

W. Clem Karl

Professor

Department of Electrical and Computer Engineering

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Principal Research Interests:

Computational imaging, statistical signal processing, inverse problems, sparsity-based estimation and data science, geometric estimation, applications to biomedical signal and image processing, remote sensing, synthetic aperture radar.

Education:

<u>University</u>	<u>Degree</u>	<u>Date</u>
Massachusetts Institute of Technology	Ph.D. in Electrical Engineering and Computer Science	1991
Massachusetts Institute of Technology	E.E in Electrical Engineering and Computer Science	1990
Massachusetts Institute of Technology	S.M. in Electrical Engineering and Computer Science	1984
Massachusetts Institute of Technology	S.B. in Aeronautical and Astronautical Engineering	1983

Boston University Appointments:

<u>Rank</u>	<u>Dates</u>
Chair of Electrical and Computer Engineering	2015–present
Professor Electrical and Computer Engineering	2003–present
Professor Biomedical Engineering	2003–present
Associate Professor Electrical and Computer Engineering	2000–2003
Associate Professor Biomedical Engineering	2000–2003
Assistant Professor Electrical and Computer Engineering	1995–2000
Assistant Professor Biomedical Engineering	1996–2000

Other Appointments:

<u>Position</u>	<u>Institution</u>	<u>Dates</u>
Visiting Scientist	Center for Integration of Medicine and Innovative Technology, Department of Radiology, MGH	2005–2015
Lecturer of Health Sciences and Technology	Harvard-MIT Division of Health Sci. and Tech.	1995–2000
Research Scientist	MIT Laboratory for Information and Decision Systems	1992–1994
Post-doctoral Research Associate	MIT Laboratory for Information and Decision Systems with Prof. Alan Willsky	1991–1992

Professional Service

- **Selected Community Service**

- ECE Department Heads Association Strategic Vision, Branding, and Community Committee (2015-Present)

- **Selected Society Committee Service**

- IEEE Publications Services and Products Board (2017-present)
- IEEE Publications Services and Products Board Publishing Conduct Committee (2017-present)
- IEEE Publications Services and Products Board Strategic Planning Committee (2015-present)
- IEEE Signal Processing Society Nominations and Appointments Committee (2013-2014)
- IEEE Signal Processing Society Publication Board (2013-Present)
- IEEE Signal Processing Society Technical Committee Review Committee (2012-2013)
- IEEE Signal Processing Society Conference Board (2012-2014)
- IEEE Signal Processing Society Board of Governors (2011-2013)
- IEEE Transactions on Medical Imaging Steering Committee (2011-2013)
- IEEE Signal Processing Society COS Conference Organizers Orientation and Training Advisory Committee (2010-2011)
- IEEE Signal Processing Society Signal Processing Education Technical Committee BISP Liaison (2009-2011)
- IEEE Signal Processing Society Biomedical Image and Signal Processing Technical Committee (2007-2013)
- IEEE Signal Processing Society Biomedical Image and Signal Processing Technical Committee Vice-chair (2009-2010)
- IEEE Signal Processing Society Intl. Symposium on Biomedical Imaging Steering Committee (2009-2010)
- IEEE Signal Processing Society Image and Multidimensional Signal Processing Technical Committee (2003-2009)

- **Selected Conference and Workshop Organization Service**

- General Chair, 2017 International Conference on Computational Photography
- Co-Organizer, Special Session of 2015 IEEE Intl. Conf. on Image Processing on Computational Imaging (2014-2015)
- Co-Organizer, Special Session of 2012 IEEE Statistical Signal Processing Workshop on Challenges in High Dimensional Learning (2011-2012)
- Co-Organizer, Special Session of 2012 IEEE Statistical Signal Processing Workshop on Statistical Signal Processing and the Engineering of Materials (2011-2012)
- Technical Program Committee, 2012 IEEE Statistical Signal Processing Workshop
- Americas Liaison, 2012 IEEE Intl. Symposium on Biomedical Imaging
- Organizer, Workshop on Large Data Sets in Medical Informatics. Part of the Institute for Mathematics and Its Applications Thematic Year on the Mathematics of Information (2010-2011)
- Program Committee, IS&T/SPIE Computational Imaging Conference (2012-present)
- General Chair, 2009 IEEE Intl. Symposium on Biomedical Imaging
- IMDSP Technical Committee Reviewer Coordinator, 2005 IEEE Intl. Conf. on Acoustic Speech and Signal Processing

- Technical Program Committee, IEEE Intl. Conf. on Acoustic Speech and Signal Processing (2004, 2005)
- Session Organizer and Chair, IEEE Asilomar Conference on Signals, Systems, and Computers (2002, 2003)
- Technical Program Committee, IEEE Intl. Conf. Image Processing (2000-2005)
- Organizing committee, First SIAM Conf. on Imaging Science (2000-2001)
- Organizing committee, First SIAM Conf. on the Life Sciences (2000-2001)
- Technical Program Committee, SPIE Conference on Battlefield Biomedical Technologies (1998-2000)
- Session Organizer and Chair, 2000 Conf. on Information Sciences and Systems special session on Medical Imaging
- Co-organizer, Int'l Atomic Energy Agency meeting on humanitarian demining (1997)
- Technical Program Committee, IEEE Engineering in MEDicine and Biology Society Workshop on Wavelets in Medicine and Biology (1994)
- Session Organizer and Chair, 1993 Conf. on Information Sciences and Systems special session on Geometry and Estimation
- Reviewer for NSF, NIH, AFOSR, etc. (Ongoing)

- **Editorial Roles**

- Inaugural Editor-in-Chief and founder, IEEE Transactions on Computational Imaging (2014-2017)
- Editor-in-Chief, IEEE Transactions on Image Processing (2013-2014)
- Editorial Board, IEEE Transactions on Image Processing (1996-2000)
- Guest Editor, special issue of *Int'l J. Patt. Recog. and Artificial Intelligence* on “Processing, Analysis, and Understanding of MR Images of the Human Brain” (1996-1998)
- Assistant Editor, *Control Systems Newsletter* (1984–1985)

Honors, Awards, Special Recognition, or other Significant Items

- IEEE Fellow
- Advisee won student paper award at 2005 IEEE Intl. Conf. on Acoustics Speech and Signal Processing
- Advisee among top 10 in student paper award competition at 2002 IEEE Intl. Conf. on Image Processing
- 2000 Boston University Departmental Teaching Award
- Nominated for 1999 Boston University Departmental Teaching Award
- Nominated for 1998 Boston University Departmental Teaching Award
- Advisee’s vision system won the 1996 International Aerial Robotics Competition; featured on Discovery Channel
- Elected to Sigma Xi (1985)

Teaching Experience

- Undergraduate Level
 - Circuits and Electronics
 - Introduction to Digital Signal Processing
 - Signals and Systems

