013.
- Controlled Sensing Meets Channel Coding, **Information Theory Workshop** (ITA), San Diego, Feb. 2012.
- An Information-Theoretic Characterization for Sparse Signal Processing and Applications. Information, Systems and Networks (ISN) Seminar, **Cornell University**, Dec. 2011.

- An Information-Theoretic Characterization for Sparse Signal Processing. **University of South California (USC), Syracuse University, and University of Illinois at Chicago (UIC)**, Sept-Dec. 2011.
- Controlled Sensing for Tracking in Sensor Networks. **University of California at Santa Barbara (UCSB)**, Nov. 2011.
- Group Testing: Information Theoretic Perspective and a Spectrum Violation Corrective. Computer Science Seminar, **Purdue University,** May 2011.
- Energy-Efficient Sensor Scheduling for Tracking in Cluttered Environments. **Information Theory Workshop (ITA)**, University of California at San Diego (UCSD), Feb. 2011.
- Group Testing: Information Theoretic Perspective and a Spectrum Violation Corrective. Communications Seminar (CSL), **University of Illinois at Urbana-Champaign,** March 2010.