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Current Position:

Assistant Professor of Electrical and Computer Engineering, Illinois Institute of Technology

Research Interest:

Biomedical signal and image processing with statistical methods and machine learning techniques

Education:

- Postdoc, Biomedical Engineering, University of California at Davis, Davis, CA, June 2006
- PhD, Electrical and Computer Engineering, University of Illinois at Chicago, Chicago, IL, 2004
- MS, Electrical and Electronics Engineering, Bilkent University, Ankara, Turkey, July 2000
- BSc, Electrical and Electronics Engineering, Bogazici University, Istanbul, Turkey, June 1998

Publications:

Journal Papers:

[16] S. Ozer, D. Leager, M. Haider, Y. Yang, M. Wernick, **I. S. Yetik** "Supervised and Unsupervised Methods for Prostate Cancer Localization with Multispectral MRI", submitted.

[15] Y. Artan, D. Leager, M. Haider, Y. Yang, M. N. Wernick, **I. S. Yetik** "Prostate Cancer Localization with Multispectral MRI Using Cost-Sensitive Support Vector Machines and Conditional Random Fields", submitted.

[14] M. Gadiya, **I. S. Yetik**, "Direct Reconstruction of Parametric images with Dynamic PET based on ordered subsets", submitted*.*

[13] Y. Cheng, **I. S. Yetik**, "Propagation of blood function error to the final kinetic parameter estimates with dynamic PET", submitted.

[12] I. Yildirim, R. Ansari, J. Wanek, **I. S. Yetik**, M. Shahidi, "Retinal Oxygen Tension Estimation in Fluorescence Lifetime Images Using Regularized Least Squares", to appear in *IEEE Transactions on Biomedical Engineering.*

[11] X. Liu, D. Leager, M. Haider, M. Wernick, Y. Yang, **I. S, Yetik**, "Prostate Cancer Segmentation with Simultaneous Estimation of Markov Random Field Parameters and Classes", to appear in *IEEE Transactions on Medical Imaging.*

[10] N. Cao, **I. S. Yetik**, A. Nehorai, C. H. Muravchik, J. Haueisen, "Parametric Surface-source Modeling and Estimation with Electroencephalography," *IEEE Transactions Biomedical Engineering,* vol. 53, pp. 2414-2424, 2006.

[9] N. Cao, **I. S. Yetik**, A. Nehorai, C. H. Muravchik, J. Haueisen, "Estimating Parametric Line-Source Models with Electroencephalography," *IEEE Transactions on Biomedical Engineering,* vol. 53, pp. 2156-2165, 2006.

[8] **I. S. Yetik** and A. Nehorai, "Performance bounds for image registration," *IEEE Trans. Signal Processing*, vol. 54, pp. 1737-1749, 2006*.*

[7] **I. S**. **Yetik,** A. Nehorai, C. H. Muravchik, J. Hauesien, "Surface-source modeling and estimation using biomagnetic measurements," *IEEE Trans. Biomedical Engineering,* vol. 53, pp. 1872-1882, 2006.

[6] **I. S. Yetik**, A. Nehorai, J. D. Lewine, C. H. Muravchik, "Distinguishing between moving and stationary sources using EEG/MEG measurements with an application to epilepsy," *IEEE Transactions. Biomedical Engineering,* Vol. 52, pp. 471-479, 2005.

[5] **I. S. Yetik**, A. Nehorai, C. H. Muravchik, J. Haueisen, "Line-source modeling and estimation with magnetoencephalography," *IEEE Trans. Biomedical Engineering,* Vol. 51, pp. 839-851, 2005.

[4] **I. S. Yetik** and A. Nehorai, "Beamforming using the Fractional Fourier Transform," *IEEE Trans. Signal Processing*, Vol. 51, pp. 1663-1668, June 2003.

[3] **I. S. Yetik,** M. A. Kutay, H. M. Ozaktas, "Optimization of orders in multi-channel fractional fourier domain filtering circuits and its application to the synthesis of mutual intensity distributions," *Applied Optics,* vol. 41, pp. 4078-4084, 2002.

[2] **I. S. Yetik,** M. A. Kutay, H. M. Ozaktas, "Image representation and compression with the fractional Fourier transform," *Optics Communications,* vol. 197, pp. 275-278, 2001.

