Mert R. Sabuncu

Visiting/Incoming Assistant Professor
School of Electrical and Computer Engineering
Meining School of Biomedical Engineering
Cornell University

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EDUCATION

Post-doc **Massachusetts Institute of Technology**
Cambridge, MA August 2006-October 2009
Medical Vision at
Computer Science and Artificial Intelligence Lab
Mentor: Polina Golland

PhD **Princeton University**
Princeton, NJ September 2001–July 2006
Electrical Engineering
Thesis Advisor: Peter J. Ramadge
Concentration: Information Sciences and Systems

MA **Princeton University**
Princeton, NJ September 2001–May 2003
Electrical Engineering

BSc **Middle East Technical University**
Ankara, Turkey September 1997–June 2001
Electrical and Electronics Engineering

RESEARCH INTERESTS

- Biomedical image analysis, with application focus in neurology/neuroscience
- Machine Learning, pattern recognition, multivariate statistics, Bayesian graphical models, approximate inference
- Data mining, applied to large-scale biomedical datasets, including genetics and imaging modalities
- Neuroinformatics
- Computational imaging genetics
- Image processing, computer vision

ACADEMIC EXPERIENCE

- **Incoming Assistant Professor** Starting July 2017
  School of Electrical and Computer Engineering
  Meining School of Biomedical Engineering
  Cornell University

- **Visiting Assistant Professor** July 2016-June 2017
  School of Electrical and Computer Engineering
  Cornell University

- **Assistant Professor of Radiology**   March 2012-current
A.A. Martinos Center for Biomedical Imaging
Department of Radiology, Mass. General Hospital/Harvard Medical School

- **Research Affiliate, MIT CSAIL**   March 2012-current

- **Associated Scientist, Broad Institute of Harvard and MIT**   December 2015-current

- **Instructor, Assistant in Neuroscience, Research Faculty**   November 2009-March 2012
A.A. Martinos Center for Biomedical Imaging
Department of Radiology, Mass. General Hospital/Harvard Medical School
(Research Affiliate, MIT CSAIL)

- **Post-doctoral Associate**   August 2006-October 2009
CSAIL, Massachusetts Institute of Technology
(Member of Prof. Polina Golland's research group)

- **Graduate Research Assistant**   June 2002-July 2006
Princeton University, Princeton, NJ

TEACHING EXPERIENCE

- **Instructor**

3rd Biomedical Image Analysis Summer School: Modalities, Methodologies & Clinical Research
organized by
Center of Visual Computing of CentraleSupelec & INRIA, Saclay, Ile-de-France   July 2015
Taught three-hour tutorial lecture on "image Segmentation."

- **Instructor**
Harvard Catalyst
Advanced Imaging in Clinical/Translational Neuroscience Research Course   May 2015
Taught a one-hour lecture on "imaging genetics."

- **Visiting Professor**
Electrical Engineering Department, Bogazici University, Istanbul, Turkey

EE58M Modeling and Inference in Biomedical Image Analysis   Summer 2012
Graduate-level class introducing concepts utilized in cutting edge applications where biomedical
image data are analyzed. An array of probabilistic modeling and inference techniques are
covered, with a focus on fundamental problems in biomedical image analysis, such as brain
mapping, surgical planning and computer-aided diagnosis. Designed and developed the entire
course material. Gave all lectures, prepared and graded assignments, projects, and exams.

- **Lecturer**
A.A. Martinos Center for Biomedical Imaging**,** Charlestown, MA

FreeSurfer Course   2010, 2011, 2012
Lecture on statistical methods that are available in the FreeSurfer software package.

- **Guest Lecturer**
Massachusetts Institute of Technology, Cambridge, MA

HST.583 Functional Magnetic Resonance Imaging   Fall 2008, Fall 2010, Fall 2012, Fall 2015

Graduate-level multidisciplinary course that focuses on the conduct and interpretation of fMRI-based human brain mapping studies. Gave guest lectures on image registration and cortical surface-based analysis.

6.034 Artificial Intelligence   Spring 2008

Basic undergraduate level course that introduces representations, techniques, and architectures used to build applied systems and to account for intelligence from a computational point of view. Gave a guest lecture that overviewed cutting-edge research in medical vision and image analysis.

- **Teaching Assistant**

Princeton University, Princeton, NJ

ELE 488 Image Processing and Transmission   Fall 2003, Fall 2004, Fall 2005

Senior/graduate level course. Designed and supervised bi-weekly laboratory sessions, helped prepare and grade homework assignments, graded exams and conducted help sessions. Prepared, graded and supervised individual term projects where students were required to conduct original research. Received the 2006 ***Outstanding Teaching Assistant Award*** from the Department of Electrical Engineering.

