

Matthew R. O'Shaughnessy

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RESEARCH INTERESTS	Model-based inference, compressed sensing, causal inference, machine learning, dynamics and dynamical systems	
EDUCATION	Ph.D. Electrical & Computer Engineering	August 2016 — Present
	Georgia Institute of Technology, Atlanta, GA Supported by NDSEG Fellowship, 2017–2021 <i>Co-Advisors:</i> Prof. Mark Davenport, Prof. Christopher Rozell <i>Thesis:</i> “Structure, Causality, and Dynamics in Statistical Inference”	
	M.S. Mathematics	December 2019
	Georgia Institute of Technology, Atlanta, GA	
	B.S. Electrical Engineering	May 2016
	Georgia Institute of Technology, Atlanta, GA <i>Designations:</i> Research Option, Co-op Option, Highest Honors	
WORK EXPERIENCE	MIT Lincoln Laboratory	Summer 2016
	Open and Embedded Systems Group (102)	
	Georgia Tech Research Institute	Summer 2014, Spring 2015, Fall 2015
	Electro-Optical Systems Lab	(full time, three semesters)
	Boeing Company	Summer 2015
	DSP Algorithms Group, Boeing Satellite Systems	
TEACHING EXPERIENCE	Undergraduate Research Advisor	August 2019 — May 2020
	Georgia Tech Opportunity Research Scholars (ORS) Program <i>Project:</i> Exploring the latent space of generative models using paired comparisons	
	Undergraduate Teaching Assistant	August 2013 — May 2016
	Georgia Tech CS 1371—Computing for Engineers	
JOURNAL PUBLICATIONS	M. O'Shaughnessy , M. Davenport, and C. Rozell, “Sparse Bayesian Learning with Dynamic Filtering for Inference of Time-Varying Sparse Signals,” <i>IEEE Transactions on Signal Processing</i> , December 2019.	
CONFERENCE PUBLICATIONS	G. Canal, M. Connor, J. Jin, N. Nadagouda, M. O'Shaughnessy , C. Rozell, M. Davenport, and C. Rozell, “The PICASSO Algorithm for Bayesian Localization via Paired Comparisons in a Union of Subspaces Model,” to appear in <i>Proc. IEEE Int. Conference on Acoustics, Speech, and Signal Processing (ICASSP)</i> , Barcelona, Spain, May 2020.	
	M. O'Shaughnessy , M. Davenport, and C. Rozell, “Dynamical System Implementations of Sparse Bayesian Learning,” in <i>Proc. IEEE Int. Workshop on Computational</i>	

Advances in Multi-Sensor Adaptive Processing (CAMSAP), Guadeloupe, West Indies, December 2019.

G. Canal*, **M. O'Shaughnessy*** (equal contribution), C. Rozell, and M. Davenport, "Joint Estimation of Trajectory and Dynamics from Paired Comparisons," in *Proc. IEEE Int. Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Guadeloupe, West Indies, December 2019.

M. O'Shaughnessy, M. Davenport, and C. Rozell, "Robust Incorporation of Signal Predictions into the Sparse Bayesian Learning Framework," In *Proc. IEEE Workshop on Signal Processing with Adaptive Sparse Structured Representations (SPARS)*, Toulouse, France, July 2019.

M. O'Shaughnessy and M. Davenport, "Localizing Users and Items from Paired Comparisons," In *Proc. IEEE Int. Workshop on Machine Learning for Signal Processing (MLSP)*, Vietri sul Mare, Salerno, Italy, September 2016.

R. Ortman, D. Carr, R. James, D. Long, **M. O'Shaughnessy**, C. Valenta, and G. Tuell, "Real-time, Mixed-mode Computing Architecture for Waveform-resolved Lidar Systems with Total Propagated Uncertainty," in *Proc. SPIE Defense and Commercial Sensing*, Baltimore, Maryland, April 2016.

OTHER PUBLICATIONS

M. O'Shaughnessy, "Localizing Embeddings for Recommendation Systems using Binary Paired Comparisons," *Undergraduate Thesis*, Georgia Institute of Technology, May 2016.

G. Tuell, D. Carr, N. Guida, **M. O'Shaughnessy**, "Strategies for Mitigating Sea Surface Effects in the Workflow of Deployed Topo-Bathy Lidar Systems," *Technical Report to NOAA*, September 2015.

G. Tuell, D. Carr, N. Guida, **M. O'Shaughnessy**, "On the Relationship between Resolution of Sea Surface DEMs and Accuracy of Refracted Angle based on Analysis of Empirical Data," *Technical Report to NOAA*, July 2015.

G. Tuell, D. Carr, N. Guida, **M. O'Shaughnessy**, "Procedures and Algorithms for Raytracing Lidar Measurements Through an Irregular Sea Surface," *Technical Report to NOAA*, May 2015.

AWARDS

National Defense Science & Engineering Graduate (NDSEG) Fellowship, 2017—2021
Georgia Tech President's Undergraduate Research Award, 2015
3rd Place, Opportunity Research Scholars Poster Contest, 2014
2nd Place, Opportunity Research Scholars Poster Contest, 2013
Kelley Family Music Scholarship, 2013
National Merit Scholarship, 2012—2016
Zell Miller Scholarship, 2012—2016
Georgia Tech Dean's List; Faculty Honors, 2012—2016

REVIEWER

IEEE Transactions on Signal Processing
Workshop on Signal Processing with Adaptive Sparse Structured Representations (SPARS)
IEEE Wireless Communication Letters
Georgia Tech President's Undergraduate Research Award

SERVICE

Organizer, Children of the Norm Group Meeting, 2019–

Website Developer, GT Center for Signal & Information Processing, 2018

Mentor, School of ECE Graduate Student Organization New Graduate Student Mentorship Program, 2019

Member, Center for Signal & Information Processing Student Activities Committee

ECE Section Editor, The Tower Undergraduate Research Journal, 2015–2016

Treasurer, Society for Photonics & Optics, Georgia Tech Student Chapter, 2015