- Graduate Level
 - Recursive Estimation
 - Stochastic Processes, Detection, and Estimation
 - Image Restoration and Reconstruction
 - Computational Imaging

Publications

Books and Book Chapters

1. T. M. Chin, M. R. Luetttgen, W. C. Karl, and A. S. Willsky, “An Estimation-Theoretic Perspective on Image Processing and the Calculation of Optical Flow,” in *Motion Analysis and Image Sequence Processing*, M. Sezan and R. Lagendijk, eds, Kluwer, March 1993.
2. W. C. Karl, “Regularization in Reconstruction and Restoration,” in *Handbook of Image and Video Processing*, A. Bovik, ed, Academic Press Limited, April, 2000.
3. W. C. Karl, “Regularization in Reconstruction and Restoration,” in *Handbook of Image and Video Processing*, A. Bovik, ed, Academic Press Limited, Second Edition, May 2005.
4. R. A. Weisenseel, W. C. Karl, and R. C. Chan, “Multisensor Data Inversion and Fusion Based on Shared Image Structure,” in *Multi-sensor image fusion and its applications*, R. S. Blum and Z. Liu, ed, CRC Press, 2005.
5. W. C. Karl and E. L. Miller, “Digital Subsurfacing Imaging,” in *Introduction to Subsurface Imaging*, B. Saleh, ed, Cambridge University Press, December, 2010
6. I. Stojanovic, M. Cetin, W. C. Karl, “Sparsity and Compressed Sensing in Mono-static and Multi-static Radar Imaging,” in *Compressed Sensing and Sparse Filtering*, A. Y. Carmi , L. S. Mihaylova and S. J. Godsill, eds, Springer, September, 2013.

Journal Articles

1. W. C. Karl, J. Greschak, and G. C. Verghese, “Comments on ‘A Necessary and Sufficient Condition for the Stability of Discrete Linear Interval Systems,’ ” *International Journal of Control*, Vol. 39, No. 4, pp. 849–851, 1984.
2. W. C. Karl and G. C. Verghese, “Comments on ‘Sufficient and Necessary Condition for the Asymptotic Stability of Discrete Linear Interval systems,’ ” *International Journal of Control*, Vol. 45, No. 5, pp. 2159–2160, November, 1988.
3. W. C. Karl and G. C. Verghese, “Comments on ‘Robust Stability in Linear State Space Models,’ ” *International Journal of Control*, Vol. 49, No. 3, pp. 1093, 1989.
4. W. C. Karl and G. C. Verghese, “Curvatures of Surfaces and Their Shadows,” *Linear Algebra and its Applications* (Special Issue on Image Reconstruction from Projections), Vol. 130, pp. 231-255, March, 1990.
5. W. C. Karl, S. Leeb, L. Jones, J. Kirtley, and G. C. Verghese, “Applications of Rank-Based Filters in Power Electronics,” *IEEE Transactions on Power Electronics*, Vol. 7, No. 3, pp. 437–443, July 1992.
6. T. M. Chin, W. C. Karl, and A. S. Willsky, “Sequential Filtering for Multi-Frame Visual Reconstruction,” *Signal Processing* special issue on Multidimensional Signal Processing, Vol. 28, No. 3, pp. 311–333, September 1992.
7. W. C. Karl and G. C. Verghese, “A Sufficient Condition for the Stability of Interval Matrix Polynomials,” *IEEE Transactions on Automatic Control* (Special Issue on Meeting the Challenge of Computer Science in the Industrial Applications of Control), Vol. 38, No. 7, pp. 1139–1143, July 1993.
8. M. R. Luetttgen, W. C. Karl, A. S. Willsky, and R. R. Tenney, “Multiscale Representations of Markov Random Fields,” *IEEE Transactions on Signal Processing* special issue on Wavelets and Signal Processing, Vol. 41, No. 12, pp. 3377–3396, December 1993.
9. W. C. Karl, G. C. Verghese, and J. H. Lang, “Control of Vibrational Systems,” *IEEE Transactions on Automatic Control*, Vol. 39, No. 1, pp. 222–226, January, 1994.
10. M. R. Luetttgen, W. C. Karl, and A. S. Willsky, “Efficient Multiscale Regularization with Applications to the Computation of Optical Flow,” *IEEE Transactions on Image Processing*, Vol. 3, No. 1, pp. 41–64, January 1994.