ELE 391 The Wireless Revolution   Spring 2005

A course, mainly designed for non-engineers, that addresses the different aspects of today's wireless technologies. Graded homework assignments, exams and term projects.

ELE 201 Introduction to Electrical Signals and Systems   Fall 2002

A gateway class for the Electrical Engineering Department. Organized and supervised lab sessions, graded assignments and exams.

OTHER PROFESSIONAL EXPERIENCE

- **Intern/Research Staff**   June 2003-June 2006

Siemens Corporate Research, Princeton, NJ

- **Undergraduate Intern**   August 2000

Tubitak-Bilten (The Scientific and Research Council of Turkey)

- **Undergraduate Intern**   June-July 1999

Vestel Electronics, Inc., Manisa, Turkey

PUBLICATIONS

NCBI Bibliography:
http://www.ncbi.nlm.nih.gov/myncbi/browse/collection/42348358/?sort=date&direction=descending
Google Scholar Profile:
http://scholar.google.com/citations?user=Pig-I4QAAAAJ&hl=en

* Contributed equally

- **Journal**

J1.   "Morphometricity as a measure of the neuroanatomical signature of a trait," MR Sabuncu, T Ge, AJ Holmes, J Smoller, R Buckner, and B Fischl. *Proceedings of National Academy of Arts and Sciences (PNAS)*. In Press, 2016.

J2.   "Multidimensional heritability of neuroanatomical shape." T Ge, M Reuter, AM Winkler, AJ Holmes, PH Lee, LS Tirrell, JL Roffman, RL Buckner, JW Smoller, and <u>MR Sabuncu.</u> *Nature Communications.* In Press, 2016.

J3.   "Bayesian model reveals latent atrophy factors in Alzheimer's disease with dissociable preclinical and clinical trajectories." X Zhang, E Mormino, RA Sperling, <u>MR Sabuncu</u>, and BTT Yeo. *Proceedings of National Academy of Sciences (PNAS).* In Press, 2016.

J4.   "Polygenic risk of Alzheimer's disease is associated with early and late life processes." E Mormino, RA Sperling, A Holmes, RL Buckner, PL DeJager, JW Smoller, and <u>MR Sabuncu</u>. To appear in *Neurology.* 2016

J5.   "Probabilistic Modeling of Imaging, Genetics and Diagnosis ", N Batmanghelich, A Dalca, G Quon, G., <u>M Sabuncu</u>, and P Golland, *IEEE Transactions on Medical Imaging,* 2016

J6.   "Multi-atlas Segmentation of Biomedical Images: A Survey". JE Iglesias and <u>MR Sabuncu</u>. *Medical Image Analysis*, vol. 24, no. 1, 2015. PMID: 26201875

J7.   "Massively Expedited Genome-wide Heritability Analysis (MEGHA)." T Ge, TE Nichols, AJ Holmes, PH Lee, JL Roffman, RL Buckner, <u>MR Sabuncu*</u>, and JW Smoller*. *Proceedings of the National Academy of Sciences,* vol. 12, no. 8. 2015. PMCID: PMC4345618

J8.   . "Identifying Shared Brain Networks in Individuals by Decoupling Functional and Anatomical Variability." G Langs, D Wang, P Golland, S Mueller, R Pan, <u>MR Sabuncu</u>, W Sun, K Li, and H Liu. *Cerebral Cortex*, bhv189, 2015.

J9.   "A Kernel Machine Method for Detecting Effects of Interaction Between Multidimensional Variable Sets: An Imaging Genetics Application." T Ge, T Nichols, D Ghosh, E Mormino, JW Smoller*, and <u>MR Sabuncu*</u>. *NeuroImage*, vol. 109, 2015. PMCID: PMC4339421

J10.   "An algorithm for optimal fusion of atlases with different labeling protocols." JE Iglesias, <u>MR Sabuncu</u>, I Aganj, P Bhatt, C Casillas, D Salat, A Boxer, B Fischl, and K Van Leemput. *Neuroimage*, vol. 106, 2015. PMCID: PMC4286284

J11.   "Avoiding symmetry-breaking spatial non-uniformity in deformable image registration via a quasi-volume-preserving constraint." I Aganj, M Reuter, <u>MR Sabuncu</u>, and B Fischl. *Neuroimage*, vol. 106, 2015. PMCID: PMC4286290

J12.   "Clinical Prediction from Structural Brain MRI Scans: A Large-Scale Empirical Study." <u>MR Sabuncu</u>, and E Konukoglu. *Neuroinformatics*: 1-16, 2014. PMCID: PMC4303550

J13.   "Event Time Analysis of Longitudinal Neuroimage Data." <u>MR Sabuncu</u>, JL Bernal-Rusiel, M Reuter, DN Greve, and B Fischl. *Neuroimage*, vol. 97, 2014. PMCID: PMC4078261

J14.   "Neurobiological basis of head motion in brain imaging." L-L Zeng, D Wang, MD Fox, <u>MR Sabuncu</u>, D Hu, M Ge, RL Buckner, and H Liu. *Proceedings of the National Academy of Sciences,* vol. 111, no. 16, 2014.