[1] **I. S. Yetik**, H. M. Ozaktas, B. Barshan, L. Onural, "Perspective projections in the space-frequency plane and fractional Fourier transforms," *Journal of Optical Society of America A*, vol. 12, pp. 2382-2390, Dec. 2000.

Conference Papers:

[20] I. Yildirim, R. Ansari, J. Wanek, I. S. Yetik, M. Shahidi, "Denoising Algorithms and Retinal Oxygen Tension Estimation with EM", to appear, *Proceedings of IEEE International Symposium on Biomedical Imaging,* 2009.

[19] S. Ozer, I. S. Yetik, D. Leager, M. Haider, Y. Yang, M. Wernick, "Supervised Prostate Cancer Localization with Multispectral MRI", to appear, *Proceedings of IEEE International Symposium on Biomedical Imaging,* 2009.

[18] Y. Artan, I. S. Yetik, D. Leager, M. Haider, Y. Yang, M. N. Wernick, "Prostate Cancer Localization with Multispectral MRI Using Conditional Random Fields", *Proceedings of IEEE International Symposium on Biomedical Imaging,* 2009.

[17] X. Liu, **I. S. Yetik**, M. N. Wernick, "Simultaneous estimation of the Markov Random Field parameters and the classes for image segmentation", *Proceedings of IEEE International Conference on Image Processing,* pp. 3048-3051, 2008.

[16] M. Gadiya, **I. S. Yetik**, "Direct reconstruction of kinetic parameter images with ordered subsets, *Proceedings of Medical Imaging Conference,* 2008.

[15] I. Yildirim, R. Ansari, J. Wanek, **I. S. Yetik**, M. Shahidi, "Retinal oxygen tension estimation in fluorescence lifetime images using regularized least squares", *Proceedings of IEEE Electro/Information Technology,* pp. 465-469, 2008.

[14] F. Pektas **I. S. Yetik,** "'Covariance expressions for implicit estimators of kinetic parameters with dynamic PET", *Proceedings of IEEE Electro/Information Technology,* pp. 316-320, 2008.

[13] Y. Cheng, **I. S. Yetik**, "'Effect of the blood function error on the estimated kinetic parameters with dynamic PET", *Proceedings of IEEE International Symposium on Biomedical Imaging,* pp. 1585-1588, 2008.

[12] L. Chaillou, **I. S. Yetik**, M. N. Wernick, "New methods for fMRI data processing based on LLE", *Proceedings of Computational Imaging Conference*, pp.1322-1327, 2008.

[11] I. S. Yetik, J. Qi, "Direct estimation of kinetic parameters from the sinogram with an unknown blood function," *Proceedings of IEEE International Symposium on Biomedical Imaging,* pp. 295-298, 2006.

[10] I. S. Yetik, J. Qi, "A fast method for kinetic parameter estimation," *Proceedings of IEEE Nuclear Science Symposium,* pp. 3213-3216, 2006.

[9] N. Cao, **I. S. Yetik**, A. Nehorai, C. H. Muravchik, J. Haueisen, "Line-source Modeling and Estimation with Electroencephalography," *Proceedings of BEM and NFSI*, 2005.

[8] I. S. Yetik and A. Nehorai, "Performance bounds on image registration," *Proceedings of IEEE International Conference on Acoustics, Speech and Signal Processing,* vol. II, pp. 117-120, 2005.

[7] I. S. Yetik, A. Nehorai, C. H. Muravchik, J. Hauesien, "Line-source modeling and estimation with magnetoencephalography," *Proceedings of the 2004 IEEE International Symposium on Biomedical Imaging,* pp.1339-1342, 2004.

[6] I. S. Yetik, A. Nehorai, C. H. Muravchik, J. Hauesien, "Line and surface source estimation with magnetoencephalography," *Proceedings of the 14th Biomag,,* pp. 603-604, 2004.

[5] I. S. Yetik, H. M. Ozaktas, M. A. Kutay, "Fractional Fourier Transform and its Applications," *Proceedings of DETC ASME*, CD-ROM, 2003.

[4] I. S. Yetik, M. A. Kutay, and H. M. Ozaktas, "Kesirli Fourier dönüşümü ile imge gösterimi ve sıkıştırılması, in Turkish (Image representation and compression with the fractional Fourier transform)," *Sinyal İşleme ve Uygulamaları,* pp. 37-41, 2001.