11. W. C. Karl, G. C. Verghese, and A. S. Willsky, "Reconstructing Ellipsoids from Projections," *Computer Vision, Graphics, and Image Processing: Graphical Models and Image Processing*, Vol. 56, No. 2, pp. 124–139, March, 1994.
12. P. Milanfar, W. C. Karl, and A. S. Willsky, "Reconstructing Binary Polygonal Objects from Projections: A Statistical View," *Computer Vision, Graphics, and Image Processing: Graphical Models and Image Processing*, Vol. 56, No. 5, pp. 371–391, September, 1994.
13. T. M. Chin, W. C. Karl, and A. S. Willsky, "Probabilistic and Sequential Computation of Optical Flow using Temporal Coherence," *IEEE Transactions on Image Processing*, Vol. 3, No. 6, pp. 773–788, November, 1994.
14. T. M. Chin, W. C. Karl, and A. S. Willsky, "A Distributed and Iterative Method for Square Root Filtering in Space-Time Estimation," *Automatica*, Vol. 31, No. 1, pp. 67–82, January, 1995.
15. P. Milanfar, G. C. Verghese, W. C. Karl, and A. S. Willsky, "Reconstructing Polygons from Moments with Connections to Array Processing," *IEEE Transactions on Signal Processing*, Vol. 43, No. 2, pp. 432–443, February, 1995.
16. P. W. Fieguth, W. C. Karl, A. S. Willsky, and C. Wunsch, "Multiresolution Optimal Interpolation and Statistical Analysis of TOPEX/POSEIDON Satellite Altimetry," *IEEE Transactions on Geoscience and Remote Sensing*, Vol. 33, No. 2, pp. 280–292, March, 1995.
17. S. Jaggi, W. C. Karl, and A. S. Willsky, "Estimation of Dynamically Evolving Ellipsoids with Applications to Medical Imaging," *IEEE Transactions on Medical Imaging*, Vol. 14, No. 2, pp. 249–258, June, 1995.
18. M. Bhatia, W. C. Karl, and A. S. Willsky, "A Wavelet-Based Method for Multiscale Tomographic Reconstruction," *IEEE Transactions on Medical Imaging*, Vol. 15, No. 1, pp. 92–101, February, 1996.
19. R. W. Stadler, W. C. Karl, and R. S. Lees, "New Methods for Arterial Diameter Measurement from B-Mode Images," *Ultrasound in Medicine and Biology*, Vol. 22, No. 1, pp. 25–34, 1996.
20. R. W. Stadler, W. C. Karl, and R. S. Lees, "The Application of Echo Tracking Methods to Endothelium-Dependent Vasoreactivity and Arterial Compliance Measurements," *Ultrasound in Medicine and Biology*, Vol. 22: No. 1, pp. 35–42, 1996.
21. P. Milanfar, W. C. Karl, and A. S. Willsky, "A Moment-Based Variational Approach to Tomographic Reconstruction," *IEEE Transactions on Image Processing*, Vol. 5, No. 3, pp. 459–470, March, 1996.
22. W. C. Karl, S. R. Kulkarni, G. C. Verghese, and A. S. Willsky, "Local Tests for Consistency of Support Hyperplane Data," *Journal of Mathematical Imaging and Vision* special issue on Topology and Geometry in Computer Vision, Vol. 6, No. 2/3, Pg. 249–267, June, 1996.
23. L. Belcastro, W. C. Karl, and A. S. Willsky, "Tomographic Reconstruction of Polygons from Knot Location and Chord Length Measurements," *Graphical Models and Image Processing*, Vol. 58, No. 3, pp. 233–245, May, 1996.
24. C. H. Fosgate, H. Krim, W. W. Irving, W. C. Karl, A. S. Willsky, "Multiscale Segmentation and Anomaly Enhancement of SAR Imagery," *IEEE Transactions on Image Processing* special issue on Automatic Target Recognition, Vol. 6, No. 1, pp. 7–20, January, 1997.
25. M. Bhatia, W. C. Karl, and A. S. Willsky, "Tomographic Reconstruction and Estimation Based on Multiscale Natural-Pixel Bases," *IEEE Transactions on Image Processing*, Vol 6, No. 3, pp. 463–478, March 1997.
26. J. Kaufhold, M. K. Schneider, W. C. Karl, and A. S. Willsky, "A statistical method for efficient segmentation of MR imagery," *International Journal of Pattern Recognition and Artificial Intelligence* Special issue on Processing of MRI Imagery, Vol. 11, No. 8, pg. 1213–1231, December, 1997.
27. W. C. Karl, D. N. Kennedy, A. J. Worth, H. H. Pien, A. S. Willsky, "Processing of MR Images of the Human Brain," *International Journal of Pattern Recognition and Artificial Intelligence* Special issue on Processing of MRI Imagery, Vol. 11, No. 8, pg. 1157–1160, December, 1997.
28. P. W. Fieguth, W. C. Karl, and A. S. Willsky, "Efficient Multiresolution Counterparts to Variational Methods for Surface Reconstruction," *Computer Vision and Image Understanding*, Vol. 70, No. 2, pg 157–176, May, 1998.

29. A. Frakt, W. C. Karl, and A. S. Willsky, "A Multiscale Hypothesis Testing Approach to Anomaly Detection and Localization from Noisy Tomographic Data," *IEEE Transactions on Image Processing*, Vol. 7, No. 6, pg 825–837, June, 1998.
30. J. Kaufhold, W. C. Karl, and R. C. Chan, "A Texture-Based Variational Segmentation Method for Ultrasound Blood Vessel Imagery," *Annals of Biomedical Engineering*. Volume 26, Supplement 1, October, 1998.
31. S. Jaggi, W. C. Karl, S. Mallat, and A. S. Willsky, "High Resolution Pursuit for Feature Extraction," *Applied Computational and Harmonic Analysis*, Vol. 5, No. 4, pg 428–449, October, 1998.
32. F. Kamalabadi, W. C. Karl, J. L. Semeter, D. M. Cotton, T. A. Cook, S. Chakrabarti, "A Statistical framework for space-based EUV ionospheric tomography," *Radio Science*, Vol. 34, No. 2, pp. 437–447, March/April, 1999.
33. S. Jaggi, W. C. Karl, S. G. Mallat, and A. S. Willsky, "Silhouette Recognition using High Resolution Pursuit," *Pattern Recognition*, Vol. 23, No. 5., pg. 753–771, May, 1999.
34. M. K. Schneider, P. W. Fieguth, W. C. Karl, and A. S. Willsky, "Multiscale Statistical Methods for the Segmentation and Reconstruction of Signals and Images," *IEEE Transactions on Image Processing*, Vol. 9, No. 3, Pg. 456–468, March, 2000.
35. A. Kannan, M. Ostendorf, W. C. Karl, D. A. Castanon, R. K. Fish, "ML Parameter Estimation of a Multiscale Stochastic Process using the EM Algorithm," *IEEE Transactions on Signal Processing*, Vol. 48, No. 6 pg. 1836–1847, June, 2000.
36. R. Chan, W. C. Karl, and R. S. Lees, "A new model-based technique for enhanced small vessel measurements in X-ray ciné-angiograms," *IEEE Transactions on Medical Imaging*, Vol. 19, No. 3, pg. 243–255, March, 2000.
37. M. Cetin and W. C. Karl, "Feature-enhanced synthetic aperture radar image formation based on non-quadratic regularization," *IEEE Transactions on Image Processing*, Vol. 10, No. 4, pg. 623–631, April, 2001.
38. W. S. Hoge, E. L. Miller, H. Lev-Ari, D. H. Brooks, W. C. Karl and L. P. Panych, "An Efficient Region of Interest Acquisition Method for Dynamic Magnetic Resonance Imaging," *IEEE Transactions on Image Processing*, Vol. 10, No. 74, pg. 1118–1128, July 2001.
39. M. Desai, R. Mangoubi, J. Shah, W. Karl, H. Pien, A. Worth , and D. Kennedy, "Functional MRI Activity Characterization Using Response Time Shift Estimates from Curve Evolution," *IEEE Transactions on Image Processing*, Vol. 21, No. 11, pg. 1402–1412, November 2002.
40. V. Galdi, H. Feng, D. A. Castanon, W. C. Karl, L. B. Felsen, "Multifrequency Subsurface Sensing in the Presence of a Moderately Rough Air-Soil Interface via Quasi-Ray Gaussian Beams," *Radio Science*, Vol. 38, No. 2, VIC 8-1–VIC 8-12, December 2002.
41. H. Feng, W. C. Karl, D. A. Castanon, "A Curve Evolution Approach to Object-Based Tomographic Reconstruction" *IEEE Transactions on Image Processing*, Vol. 12, No. 1, pg, 44-57, January 2003.
42. V. Galdi, J. Pavlovich, W. C. Karl, D. A. Castanon, L. B. Felsen, "Moderately Rough Dielectric Interface Profile Reconstruction via Short-Pulse Quasi-Ray Gaussian Beams," *IEEE Transactions on Antennas and Propagation*, Vol. 51, No. 3, pg. 672–677, March, 2003.
43. V. Galdi, H. Feng, D. A. Castanon, W. C. Karl, L. B. Felsen, "Moderately Rough Surface Underground Imaging via Short-Pulse Quasi-Ray Gaussian Beams," *IEEE Transactions on Antennas and Propagation*, Vol. 51, No. 9, pg. 2304-2318, Sept. 2003.
44. M. Cetin, W. C. Karl, and D. A. Castanon, "Analysis of the Impact of Non-Quadratic Optimization-based SAR Imaging on Feature Enhancement and ATR Performance," *IEEE Trans. Aerospace and Electronic Systems*, Vol. 39, No. 4, pg. 1375-1395, October 2003.
45. R. Weisenseel and W. C. Karl, R. C. Chan, and T. J. Brady, "A Variational Approach to Multi-modality Subsurface Data Inversion and Fusion Based on Shared Image Structure," *Subsurface Sensing Technologies and Applications*, Vol.4, No.4, pgs 373-392, October 2003.
46. A. K. Swan, L. Moiseev, C. R. Cantor, B. Davis, S. B. Ippolito, W. C. Karl, B. B. Goldberg and M. S. Unlu, "Towards nanometer-scale resolution in fluorescence microscopy using spectral self-interference," *IEEE Journal*