J15.   "Genetic variation of oxidative phosphorylation genes in stroke and Alzheimer's disease." A Biffi, <u>MR Sabuncu</u>, RS Desikan, N Schmansky, DH Salat, J Rosand, and CD Anderson, *Neurobiology of Aging*, vol. 35, no. 8, 2014. PMCID: PMC4329419

J16.   "A unified framework for cross-modality multi-atlas segmentation of brain MRI." EJ Iglesias, <u>MR Sabuncu</u>, and K Van Leemput. *Medical image analysis*, vol. 17, no. 8, 2013. PMCID: PMC3888218

J17.   "In vivo characterization of the early states of the amyloid-beta network." J Sepulcre, <u>MR Sabuncu</u>, A Becker, R Sperling, and KA Johnson, *Brain,* vol. 136, nol. 7, 2239-2252, 2013. PMCID: PMC3692037

J18.   "Improved Inference in Bayesian Segmentation Using Monte Carlo Sampling: Application to Hippocampal Subfield Volumetry." JE Iglesias, <u>MR Sabuncu</u>, and K Van Leemput, *Medical Image Analysis*, vol. 17, no. 7, p. 766-778, 2013. PMCID: PMC3719857

J19.   "Spatiotemporal Linear Mixed Effects Modeling for the Mass-univariate Analysis of Longitudinal Neuroimage Data." JL Bernal-Rusiel, M Reuter, DN Greve, B Fischl, and <u>MR Sabuncu,</u> *Neuroimage*, vol. 81, p. 358-370, 2013. PMCID: PMC3816382

J20.   "A Surface-based Analysis of Language Lateralization and Cortical Asymmetry." DN Greve, L Van der Haegen, Q Cai, S Stufflebeam, <u>MR Sabuncu</u>, B Fischl, and M Bysbaert, *Journal of Cognitive Neuroscience,* vol. 25, no. 9, 1477-1492, 2013. PMCID: PMC3767398

J21.   "On Removing Interpolation and Resampling Artifacts in Rigid Image Registration." I Aganj, B Yeo, <u>MR Sabuncu</u>, and B Fischl, IEEE *Transactions on Image Processing*, vol. 22, no. 2, 816-827, 2013. PMCID: PMC3694571

J22.   "Individual Variability in Functional Connectivity Architecture of the Human Brain." S Mueller, D Wang, MD Fox, BT Yeo, J Sepulcre, <u>MR Sabuncu</u>, R Shafee, J Lu, and H Liu, *Neuron,* vol. 77, no. 3, 586-595, 2013. PMCID: PMC3746075

J23.   "Statistical Analysis of Longitudinal Neuroimage Data with Linear Mixed Effects Models." JL Bernal-Rusiel, DN Greve, M Reuter, B Fischl, and <u>MR Sabuncu,</u> *Neuroimage*, vol. 66, 249-260, 2012. PMCID: PMC3586747

J24.   "The Relevance Voxel Machine (RVoxM): A Self-tuning Bayesian Model for Informative Image-based Prediction." <u>MR Sabuncu</u> and K Van Leemput, *IEEE Transactions on Medical Imaging*, vol. 31, no. 12, 2012. PMCID: PMC3623564

J25.   "Stepwise Connectivity of the Modal Cortex Reveals the Multimodal Organization of the Human Brain." J Sepulcre, <u>MR Sabuncu</u>, BTT Yeo, H Liu, and KA Johnson, *The Journal of Neuroscience*, vol. 32, no. 31, p. 10649-10661, 2012. PMCID: PMC3483645

J26.   "Network Assemblies in the Functional Brain." J Sepulcre, <u>MR Sabuncu</u>, and KA Johnson, *Current Opinion in Neurology*, vol. 25, no. 4, p. 384-391, 2012. PMID: 22766721

J27.   "A Coding Variant in CR1 Interacts with APOE-ε4 to Influence Cognitive Decline." BT Keenan, JM Shulman, LB Chibnik, T Raj, D Tran, <u>MR Sabuncu</u>, AN Allen, et al., *Human molecular genetics*, vol. 21, no. 10, p. 2377-2388, 2012. PMID: 22343410

