

Mina Karzand

Contact Information

Department of Electrical Engineering and Computer Science
Massachusetts Institute of Technology
77 Massachusetts Avenue
36-660A
Cambridge, MA 02139

Tel: +1 (617) 999-2279
E-mail: mkarzand@mit.edu

Academic Appointment

Massachusetts Institute of Technology, Cambridge, MA

Postdoctoral Associate

September 2017- present

- Department of Electrical Engineering and Computer Science
- Laboratory of Information and Decision Systems (LIDS)

Education

Massachusetts Institute of Technology, Cambridge, MA

PhD, Electrical Engineering and Computer Science Graduation date: September 2017

- Thesis Title: Theoretical Study of Two Prediction-Centric Problems: Graphical Model Learning and Recommendations
- Advisors: Prof. Lizhong Zheng and Prof. Guy Bresler

École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland

M.Sc., Electrical Engineering

Graduation date: June 2009

- Thesis Title: Physics-Based Sensor Network Data Analysis for the SensorScope Project
- Advisor: Prof. Martin Vetterli
- Area of Study: Information Technology (Signal and Image Processing)

University of Tehran, Tehran, Iran

B.Sc., Electrical Engineering

Graduation date: June 2007

Research Interests

- Algorithmic statistics and machine learning
- Learning graphical models
- Information theoretic approach to machine learning
- Applied probability

Selected Courses

- Mathematics of machine learning, Information theory, High dimensional statistics, Random matrix theory, Game theory, Inference and information, Algorithm for inference, Algebraic techniques and semidefinite optimization

Awards

- Recipient of 2015 Neekeyfard award from MIT
- Recipient of 2013 Claude E. Shannon research assistantship from RLE/MIT

Working and Teaching Experience

Teaching Assistantship

Spring 2016

- Course: 6.437 Inference and Information, EECS, MIT
- Instructors: Prof. Lizhong Zheng and Prof. Gregory Wornell

Teaching Assistantship

Spring 2012

- Course: 6.262 Discrete Stochastic Processes, EECS, MIT
- Instructor: Prof. Lizhong Zheng

Teaching Assistantship

Spring 2011

- Course: 6.262 Discrete Stochastic Processes, EECS, MIT
- Instructor: Prof. Robert Gallager

Internship at Akamai Technologies

June 2013 to August 2013

- Title: Intern at performance engineering group in platform mapping team
- Analysis of the temporal decay of load in the network as the mapping changes
- Design of an iterative computationally efficient approach for the demand estimation procedure in the network

Internship

September 2008 to February 2009

- Title: “Physics-Based Sensor Network Data Analysis for the SensorScope Project”
- Audiovisual Communications Laboratory (LCAV) in EPFL
- Advisors: Prof. Yue M. Lu and Prof. Martin Vetterli

Internship

February 2008 to September 2008

- Title: “Theory and Non-iterative Implementation of Iterative Demosaicking Methods ”
- Researcher in Audiovisual Communications Laboratory (LCAV) in EPFL
- Advisors: Prof. Yue M. Lu and Prof. Martin Vetterli

Publications

- Guy Bresler, and Mina Karzand, “Tight regret bounds for a latent variable model of recommendation systems,” In preparation. (List of authors in alphabetical order)
- Guy Bresler, and Mina Karzand, “Performance analysis of User-user and Item-item online recommendation systems,” In preparation. (List of authors in alphabetical order)
- Guy Bresler, and Mina Karzand, “Regret bounds and regimes of optimality for item-item and user-user recommendation systems,” *To appear in Proc. 55th Annual Allerton Conference on Communication, Control, and Computing, September 2017.*(List of authors in alphabetical order)
- Mina Karzand, and Guy Bresler, “Learning a Tree-Structured Ising Model in Order to Make Predictions,” arXiv:1604.06749. (List of authors in alphabetical order)
- Mina Karzand, and Guy Bresler, “Inferring Trees,” *Proc. 53rd Annual Allerton Conference on Communication, Control, and Computing, September 2015.*
- Mina Karzand, and Lav Varshney, “Communication strategies for low latency trading,” 2015 IEEE International Symposium on Information Theory, Hong Kong, June 2015.
- Mina Karzand, and Lizhong Zheng, “Degrees of freedom in fading channels with memory: Achievability through nonlinear decoding,” *Proc. 52nd Annual Allerton Conference on Communication, Control, and Computing, September 2014.*

- Mina Karzand, and Lihong Zheng, “Achievability of Nonlinear Degrees of Freedom in Correlatively Changing Fading Channels,” *Proc. 47th Annual Conference on Information Sciences and Systems (CISS), Princeton, NJ, 2013*.
- Yue M. Lu, Mina Karzand, and Martin Vetterli, “Demosaicking by alternating projections: Theory and fast one-step implementation,” *IEEE Transactions on Image Processing*, vol. 19, no. 8, August 2010.
- Yue M. Lu, Mina Karzand, and Martin Vetterli, “Iterative demosaicking accelerated: theory and equivalent noniterative fast implementation,” *Proc. SPIE Conference on Computational Imaging VI*, San Jose, January 2009.
- Cláudio Carneiro, Mina Karzand, François Golay, Yue M. Lu, and M. Vetterli, “Assessing digital surface models by verifying shadows: A sensor network approach,” *Proc. 6th International Symposium on Spatial Data Quality*, Newfoundland, 2009.
- Mina Karzand, Mohammad Khajehnejad, Mohammad Reza Ghajar, Farrokh Etezadi and Gholam Ali Hossein-Zadeh, “Evaluating the effect of watermarking on analysis of functional magnetic resonance images”, in *Proc. 11th International CSI Computer Conference*, IPM, Tehran, Iran, January 2006.