- on selected topics in quantum electronics (JSTQE)* special issue on “Lasers in medicine and biology,” Vol. 9, No. 2, pgs 294-300, March/April 2003.
47. B. J. Davis, W. C. Karl, A. K. Swan, M. S. Unlu, and B. B. Goldberg, “Capabilities and limitations of pupil-plane filters for superresolution and image enhancement,” *Opt. Express* Vol. 12, No. 17, 4150-4156, August, 2004.
 48. Chan, R.C., A.H. Chau, W.C. Karl, S. Nadkarni, A.S. Khalil, N. Iftimia, M. Shishkov, G.J. Tearney, M.R. Kaazempur-Mofrad, and B.E. Bouma, “OCT-based arterial elastography: robust estimation exploiting tissue biomechanics”. *Optics Express*, 2004. 12(19): p. 4558-4572.
 49. W. C. Karl and H. Pien, “High-Resolution Biosensor Spectral Peak Shift Estimation,” *IEEE Trans. on Signal Processing*, Vol. No. 12, pg 4631-4639, Dec, 2005.
 50. Maros Ferencik, Jennifer B. Lisauskas, Ricardo C. Cury, Udo Hoffmann, Suhny Abbara, Stephan Achenbach, W. Clem Karl, Thomas J. Brady, Raymond C. Chan, “Improved vessel morphology measurements in contrast-enhanced multi-detector computed tomography coronary angiography with non-linear post-processing,” *European Journal of Radiology*, Vol. 57, pg. 380-383, March, 2006.
 51. M. Cetin, W.C. Karl, and A. S. Willsky, “A Feature-Preserving Regularization Method for Complex-valued Inverse Problems with Application to Coherent Imaging,” *Optical Engineering*, vol. 54, no. 1, 017003, January 2006.
 52. N. Aggarwal, and W. C. Karl, “Line Detection in Images through Regularized Hough Transform,” *IEEE Transactions on Image Processing*, Vol. 15, No. 3, pg. 582-591, March, 2006.
 53. M. Mendillo, S. Laurent, J. Wilson, J. Baumgardner, J. Konrad, and W. C. Karl, “The sources of sodium escaping from Io revealed by spectral high definition imaging,” *Nature*, Vol. 448, pg. 330-332, July 2007.
 54. B. J. Davis, A. K. Swan, M. S. Unlu, W. C. Karl, B. B. Goldberg, J. C. Schotland, and P. S. Carney, “Spectral self-interference microscopy for low-signal nanoscale axial imaging,” *J. Opt. Soc. Am. A* 24, pg. 3587-3599, 2007.
 55. B. J. Davis, M. Dogan, B. B. Goldberg, W. C. Karl, M. S. Unlu, and A. K. Swan, “4Pi spectral self-interference microscopy,” *J. Opt. Soc. Am. A*, 24, pg. 3762-3771, 2007.
 56. B. J. Davis, M. Dogan, B. B. Goldberg, W. C. Karl, M. S. Unlu, and A. K. Swan, “4Pi spectral self-interference microscopy,” *Virtual Journal of Nanoscale Science and Technology*, Jan, 14, 2008.
 57. H. Feng, D. A. Castanon, W. C. Karl, “Unified Anomaly Suppression and Boundary Extraction in Laser Radar Range Imagery based on a Joint Curve-Evolution and Expectation-Maximization Algorithm,” *IEEE Trans. Image Processing*, Vol 17, No. 5, pg 757-766, May 2008.
 58. Y. Shi and W. C. Karl, “A Real-Time Algorithm For The Approximation Of Level-Set-Based Curve Evolution,” *IEEE Trans. on Image Processing*, Vol. 17, No. 5, Pg 645-656, May, 2008.
 59. I. Stojanovic and W. C. Karl, “Imaging of moving targets with multistatic SAR using an overcomplete dictionary,” *Journal of Selected Topics in Signal Processing*, special issue on MIMO Radar, Vol. 4, No. 1, Pg. 164-176, February 2010.
 60. L. He, B. Orten, S. Do, W. C. Karl, A. Kambadakone, D. Sahani, H. Pien, “A Spatio-Temporal Deconvolution Method to Improve Perfusion CT Quantification,” *IEEE Trans. on Medical Imaging*, Vol. 29, No. 5, Pg. 1182-1191, May 2010.
 61. S. Do, Z. Liang, W. C. Karl, T. Brady, H. Pien, “ A decomposition-based CT reconstruction formulation for reducing blooming artifacts,” *Physics in Medicine and Biology*, Vol. 56, No. 22, Pg 7109, 2011
 62. A. Tuysuzoglu, J. M. Kracht, M. Cetin, R. Cleveland, W.C. Karl, “Sparsity Driven Ultrasound Imaging,” *Journal of Acoustical Society of America*, Vol. 131, No. 2, pg. 1271-1281, 2012.
 63. A. P. Reddington, J. T. Trueb, D. S. Freedman, A. Tuysuzoglu, G. G. Daaboul, C. A. Lopez, W. C. Karl, J. H. Connor, H. Fawcett, M. S. Unlu, ”An Interferometric Reflectance Imaging Sensor for Point of Care Viral Diagnostics,” *IEEE Transactions on Biomedical Engineering*, vol.60, no.12, pp.3276,3283, Dec. 2013 doi: 10.1109/TBME.2013.2272666