J28.   "Measuring and Comparing Brain Cortical Surface Area and Other Areal Quantities." AM Winkler, <u>MR Sabuncu</u>, BTT Yeo, B Fischl, DN Greve, P Kochunov, TE Nichols, J Blangero, and DC Glahn, *NeuroImage*, vol. 61, no. 4, p. 1428-1443, 2012. PMID: 22446492

J29.   "The Influence of Head Motion on Intrinsic Functional Connectivity MRI." K Van Dijk, <u>MR Sabuncu,</u> and RL Buckner, *NeuroImage*, vol. 59, no. 1, p. 431-438, 2012. PMID: 21810475

J30.   "The Association between a Polygenic Alzheimer Score and Cortical Thickness in Clinically Normal Subjects." <u>MR Sabuncu</u>, RL Buckner, JW Smoller, P Hyuon-Lee, B Fischl, and RA Sperling, *Cerebral Cortex*, vol. 22, no. 11, p. 2653-2661, 2012. PMID: 22169231

J31.   "The Organization of the Human Cerebral Cortex Estimated by Functional Connectivity." BTT Yeo, FM Krienen, J Sepulcre, <u>MR Sabuncu</u>, D Lashkari, M Hollinshead, JL Roffman, JW Smoller, L Zöllei, JR Polimeni, B Fischl, H Liu, and RL Buckner, *Journal of Neurophysiology*, vol. 106, no. 3, 2011. PMID: 21653723

J32. "The dynamics of cortical and hippocampal atrophy in Alzheimer's disease." <u>MR Sabuncu</u>, RS Desikan, J Sepulcre, BTT Yeo, H Liu, NJ Schmansky, M Reuter, MW Weiner, RL Buckner, RA Sperling, and B. Fischl. *Archives of Neurology*, vol. 68, no. 8, 2011. PMID: 21825241

J33. "Selective disruption of the cerebral neocortex in Alzheimer's disease." RS Desikan, <u>MR Sabuncu</u>, NJ Schmansky, M Reuter, HJ Cabral, CP Hess, MW Weiner, A Biffi, CD Anderson, J Rosand, DH Salat, TL Kemper, AM Dale, RA Sperling and B Fischl*, PLoS ONE*, vol. 5, no. 9, 2010*.* PMID: 20886094

J34. "Genetic Variation and Neuroimaging Measures in Alzheimer Disease." A Biffi, CD Anderson, RS Desikan, <u>MR Sabuncu</u>, L Cortellini, N Schmansky, D Salat and J Rosand, *Archives of Neurology*, vol. 67, no. 6, p. 677-685, 2010. PMID: 20558387

J35. "A Generative Model for Image Segmentation Based on Label Fusion." <u>MR Sabuncu*</u>, BTT Yeo*, K Van Leemput, B Fischl, and P Golland. *IEEE Transactions on Medical Imaging*, vol. 29, no. 10, p. 1714-1729, 2010. PMID: 20562040

J36. "Learning Task-Optimal Registration Cost Functions for Localizing Cytoarchitecture and Function in the Cerebral Cortex." BTT Yeo, <u>MR Sabuncu</u>, T Vercauteren, D Holt, K Amunts, K Zilles, P Golland, B Fischl. *IEEE Transactions on Medical Imaging*, vol. 29, no. 7, p. 1424-41, 2010. PMID: 20529736

J37. "Spherical Demons: Fast Diffeomorphic Landmark-free Surface Registration." BTT Yeo*, <u>MR Sabuncu*,</u> T Vercauteren, N Ayache, B Fischl and P Golland. *IEEE Transactions on Medical Imaging,* vol. 29, no. 3, p. 650-668, 2010. PMID: 19709963

J38. "Function-based inter-subject alignment of the cortical anatomy." <u>MR Sabuncu*,</u> BD Singer*, B Conroy, RE Bryan, PJ Ramadge and JV Haxby, *Cerebral Cortex*, vol. 20, no. 1, p. 130-140, 2010. PMID: 19420007

J39. "Image-driven Population Analysis through Mixture-Modeling." <u>MR Sabuncu</u>, SK Balci, ME Shenton and P Golland. *IEEE Transactions on Medical Imaging*, vol. 28, no. 9, p. 1473-1487, 2009. PMID: 19336293

J40. "Consistency Clustering: A Robust Algorithm for Group-Wise Registration, Segmentation and Automatic Atlas Construction in Diffusion MRI." U Ziyan, <u>MR Sabuncu</u>. WEL Grimson, and CF Westin, *International Journal of Computer Vision*, vol. 85, no. 3, p. 279-290, 2009. PMID: 20442792