[3] I. S. Yetik, H. M. Ozaktas, B. Barshan, and L. Onural, "Perspektif dönüşümün zaman-sıklık düzleminde incelenmesi, in Turkish (Perspective projections in the space-frequency plane.) " *Sinyal İşleme ve Uygulamaları*, pp. 629-633, 2000.

[2] **I. S. Yetik,** H. M. Ozaktas, B. Barshan, and L. Onural, "Perspective projections in the space-frequency plane and fractional Fourier transforms," *Proceedings of the first IEEE Balkan Conference on Signal Processing, Communications and Circuits, and Systems,* 2000.

[1] **I. S. Yetik,** M. A. Kutay, H. Ozaktas, and H. M. Ozaktas, "Continuous and Discrete Fractional Fourier Domain Decompositions," *Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing,* pp. I:93-96, 2000.

Grants:

Duration	Agency	Title	Investigators
11/2006-11/2007	Pritzker Institute of Biomedical Sciences	A New Framework for Analysis of Functional Imaging and Behavioral Test Data	I.S. Yetik (PI), M. N. Wernick, S. Strother (U ofToronto)
1/2009-1/2010	IIT ERIF	Registration of histology to *invivo* multispectral MR images for prostate cancer localization	I. S. Yetik

Invited Seminars:

- "Automated Prostate Cancer Localization with Multispectral MRI*", Department of Electrical and Systems Engineering, Washington University at St. Louis,* February 2 2009.

Courses Taught :

1. ECE 569, Digital Signal Processing II, Fall 2007, 18

2. ECE 565, Computer Vision and Image Processing, Spring 2007, 24

3. ECE 565, Computer Vision and Image Processing, Spring 2008, 38

4. ECE 437, Digital Signal Processing I, Fall 2008, 77

5. ECE 436, Digital Signal Processing I with lab, Fall 2008, 14

6. ECE 507, Imaging Theory and Applications, Spring 2009, 30

New Courses Developed:

- Developed a new course ECE 507, titled "Imaging Theory and Applications". The description of ECE 507 is:

  "Methods and techniques of imaging. Imaging as spatial representation of real-world properties. Image formation methods including optical (photography), tomography, image formation with arrays of sensors, interferometry, and surface imaging. Technologies of image acquisition including digital cameras, radar/sonar and medical imaging techniques such as magnetic resonance imaging, computed tomography, positron emission tomography, optical imaging, electroencephalography, and magnetoencephalography. Throughout the semester, the course will

also focus on the reconstruction of images based on the raw data obtained from various imaging techniques that are listed."

Student Supervision:

MS degrees granted:

1. L. Chaillou, "New Methods for fMRI data processing based on LLE", August 2007.

2. C. Rollet, "Preliminary Results on True Multimodal Imaging", August 2007.

3. M. Gadiya, "Direct Kinetic Parametric Imaging with Dynamic PET based on Ordered Subsets", March 2008.

4. F. Pektas, "Statistical Analysis of Kinetic Parameter Estimators with Dynamic PET", April 2008.

5. Y. Cheng, "Propogation of the Blood Function Errors to the Estimates of Kinetic Parameters with Dynamic PET", July 2008.

6. A. Arakaza, "Model Selection in Dynamic PET", August 2008.

7. K. Triandafilou, "Image Fusion for Prostate Cancer Localization With LLE", December 2008.

Current Student Supervision:

1. X. Liu, PhD, since Spring 2007
2. S. Ozer, PhD, since Fall 2007
3. Y. Artan, PhD, since Spring 2008.
4. L. Lukai, MS expected in May 2009.
5. A. Nayak, expected in August 2009.
6. A. Trithahalli, expected in December 2009.
7. M. Zang, MS expected in May 2010.

Professional Membership:

- Senior Member, IEEE, since April 2009.

Experience:

- Assistant Professor, August 2006- present, Illinois Institute of Technology, Chicago, IL.
- Post-doctorate Researcher, June 2005-June 2006, University of California at Davis, Davis, CA.
- Post-doctorate Researcher, July 2004-June 2005, University of Illinois at Chicago, Chicago, IL.
- Research Assistant, August 2000- July 2004, University of Illinois at Chicago, Chicago, IL.
- Research/Teaching Assistant, August 1998-July 2000, Bilkent University, Ankara, Turkey.
- Trainee, June 1997-September 1997, Turk Telekom, Istanbul, Turkey.