64. I. Stojanovic, M. Cetin, W. C. Karl, "Compressed Sensing of Monostatic and Multistatic SAR," *Geoscience and Remote Sensing Letters, IEEE*, vol.10, no.6, pp.1444,1448, Nov. 2013 doi: 10.1109/LGRS.2013.2259794
65. I. Stojanovic, W. C. Karl, L. Novak, "Interrupted SAR persistent surveillance via group sparse reconstruction of multi-pass data," *IEEE Trans. on Aerospace and Electronic Systems, Special Issue on Compressed Sensing for Radar*, Vol. 50, No. 2, pg 987-1003, April, 2014
66. Mujdat Cetin, Ivana Stojanovic, N. Ozben Onhon, Kush R. Varshney, Sadegh Samadi, W. Clem Karl, Alan S. Willsky, "Sparsity-Driven Synthetic Aperture Radar Imaging," *IEEE Signal Processing Magazine Special Issue on Recent Advances in Synthetic Aperture Radar Imaging*, Vol. 31, No. 4, pg. 27-40, July, 2014.
67. S. Do, W. C. Karl, S. Singh, M. Kalra, T. Brady, E. Shin, H. Pien, "High Fidelity System Modeling for High Quality Image Reconstruction in Clinical CT," *PLoS ONE* Vol 9, No. 11, 2014:
68. A. Tuysuzoglu, W. C. Karl, I. Stojanovic, D. A. Castanon, and S. Unlu, "Graph-cut based Discrete-Valued Image Reconstruction," *IEEE Trans. on Image Processing*, Vol. 24, No. 5, pp.1614-1627, May, 2015.
69. T. B. Cilingiroglu, A. Uyar, A. Tuysuzoglu, W. C. Karl, J. Konrad, B. B. Goldberg, and M. S. Unlu, "Dictionary-based image reconstruction for superresolution in integrated circuit imaging," *Optics Express*, Vol. 23, No. 11, June 2015, pp. 15072-15087
70. L. Martin, A. Tuysuzoglu, W. C. Karl, P. Ishwar, "Learning-based object identification and segmentation using dual-energy CT images for security," *IEEE Transactions on Image Processing*, Vol 24, No. 11, Nov, 2015

Conference Papers

1. W. C. Karl, S. Leeb, L. Jones, J. Kirtley, and G. C. Verghese, "Applications of a Class of Nonlinear Filters to Problems in Power Electronics," *Proc. of 21st Annual IEEE Power Electronics Specialists Conference*, San Antonio, TX, pp. 35-42, June 1990.
2. A. B. Dobrzeniecki, W. C. Karl, P. Lipson, and J. D. Pearlman, M.D., "Advances in Quantification, Analysis, and Display of Thallium Myocardial Images," *Proc. of the 18th Annual Conf. on Computers in Cardiology*, Venice, Italy, pp. 497-500, September 23-26, 1991.
3. P. Milanfar, W. C. Karl, S. R. Kulkarni, and A. S. Willsky, "Geometric Aspects of Tomographic Signal Processing," *Proc. 7th IEEE Workshop on Multidimensional Signal Processing*, Lake Placid, NY, pp. 6.5, Sept. 1991.
4. P. Milanfar, W. C. Karl, and A. S. Willsky, "Statistical Approaches to the Tomographic Reconstruction of Finitely Parameterized Geometric Objects," in *Neural and Stochastic Methods in Image and Signal Processing*, S. S. Chen, Editor, *Proc. SPIE 1992 Int'l. Symposium on Optics, Imaging, and Instrumentation* San Diego, CA, Vol. 1766, pp. 166-177, July 20-23, 1992.
5. R. E. Learned, W. C. Karl, and A. S. Willsky, "Wavelet Packet Based Transient Signal Classification," *Proc. IEEE Signal Processing Society Int'l Symposium on Time-Frequency and Time-Scale Analysis*, Victoria, Canada, pp. 109-112, October 4-6, 1992.
6. M. R. Luetzgen, W. C. Karl, and A. S. Willsky, R. R. Tenney, "Multiresolution Statistical Methods in Image Analysis," in *Intelligent Robots and Computer Vision XI: Biological, Neural Net, and 3-D Methods*, *Proc. SPIE*, Boston, MA, Vol. 1826, pp. 2-13, November 18-20, 1992.
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 191. A. Tuysuzoglu, Y. Khoo, W. Clem Karl, "Fast and robust discrete computational imaging," in *Computational Imaging*, C. A. Bouman, K. Sauer, editors, Proc. of Electronic Imaging, San Francisco, CA, January 29-February 2, 2017.
- Ahmet Tuysuzoglu¹, Yuehaw Khoo², and W. Clem Karl³; ¹Siem
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Patents and Disclosures

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Grant Activity

Over \$14M total

1. Title: A Comprehensive and Integrated Approach to Reduced Signature Target Recognition.
Agency: AFOSR – Multidisciplinary University Research Initiative
Role: Co-Principal investigator
Amount: \$7,000,000
Grant Period: 2/1/95-1/31/02
2. Title: Anatomic Morphologic Analysis of MR Brain Images
Agency: NIH via MGH
Role: Principal investigator
Amount: \$219,820
Grant Period: 7/1/95-6/30/98
3. Title: Dynamical Adaptive MRI using Feedback Control and Selective Excitation
Agency: Brigham and Womens Hospital
Role: Principal investigator
Amount: \$19,845
Grant Period: 9/1/95-8/31/96
4. Title: Information Fusion for Pose Determination
Agency: ARO – STTR via Alphatech
Role: Co-Principal investigator
Amount: \$40,589
Grant Period: 10/1/96-7/31/97
5. Title: MURI: Sensor Management and Information Fusion for Detection, Localization, and Classification of Mines
Agency: ARO – Multidisciplinary University Research Initiative via Northeastern
Role: Co-Principal investigator
Amount: \$498,123
Grant Period: 2/1/97-1/31/02
6. Title: Target Classification in MRI using Hypothesis Testing and Selective Excitation
Agency: Brigham and Womens Hospital
Role: Principal investigator
Amount: \$19,845
Grant Period: 9/1/96-8/31/97
7. Title: Multiresolution Information Fusion
Agency: ARO – STTR via Alphatech
Role: Co-Principal investigator
Amount: \$75,959
Grant Period: 9/1/97-8/31/99
8. Title: Acquisition of Computer Facilities to Support an Interdisciplinary Multidata Signal and Image Processing Laboratory
Agency: NSF – Major Research Instrumentation
Role: Co-Principal investigator
Amount: \$265,271
Grant Period: 9/1/98 – 8/30/01
9. Title: Anatomic Morphologic Analysis of MR Brain Images
Agency: NIH – NINDS/Human Brain Project (via MGH)
Role: Principal Investigator
Amount: \$1,600,785 (\$312,962 to BU)
Grant Period: 9/1/98–8/31/02
10. Title: An Engineering Research Center for Subsurface Sensing and Imaging
Agency: NSF (via Northeastern)