J41. "Effects of Registration Regularization and Atlas Sharpness on Segmentation Accuracy." BTT Yeo*, <u>MR Sabuncu*</u>, R Desikan, B Fischl and P Golland, *Medical Image Analysis Journal*, vol. 12, p. 603-615, 2008. PMID: 18667352. ***Winner of Young Investigator Publication Impact Award at MICCAI'11.***

J42. "Using Spanning Graphs for Efficient Image Registration." <u>MR Sabuncu</u> and PJ Ramadge, *IEEE Transactions on Image Processing*, vol. 17, no. 5, p. 788-797, May 2008. PMID: 18390383

- **Peer-reviewed Conference**

C1. "A Sparse Bayesian Learning Algorithm for Longitudinal Image Data." <u>MR Sabuncu</u>. *Proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (*MICCAI*)*, 2015.

C2. "Predictive Modeling of Anatomy with Genetic and Clinical Data." AV Dalca, R Sridharan, <u>MR Sabuncu</u>, and Polina Golland. *Proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (*MICCAI*)*, 2015.

C3.   "Mid-Space-Independent Symmetric Data Term for Pairwise Deformable Image Registration". I Aganj, JE Iglesias, M Reuter, MR Sabuncu, and B Fischl. *Proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (*MICCAI*)*, 2015.

C4.   "A Universal and Efficient Method to Compute Maps from Image-based Prediction Models." MR Sabuncu, (2014), *Proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (*MICCAI*)*, 2014.

C5.   "A Cautianary Analysis of STAPLE Using Direct Inference of Segmentation Truth." K Van Leemput and MR Sabuncu, (2014), *Proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (*MICCAI*)*, 2014.

C6.   "Segmentation of Cerebrovascular Pathologies in Stroke Patients with Spatial and Shape Priors." A Dalca, R Sridharan, L Cloonan, K Fitzpatrick, A Kanakis, K Furie, J Rosand, O Wu, MR Sabuncu, N Rost, and P Golland. *Proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (*MICCAI*)*, 2014.

C7.   "Example-based Restoration of High-resolution Magnetic Resonance Image Acquisitions." E Konukoglu, A van der Kouwe, MR Sabuncu, and B Fischl (2013), *Proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (*MICCAI*)*, p. 131-138, 2013.

C8.   "A probabilistic, non-parametric framework for inter-modality label fusion." JE Iglesias, MR Sabuncu, and K Van Leemput, (2013), *Proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (*MICCAI*)*, p. 576-583, 2013.

C9.   "Incorporating Parameter Uncertainty in Bayesian Segmentation Models: Application to Hippocampal Subfield Volumetry." J Iglesias, MR Sabuncu, and K Van Leemput, *Proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (*MICCAI*)*, LNCS 7512, p. 50-57, 2012.

C10.   "A Generative Model for Multi-atlas Segmentation Across Modalities." JE Iglesias, MR Sabuncu, and K Van Leemput, *International Symposium on Biomedical Imaging (ISBI),* 2012.

C11.   "The Relevance Voxel Machine (RVoxM): A Bayesian method for Image-based prediction." MR Sabuncu and K Van Leemput, *Proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (*MICCAI), LNCS 6893, p. 99–106, 2011.

C12.   "Supervised Nonparametric Image Parcellation." MR Sabuncu, BTT Yeo, K Van Leemput, B Fischl, and P Golland, *Proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (*MICCAI*)*, LNCS 5762, p. 1075-83, 2009.

C13.   "Asymmetric Image-Template Registration." MR Sabuncu, BTT Yeo, T Vercauteren, K Van Leemput and P Golland, *Proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (*MICCAI*)*, LNCS 5761, p. 565-573, 2009.

C14.   "Task-optimal Registration Cost Functions." BTT Yeo, MR Sabuncu, B Fisch and P Golland, *Proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (*MICCAI*)*, LNCS 5761, p. 598-606, 2009.

C15.   "A Unified Framework for MR Based Disease Classification." KM Pohl and MR Sabuncu, *Information Processing in Medical Imaging (IPMI) 2009,* LNCS 5636, p. 300-313, 2009.

C16.   "Discovering Modes of an Image Population through Mixture Modeling." MR Sabuncu, SK Balci, and P Golland. *Proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI),* LNCS 5242, p. 381-389, 2008.

C17.   "Spherical Demons: Fast Surface Registration." BTT Yeo, MR Sabuncu, T Vercauteren, N Ayache, B Fischl, and P Golland. *Proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (*MICCAI*),* LNCS 5241, p. 745-753, 2008.