- Role: Investigator
Amount: \$12,500,000 (\$678,717 to BU)
Grant Period: 9/1/00–8/31/05
11. Title: Nanometer Resolution Spectral Self-interference Fluorescence Microscopy
Agency: NSF – IDBR
Role: Co-Principal Investigator
Amount: \$497,734
Grant Period: 4/1/02–3/31/04
 12. Title: Nanoscale Imaging of Subcellular Processes
Agency: NIH
Role: Co-Principal Investigator
Amount: \$1,705,715
Grant Period: 09/30/02–08/31/05
 13. Title: Anatomic Morphologic Analysis of MR Brain Images
Agency: NIH – NINDS/Human Brain Project (via MGH)
Role: Principal Investigator
Amount: \$2,530,068 (\$359,809 to BU)
Grant Period: 9/1/02–8/31/06
 14. Title: Adaptive Feedback Algorithms for Sensor Management and Processing
Agency: ARPA (via Alphatech)
Role: Co-Principal Investigator
Amount: \$305,998
Grant Period: 6/1/02–11/31/04
 15. Title: Segmentation and Reconstruction of Scenes with Dynamic Objects
Agency: NSF
Role: Co-Principal Investigator
Amount: \$24,480
Grant Period: 05/01/03–04/30/06
 16. Title: Foundations of Automatic Target Recognition
Agency: AFOSR
Role: Principal Investigator
Amount: \$231,817
Grant Period: 09/01/03–08/31/06
 17. Title: Distributed Methods for Statistical Decision Making in Networked Environments
Agency: NSF
Role: Co-Principal Investigator
Amount: \$372,652
Grant Period: 08/01/04–07/31/07
 18. Title: Foundations of Automatic Target Recognition
Agency: AFOSR
Role: Principal Investigator
Amount: \$247,272
Grant Period: 12/01/06–11/30/09
 19. Title: Integrated Fusion, Performance Prediction, and Sensor Management for Automatic Target Exploitation (MURI)
Agency: DOD/AFOSR via Ohio State
Role: Co-Principal Investigator
Amount: \$5,525,211 (\$500,000 BU portion)
Grant Period: 05/01/06–04/30/11

20. Title: Center of Excellence: ALERT (Awareness and Localization of Explosives-Related Threats)
 Agency: Department of Homeland Security
 Role: Co-Principal Investigator (with Saligrama, Castanon)
 Amount: \$1,000,000 (BU Portion)
 Grant Period: 9/1/07-8/31/11
21. Title: SWARM Program
 Agency: Department of Homeland Security via Raytheon
 Role: Principal Investigator
 Amount: \$130,624
 Grant Period: 4/1/10-12/31/10
22. Title: ISBI 2009
 Agency: National Institutes of Health
 Role: Principal Investigator
 Amount: \$20,000
 Grant Period: 2/9/09-3/31/10
23. Title: A Biomedical Imaging Acceleration Testbed
 Agency: National Science Foundation
 Role: Co-Principal Investigator
 Amount: \$1,970,374 (BU Portion \$257,241)
 Grant Period: 9/1/09-8/31/12
24. Title: MRI: Next-generation imaging spectrometer based on a tunable liquid crystal filter
 Agency: National Science Foundation
 Role: Co-Principal Investigator
 Amount: \$839,232
 Grant Period: 12/31/09-11/31/12
25. Title: ISBI 2012
 Agency: National Science foundation
 Role: Principal Investigator
 Amount: \$15,000
 Grant Period: 1/1/12-12/31/12
26. Title: ISBI 2012
 Agency: National Institutes of Health
 Role: Principal Investigator
 Amount: \$30,000
 Grant Period: 4/1/12-3/31/13
27. Title: CIF: Sensing Aware Decision Making for High-Dimensional Signals
 Agency: NSF
 Role: Co-Principal Investigator
 Amount: \$499,997 Grant Period: 9/1/12-8/31/2016
28. Title: Research and Development of Reconstruction Advances in CT-Based Object Detection Systems Agency:
 Department of Homeland Security via NEU
 Role: Co-Principal Investigator
 Amount: \$125,000 Grant Period: 7/1/12-12/31/2013
29. Title: Center of Excellence: ALERT (Awareness and Localization of Explosives-Related Threats)
 Agency: Department of Homeland Security
 Role: Co-Principal Investigator (with Saligrama, Castanon)
 Amount: \$1,000,000 (BU Portion)
 Grant Period: 9/1/13-8/31/19

30. Title: Development of an Acoustic Marine Life Watch System
 Agency: Department of Defense via SOFAR Acoustics
 Role: Co-Principal Investigator (with Nagem)
 Amount: \$112,453.20
 Grant Period: 03/15/2015-11/15/2015
31. Title: BAA 13-05: Information Theoretic Analysis of Security Data
 Agency: Department of Homeland Security
 Role: Co-Principal Investigator (with Saligrama, Castanon)
 Amount: \$451,283
 Grant Period: 10/1/15-8/31/17

Pending Proposals:

1. Title: Computational interferometric microscopy for biological nanoparticles
 Agency: NIH
 Role: Co-Principal Investigator (with Tian, Unlu)
 Amount: \$443,438
 Grant Period: 9/1/17-8/31/18

Doctoral Theses Supervision

1. P. Milanfar, “Geometric Aspects of Tomographic Signal Processing,” MIT Dept of Elec. Eng. and Comp. Sci., May 1993. Co-advised with Prof. A. Willsky.
2. M. Bhatia, “Multiresolution Methods for Tomographic Reconstruction,” MIT Dept of Nuclear Eng., August 1994. Co-advised with Prof. A. Willsky.
3. R. Stadler, “Early Detection and Monitoring of Atherosclerosis Through Non-Invasive Evaluation of Endothelial Function,” Harvard-MIT Division of Health Sciences and Technology, Medical Engineering and Medical Physics Program, June 1996. Co-advised with Dr. R. Lees.
4. S. Jaggi, “Multiscale Estimation of Object Shape,” MIT Dept of Elec. Eng. and Comp. Sci., Jan. 1997. Co-advised with Prof. A. Willsky.
5. L. Zhao, “Optimization of hyperpolarized noble gas MRI,” BU BME Dept., September, 1999. Co-advised with Dr. L. Panych.
6. F. Kamalabadi, “Space-Based Ionospheric Tomography using Extreme Ultraviolet Emissions,” BU ECE Dept., Aug. 2000. Co-advised with Prof. Chakrabarti.
7. J. Kaufhold, “Efficient Statistical Methods for the Segmentation of MRI Images of the Brain,” Doctoral thesis, BU BME Dept., Sept. 2000.
8. M. Cetin, “A Statistical Tomographic Approach to Synthetic Aperture Radar Signal Processing,” Doctoral thesis, BU ECE Dept., March, 2001.
9. W. Hoge, “An adaptive signal processing approach to dynamic magnetic resonance imaging,” Doctoral thesis, Northeastern University, ECE Dept., May 2001. Co-advised with E. Miller.
10. R. Chan, “Non-Invasive Ultrasound Monitoring of Regional Carotid Wall Structure and Deformation Atherosclerosis,” Doctoral thesis, Harvard-MIT Division of Health Sciences and Technology, Medical Engineering and Medical Physics Program, June, 2001. Co-advised with Dr. R. Lees.
11. R. Weisenseel, “Exploiting Shared Image Structure Fusion in Multi-Modality Data Inversion for Atherosclerotic Plaque Characterization,” Doctoral thesis, BU ECE Dept., January 2004.
12. S. Laurent, BU, ECE Dept. “Design of a High-Definition Imaging (HDI) Analysis Technique Adapted to Challenging Environments”, January, 2005.