C18.   "Analysis of Surfaces Using Constrained Regression Models." S Darkner, MR Sabuncu, P Golland, R Paulsen and R Larsen. *Proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, LNCS 5241, p. 842-849, 2008.

C19.   "Fiber Bundle-based Nonlinear Registration of Diffusion MR Images." U Ziyan, MR Sabuncu, L O'Donnell, and CF Westin, *Proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, LNCS 4791, p. 351-358, 2007.

C20.   "Effects of Registration Regularization and Atlas Sharpness on Segmentation Accuracy." BTT Yeo, MR Sabuncu, R Desikan, B Fischl and P Golland, *Proceedings of the International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, LNCS 4791, p. 683-691, 2007. ***Winner of MICCAI 2007 Young Scientist Award***.

C21.   "Graph Theoretic Image Registration Using Prior Examples." MR Sabuncu and PJ Ramadge. *Proceedings of EUSIPCO 2005*, Antalya, Turkey, September 2005.

C22.   "Gradient based Optimization of an EMST Registration Function." MR Sabuncu and PJ Ramadge. *Proceedings of IEEE ICASSP 2005*, Philadelphia, March 2005.

C23.   "Fast Alignment of Digital Images Using a Lower Bound on an Entropy Metric." MR Sabuncu, PJ Ramadge. *Proceedings of IEEE ICIP 2004*, Singapore, October 2004.

C24.   "Gradient based Non-uniform Sub-sampling for Information-theoretic Alignment Methods." MR Sabuncu and PJ Ramadge. *Proceedings of IEEE International Conference of EMBS 2004*, San Francisco, CA, September 2004.

- **Peer-reviewed Workshop**

W1.   "An Improved Optimization Method for the Relevance Voxel Machine." M Ganz, MR Sabuncu, and K Van Leemput. In *Machine Learning in Medical Imaging* (pp. 147-154) at MICCAI 2013.

W2.   "On Feature Relevance in Image-Based Prediction Models: An Empirical Study." E Konukoglu, M Ganz, K Van Leemput, and MR Sabuncu. In *Machine Learning in Medical Imaging* (pp. 171-178) at MICCAI 2013.

W3.   "A Bayesian Algorithm for Image-Based Time-to-Event Prediction." MR Sabuncu. In *Machine Learning in Medical Imaging* (pp. 74-81) at MICCAI 2013.

W4.   "Towards Efficient Label Fusion by Pre-Alignment of Training Data." M Depa, G Holmvang, EJ Schmidt, P Golland, and MR Sabuncu, *Proceedings of Workshop on Multi-atlas Labeling and Statistical Fusion at MICCAI'11,* 2011.

W5.   "Building an Average Population HARDI Atlas." S Bouix, Y Rathi, and MR Sabuncu, *Proceedings of the Workshop on Computational Diffusion MRI at MICCAI'10,* 2010.

W6.   "Nonparametric Mixture Models for Supervised Image Parcellation." MR Sabuncu, BTT Yeo, K Van Leemput, B Fischl, and P Golland, *Proceedings of the Workshop on Probabilistic Models for Medical Image Analysis at MICCAI'09,* 2009.

W7. "Prediction of Successful Memory Encoding from fMRI Data." SK Balci, <u>MR Sabuncu</u>, J Yoo, SS Ghosh, S Whitefield-Gabrieli, JDE Gabrieli, and P Golland. *Proceedings of the Analysis of Functional Medical Images Workshop at MICCAI'08,* 2008.

W8. "What Data to Co-register for Computing Atlases." BTT Yeo, <u>MR Sabuncu</u>, B Fischl, and P Golland. *Proceedings of the International Conference on Computer Vision (ICCV): IEEE Computer Society Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA)*, 2007.

W9. "A Robust Algorithm for Fiber-bundle Atlas Construction." U Ziyan, <u>MR Sabuncu</u>, and CF Westin. *Proceedings of the International Conference on Computer Vision (ICCV): IEEE Computer Society Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA),* 2007.

W10. "Joint Registration and Clustering of Images." <u>MR Sabuncu</u> and P Golland, *Proceedings of the Statistical Registration Workshop at MICCAI'07,* 2007.

W11. "Spatial Information in Entropy based Image Registration." <u>MR Sabuncu</u> and PJ Ramadge, *Workshop on Biomedical Image Registration*, LNCS 2717, Springer-Verlag, 2003.

- **Edited Volumes**

E1. "Machine Learning and Medical Imaging," Editors: G Wu, D Shen, and <u>MR Sabuncu</u>, Elsevier, forthcoming, 2016.

- **Miscellaneous**

M1. "Increasing Statistical Power by Modeling Spatiotemporal Correlations in Longitudinal Neuroimage Data." J Bernal-Rusiel, D Greve, M Reuter, B Fischl and <u>MR Sabuncu</u>, *19th Annual Human Brain Mapping Conference*, 2013.

M2. "A Generative Model for Probabilistic Label Fusion of Multimodal Data." J Iglesias, <u>MR Sabuncu</u>, and K Van Leemput, *Proceedings of the Workshop on Multimodal Brain Image Analysis at MICCAI'12*, 2012.

M3. "Modeling anatomical heterogeneity in populations." P Golland and <u>MR Sabuncu</u>, *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2011.

M4. "Automatic Surface-based Interhemispheric Registration with FreeSurfer." D.N. Greve, M.R. Sabuncu, R.L. Buckner, B. Fischl. *17th Annual Human Brain Mapping Conference,* 2011.

M5. "Entropy-based Image Registration." <u>MR Sabuncu</u>, *PhD Thesis*, Princeton University, 2006.

M6. "Function-based inter-subject alignment of the cortical anatomy." <u>MR Sabuncu</u>, B.D. Singer, R.E. Bryan, P. J. Ramadge, and J.V. Haxby. *12th Annual Human Brain Mapping Conference*, Florence, Italy, June 2006.

- **Patents**

P1. "Image Registration using Minimum Entropic Graphs." <u>MR Sabuncu</u> and C Chefd'hotel. US Patent 20060093240.

P2. "Incorporating Prior Knowledge from Pre-Aligned Image Pairs into EMST-Based Image Registration." <u>MR Sabuncu</u> and C. Chefd'hotel. US Patent 20070086677.

GRANTS AND OTHER FINANCIAL SUPPORT

- National Institutes of Health STTR Grant from NIA (1R41AG052246-01). Role: Co-PI of subcontract with Corticometrics, LLC (PI: Schmansky). Total subcontract funds: **US $64,453**

- MGH Executive Committee On Research, Deliberative Interim Research Support Grant, "Novel Methods for Testing Complex Associations in Neuroimaging Genetics", 2015-2016, Role: PI. Total support **US$ 86,250**

- American Health Assistance Foundation (AHAF, now joined with BrightFocus) Alzheimer's Disease Pilot Grant, 2012-2015. Role: PI. Total support over **US$ 260,000.**

- National Institutes of Health (NIH) K25 Grant, 2011-2016. Role: PI. Total support over **US$ 870,000.**

- Harvard Catalyst KL2 MeRIT Award, 2010-2012. Role: PI. Total support over **US$ 250,000.**

- Siemens Research Grant, 2004-2006. Partial support for PhD studies at Princeton.

- Graduate Fellow, Department of Electrical Engineering, Princeton University, Princeton, NJ. 2001-2002.

- Undergraduate Fellowship, Middle East Technical University, Ankara, Turkey. 1997-2001.

HONORS AND AWARDS

- Winner of Young Investigator Publication Impact Award at MICCAI'11. Co-authored paper.

- Winner of MICCAI 2007 Young Scientist Award. Co-authored paper.

- Outstanding Teaching Assistant Award, Department of Electrical Engineering, Princeton University, Princeton, NJ. 2006.

- Bulent Kerim Altay Award, given by the Electrical and Electronics Engineering Department at Middle East Technical University to the student who, based on semester grades, ranks first in his/her class. Fall 1997 and 1999; Spring 1998, 1999 and 2000.

- Ranked 90th in Turkey's nationwide university entrance exam among approximately 1.5 million candidates, 1997.

SELECT PAST INVITED TALKS

- "An Imaging Genetics Study of Alzheimer's Disease", The Functional and Structural Brain Networks Workshop at Bogazici University, Istanbul, Turkey, July 2016.

- "Probing the Genetic Underpinnings of Brain Structure in Healthy Subjects and Alzheimer's Disease Patients," Biomedical Research Imaging Center Seminar Series, UNC Chapel Hill, May 2016.

- "Probing the Genetic Underpinnings of Brain Structure in Healthy Subjects and Alzheimer's Disease Patients," Keynote Speech at UPenn Workshop on Imaging Genetics, February 2016.

- "Probing the genetic underpinnings of brain structure in healthy controls and Alzheimer's disease", UC Davis Neurology Grand Rounds, December 2015.

- "Statistical Methods for Large-Scale Neuroimage Analysis." Invited Seminar at Department of Biomedical Engineering, UC Davis, August 2015.

- "Examining the genetic underpinnings of structural neuroimaging phenotypes." Science Bites, Massachusetts General Hospital, Charlestown Navy Yard Faculty Lunch Seminar Series, March 2015.