13. Y. Shi, "Object-Based Dynamic Imaging with Level-Set Methods," Doctoral thesis, BU ECE Dept., May, 2005.
14. B. Davis, "Analysis of Multi-Channel Microscopy: Spectral Self-Interference, Multi-Detector Confocal, and 4pi Systems," Doctoral thesis, BU, ECE Dept., March, 2006.
15. A. Litvin, "Statistical shape and appearance models for segmentation and classification," Doctoral thesis, BU ECE Dept., May, 2006.
16. J. Pavlovich, "Physics-based subsurface information extraction by parametric inversion," Doctoral thesis, BU, ECE Dept., January, 2007
17. Z. Liang, "Artifact Reduction in Cardiac MDCT," Doctoral thesis, BU, BME Dept., August, 2008.
18. B. Orten, "Development of Advanced CT Perfusion Imaging Algorithms for Functional Assessment of Tumors," Doctoral thesis, BU, ECE Department, July, 2011.
19. S. Ambwani, "Advanced Image Processing in Cardiac PET/CT to Enhance Early Detection of Coronary Artery Diseases," Doctoral thesis, BU, ECE Department, September, 2011
20. I. Stojanovic, "Sparse multistatic radar imaging of stationary and moving scenes," Doctoral thesis, BU, ECE Department, December, 2011
21. L. Eger, "Exploiting Energy Diversity in Multi-energy CT for Detection of Explosives," Doctoral thesis, BU, ECE Department, December 2013.
22. A. Tuysuzoglu, "Robust Inversion and Detection Techniques for Improved Imaging Performance," Doctoral thesis, BU, ECE Department, June 2014.
23. B. Cilingiroglu, "Super-resolution Optical Reconstruction for VLSI Device Fault Determination," Doctoral thesis, BU, ECE Department, August 2014.
24. Z. Sun, "Explosives Detection with Limited Data," Doctoral thesis, BU, ECE Department, September 2016.
25. U. Ghani, Deep Learning in Computational Imaging, Doctoral thesis, BU, ECE Department, expected 2020.

Doctoral Theses Reader

1. M. Luetttgen, "Image Processing with Multiscale Stochastic Models," May 1993. (MIT EECS Dept.)
2. P. Fieguth, "Multiscale Estimation of Space-Time Processes with Applications in Physical Oceanography," May 1995. (MIT EECS Dept.)
3. W. Irving, "Multiscale Stochastic Realization and Model Identification with Applications to Large-Scale Estimation Problems," August 1995. (MIT EECS Dept.)
4. H. Gudbjartsson, "Steady State Free Precession Magnetic Resonance Imaging of Flow and Diffusion," February, 1996. (Harvard-MIT Health Sciences and Technology Prog.)
5. M. Bélanger, "Reliable Detection of Atherosclerotic Lesions using ^{99m}Tc -Labeled Low Density Lipoproteins," expected completion date May 1997. (Harvard-MIT Health Sciences Technology Prog.)
6. I. Bechwati, "Multiobject Tracking with Coupling Constraints," December, 1996.
7. A. Kannan, "Incremental Adaptation of Spectral Trajectory Models for Continuous Speech Recognition," BU ECE, May, 1997.
8. J. Winograd, "Incremental Refinement Structures for Approximate Signal Processing," BU ECE, June, 1997.
9. J. Semeter, "Ground-based Tomography of Atmospheric Optical Emissions," BU ECE, June, 1997
10. G. Bonmassar, "The Exponential Chirp Transform for Log-Polar Sampled Images," BU ECE, September, 1997.
11. R. Iyer, "Using Out-of-Domain Data to Improve Statistical Language Models," BU ECE, December, 1997.
12. L. Maas, "Processing Strategies for Functional Magnetic Resonance Imaging Data Sets," December, 1998. (Harvard-MIT Health Sciences and Technology Prog.)

13. Izhak Shaik, Doctoral Thesis reader, "Syllable-based Acoustic Modeling in Automatic Speech Recognition."
14. Michiel A. U. Bacchiani, Doctoral Thesis reader, "Using Automatically Derived Units in Automatic Speech Recognition," April, 1999.
15. Soontorn Orintara, Doctoral Thesis reader, "Regular Linear Phase Perfect Reconstruction Filter Banks for Image Compression," April, 2000.
16. Lingmin Meng, "A View-Based Hierarchical Statistical Approach To Face Detection," March, 2001, Doctoral Thesis reader.
17. Zhengrong Ying, "Statistical Approaches for Partially Occluded Object Recognition," August, 2001, Doctoral Thesis reader.
18. H. Feng, "Image Reconstruction using Object-Based Regularization and Tomographic Flows" BU, ECE Dept., May, 2002.
19. Nikola Bozinovic, "Advanced Motion Modeling for 3-D Video Coding," BU, ECE Dept. Doctoral Thesis reader. 2006.
20. Mirko Ristivojevic, "Space-time image sequence analysis: object tunnels and occlusion volumes," BU, ECE Dept. Doctoral Thesis reader. 2006.
21. Parminder Kaur, "Statistical Methods for Interpretation of High Resolution Mass Spectra," BU, ECE Dept. Doctoral Thesis reader. December, 2006.
22. Zhihua He, "Image Retrieval Using General Features", BU, ECE Dept. Doctoral Thesis reader. January, 2007.
23. Serdar Ince, "Occlusion-Aware Intermediate View Reconstruction," BU, ECE Dept. Doctoral Thesis reader. December, 2007.
24. Ben Martin, "Intensity Modulated Radiation Therapy Treatment Planning," BU, ECE Dept. Doctoral Thesis reader. April, 2008.
25. George Atia, "Robust Strategies for Cooperative and Cognitive Wireless Communication Systems," BU, ECE Dept. Doctoral Thesis reader. December, 2008.
26. Suchin Aeron, "Efficient Sensing and Reconstruction of Sparse Phenomena: Bounds and Algorithms," BU, ECE Dept. Doctoral Thesis reader. December, 2008.
27. Eladio Rodriguez, "Robust Classification Techniques and Their Application to Optical Spectroscopy in Medical Diagnostics," BU, ECE Dept. Doctoral Thesis reader. April, 2009.
28. Matthew Zettergren, "Model-Based Optical and Radar Remote Sensing of Transport and Composition in the Auroral Ionosphere," BU, ECE Dept. Doctoral Thesis reader. April, 2009.
29. Erhan Erimis, "Geometry Independence in Information Processing for Heterogeneous Camera Networks," BU, ECE Dept. Doctoral Thesis reader. January, 2010.
30. Paul Debitetto, "Robust Hierarchical Image-augmented Navigation in Urban Terrain with 3D Landmarks," BU, ECE Dept. Doctoral Thesis reader. August, 2011.
31. Ke Chen, "Reconstruction Algorithms for Multispectral Diffraction Imaging," BU, ECE Dept. Doctoral Thesis reader. June, 2014.
32. Aydan Uyar, "Modeling and Model-aware Signal Processing Methods for Enhancement of Optical Systems," BU, ECE Dept. Doctoral Thesis reader. June, 2016.
33. Kadri Aditya Mohan, "Modular Forward Models and Algorithms for Regularized Reconstruction of Time-Space Scalar and Vector Fields," Purdue, ECE Dept. Doctoral Thesis reader. December 2016.
34. Pinar Ozdemir, "Early Abductive Reasoning for Signal Processing," BU, ECE Dept. Doctoral Thesis reader. May, 2017.
35. Michael Hirsch, "Reconstruction of Fine Scale Dynamics in the Aurora," BU, ECE Dept. Doctoral Thesis reader. May, 2017.