- "Examining the genetic underpinnings of structural neuroimaging phenotypes." Invited Seminar at Dept. of Radiology and Imaging Sciences, Indiana University School of Medicine, Indianapolis, IN, March 2015.

- "Examining the genetic underpinnings of structural neuroimaging phenotypes." Invited Seminar at Department of Psychology, Yale University, February 2015.

- "Tutorial: Multivariate Methods on Imaging Genetics", First MICCAI Workshop on Imaging Genetics, Boston, September 2014.

- "Machine Learning in (structural) Neuroimage Analysis: Issues and Promise." Invited Talk at BANG Seminar Series at Martinos Center for Biomedical Imaging, MGH/Harvard Medical School, March 2014.

- "The Relevance Voxel Machine: Bayesian image-based prediction." Invited Seminar at Department of Radiology, UPenn, January 2013.

- "The Relevance Voxel Machine: Bayesian image-based prediction." NIPS 2012 Workshop on Machine Learning and Interpretation in NeuroImaging, December 2012.

- "A Generative Model for Probabilistic Label Fusion of Multimodal Data." MICCAI 2012 Workshop on Multimodal Brain Analysis, October 2012.

- "Structural MRI markers of Alzheimer's Disease." Psychiatric Genetics and Translational Research Seminar, Massachusetts General Hospital, October 2011.

- "A Generative Model for Image Segmentation based on Label Fusion." Faculty of Engineering and Natural Sciences, Sabanci University, September 2009.

- "Image-driven Population Analysis through Mixture Modeling." Computer Science Department, Brown University, October 2008.

- "Multiple Atlases for Multiple Purposes." Center for the Study of Brain, Mind and Behavior, Princeton University, Dec 2007.

- "Inter-subject Image Registration." Central for Neural Science, NYU, April 2007.

- "Renyi entropy-based image registration: a graph-theoretic approach." Computer Science and Artificial Intelligence Labs, MIT, Vision Medical Seminar, October 2005.

- "Graph theoretic image registration." Siemens Corporate Research, February 2005.

- "Spatial information in entropy based image registration: application to the human brain." Center for the Study of Brain, Mind and Behavior, Princeton University, Seminar Series on Data Processing Methods in Neuroscience, October 2004.

SERVICE

- **Organizing Committee Member**, Program Co-chair, Medical Image Computing and Computer Assisted Intervention (MICCAI) Conference, Istanbul 2016.

- **Program Committee (PC) Member**, Medical Image Computing and Computer Assisted Intervention (MICCAI) Conference, 2012, 2013, 2014, 2015

- **Organizing Committee Member**, Workshop on Imaging Genetics at MICCAI 2014, MICCAI 2015.

- **Organizing Committee Member**, Machine Learning Challenge at MICCAI 2014.

- **Organizing Committee Member**, Workshop on Machine Learning and Interpretation in Neuroimaging at Neural Information Processing (NIPS) 2011.

- **Member of Editorial Board** of Medical Image Analysis.

- **Member of Editorial Board** of Frontiers in Brain Imaging Methods.

- **Ad-hoc Reviewer** for Proceedings of National Academy of Sciences, Nature Biomedical Engineering, IEEE Transaction on Medical Imaging, IEEE Transactions on Image Processing, IEEE Transactions on Pattern Analysis and Machine Intelligence, NeuroImage, Medical Image Analysis, Alzheimer's and Dementia Journal, Archives of General Psychiatry, Cerebral Cortex, PLoS ONE, Neruobiology of Aging, Neuroinformatics, Brain Imaging and Behavior, MICCAI, IPMI, ISBI, CVPR, ICPR, among others.

- **Grant Reviewer** for Harvard Catalyst Advanced Imaging Pilot Research Grants and Concept Development Awards Program, 2013.

- **Grant Reviewer** for Alzheimer's Association Research Grant Program, 2016.

- **Grant Reviewer** for Alzheimer's Society Research Programme (UK), 2016.

- **Member of Organizing Committee** of FreeSurfer Tutorial and Workshop, 2010-2012.

MENTORED STUDENTS AND FELLOWS

- Serdar Kemal Balci, CSAIL, MIT

- Ulas Ziyan, CSAIL, MIT

- BT Thomas Yeo, CSAIL, MIT

- Michal Depa, CSAIL, MIT

- Jorge Bernal-Rusiel, Martinos Center, MGH/HMS

- Juan Eugenio Iglesias, Martinos Center, MGH/HMS

- Luke Gang, Martinos Center, MGH/HMS

- Tian Ge, Martinos Center, MGH/HMS

- Adrian Dalca, CSAIL, MIT

- Elizabeth Mormino, Martinos Center, MGH/HMS

- Xiuming Zhang, National University Singapore