36. Amanda Gaudreau, "Image Registration and Classification for Evaluating the Neuropathology of Traumatic Brain Injury," BU, ECE Dept. Doctoral Thesis reader. May, 2017.
37. Parisa Babaheidarian, "Artifact reduction and material recognition in limited angle computed tomography," BU, ECE Dept. Doctoral Thesis reader. December 2017.
38. Alex Matlock, "SP-IRIS," BU, ECE Dept. Doctoral Thesis reader. May, 2017.

Masters Theses Supervision

1. S. Jaggi, "Estimation of Dynamically Evolving Ellipsoids with Applications to Cardiac Imaging," MIT EECS Dept., September 1992. Co-advised with Prof. A. Willsky.
2. L. Belcastro, "Tomographic Reconstruction of Polygons from Knot Locations and Chord Length Measurements," MIT EECS Dept., September 1993. Co-advised with Prof. A. Willsky.
3. I. Polyak, "Robust Spline Approximations Using Wavelet Extrema," MIT EECS Dept., December 1994. Co-advised with Prof. A. Willsky.
4. H. Wexler, "The Effects of Microscanning on Infrared Image Aliasing and Spatial Resolution," MIT EECS Dept., June 1995.
5. T. Ideker, "Offset Correction Techniques for Imaging Sensors Using Random Dither Information," MIT EECS Dept., June 1995.
6. R. Chan, "Quantification of Coronary Artery Disease via Coronary Angiography," MIT EECS Dept., January 1996. Co-advised with Dr. B. Lees.
7. A. Frakt, "Multiresolution Approaches to the Detection and Localization of Anomalies in Tomographic Data," MIT EECS Dept., August 1996. co-advised with Prof. A. Willsky.
8. M. Saeed, "Maximum Likelihood Parameter Estimation of Mixture Models and its Application to Image Segmentation and Restoration," MIT EECS Dept., June 1997.
9. M. Bosse, "A Vision Augmented Navigation System for an Autonomous Helicopter," BU ECE Dept., September, 1997.
10. M. Emerson, "Statistical Feature Extraction for Early Diagnosis of Colorectal Cancer," MIT EECS Dept., September 1998.
11. N. Aggarwal, "A Statistical-based Approach for Enhanced Line Detection in Imagery," September 1999.
12. I. Stojanovic, "Non-conventional Image Formation for SAR", BU, ECE Department, May, 2007.
13. K. Pegors, "Sparse Methods for ISAR Image Reconstruction of Ships," BU, ECE Department, May, 2010.
14. A. Tuysuzoglu, "Superresolution in Ultrasound Imaging" BU, ECE Department, May, 2010.
15. L. Eger, "Recursive dual-energy tomography," BU, ECE Department, May 2010.
16. Y. Zhang, "3D ultrasound image segmentation and feature extraction for intracranial pressure detection," BU, ECE Department, December, 2011.

Masters Thesis Reader

1. R. Bates, "Reducing the Effects of Telephone Channel Distortion and Additive Noise on Continuous Speech Recognition," August 1996.
2. M. Sousa, "Application of Wavelet-Based Denoising/Deblurring Algorithms to MRI's," June 1996.
3. M. Schneider, "Multiscale Methods for the Segmentation of Images," (MIT EECS) June, 1996.
4. J. Isidoro, (BU Computer Science), August, 1999.
5. S. Sethi, (BU Computer Science), June, 2000.

6. T. Debus, (BU AME), January, 2000.
7. Y. Glina, (NEU EE), May, 2000.
8. M. Siddiqui, December, 2001.
9. S. Chang, "Mine Detection based on Ground Penetrating Radar using Feature Extraction," November, 2002.
10. D. Sherrill, "Automatic monitoring of functional motor activities," December, 2002.
11. P. Laplume, "SPIDR Signal Theory," June, 2003.
12. Erhan Ermis, May 2005.
13. Brandon Itkowitz, "Teleoperation of Concentric Tube Manipulators," December, 2007.

University Service, Committees, etc

- Departmental
 - ECE Department Chair (2015-Present)
 - ECE Faculty Search Chair (2010-2015)
 - ECE Planning Committee (1998-2004, 2010-2015)
 - ECE Representative on Mathematics Curriculum Reform Committee (2013)
 - ECE Chair Search Committee (2007-2009, 2010-2012)
 - ECE Appointment, Promotion and Tenure Committee (1996-1997,2003-2010)
 - ECE Search Committee (2004-2010)
 - ISS Area Coordinator (1998-2006, 2010-2015)
 - EK100 Undergraduate Advisor (1996-2000,2003-2007)
 - ECE Information Technology Committee (2000-2003)
 - ECE Teaching Award Committee (2001-2002)
 - ECE Computer Committee (1997-1999)
 - ECE Curriculum 2000 Committee (1998-1999)
 - ECE Undergraduate Committee (1995-1998)
- College of Engineering
 - BU Cross College Challenge Pilot Satellite Committee (2016-Present)
 - COE BU-BWH Steering Committee (2013-2016)
 - COE 50th Anniversary Committee (2013-2014)
 - Chair, COE Appointment, Promotion and Tenure Committee (2006-2007)
 - COE Appointment, Promotion and Tenure Committee (2004-2005, 2011-2012)
 - Area Representative, College of Engineering Executive Committee Retreat (2010)
 - Departmental Faculty Career Liaison (2009)
 - Deans Research and Advisory Committee (2008-2009)
 - College of Engineering Math Qualification Committee (2000)