TOSHIRO KUBOTA
Mathematical Sciences
Susquehanna University
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EMPLOYMENT

Susquehanna University
- Associate Professor at the Department of Mathematical Sciences 2010-Present
- Assistant Professor at the Department of Mathematical Sciences 2006-2010

Siemens Medical Solutions, Inc. – Computer Aided Diagnosis and Therapy Group
- Staff Scientist 2004-2006
- Consultant 2006-present

eFusion LLC
- Chief Scientist 2004

University of South Carolina, Columbia, SC
- Assistant Professor at the Department of Computer Science and Engineering 2000-2004
- Research Assistant Professor at the Department of Computer Science 1997-2000
- Lecturer/Research Associate at the Department of Computer Science 1996-1997

Georgia Institute of Technology, Atlanta, Ga
- Research Assistant at Computer Engineering Research Lab 1989-1995

EDUCATION

Georgia Institute of Technology, Atlanta, GA
- Ph.D in Electrical and Computer Engineering 1995
- MS in Electrical Engineering 1989

University of Maryland, College Park, MD
- Exchange Student from Keio Gijuku University (one student per year) 1986 –1887

Keio Gijuku University, Yokohama Japan
- BS in Instrumentational Engineering 1988

TEACHING

(Following courses are taught at the Susquehanna University)
- MATH 108: Introduction To Statistics
- MATH 111: Calculus I
- MATH 112: Calculus II
- MATH 501: Bayesian Networks
- CSCI 181: Principles of Computer Science
- CSCI 281: Data Structures
- CSCI 282: Computer Organization
- CSCI 381: Algorithms
- CSCI 460: Windows Programming
- CSCI 471: Software Engineering – Methodology
- CSCI 472: Software Engineering – Practicum
- CSCI 483: Compiler Theory

(Following courses are taught at the University of South Carolina)
- CSCE212: Computer Organization and Architecture.
- CSCE565: Computer Graphics.
- CSCE763: Digital Image Processing.
- CSCE784: Neural Information Processing.
- CSCE867: Computer Vision.

- CSCI213: Computer Organization.
- CSCI240: Software Design and Development.
- CSCI577: Scientific Visualization Tools.
- CSCI886: Neural Networks.

UNIVERSITY SERVICES

- Mentor for a new faculty member 2009
- Ad-hoc committee for evaluating course management systems. Summer 2008
- Ad-hoc committee for analytical core requirement Summer 2007

STUDENT RESEARCH

- Hiring of Mr. Anurodh Joshi as a research assistant and directing a medical imaging project. 2006-8
  The research resulted in an abstract presented by Mr. Joshi at National Conferences on Undergraduate Research (NCUR) in April 2008 and a full-length paper published in the proceeding of the NCUR.
- Hiring of Mr. Nabin Mulepati for the Summer Research Partnership program. Summer 2008
  An abstract reporting the research results will be submitted to NCUR 2009.
- Advising Mr. Anurodh Joshi for his independent research as a part of the Departmental Honors Program. Fall 2008
- Advising Mr. Eric Pederson for his independent research as a part of the Departmental Honors Program. Fall 2008

UNIVERSITY RECRUITING AND OTHER SERVICES

- Science Action Day lecture 2008, 2009
- Science Lunch Presentation Fall 2008
- Strategic Planning review workshop Summer 2008
- High-school Junior Open House Spring 2008
- Spring Open House Spring 2008
- Fall Open House Fall 2007
- Core Curriculum Diversity requirement meeting September 18th, 2007
- Breakfast session with the Board of Trustee for discussing the diversity issue Feb. 19th, 2007
- High-school Junior Open House Spring 2007
- Spring Open House Spring 2007
- Fall Open House Fall 2006
- Core Curriculum review workshop Summer 2006

PROFESSIONAL SERVICES

- Program committee member for the 2010 IEEE International Conference on System Man and Cybernetics.
- Program committee member for the 2008 IEEE International Conference on System Man and Cybernetics.
- Program committee member for the 2007 IEEE International Conference on System Man and Cybernetics.
- Session chair for the Soft Computing session at the 2007 IEEE International Conference on System Man and Cybernetics.
- Session chairs for ACM SECon 2002.
- Reviewers for IEEE Trans. Image Processing, IEEE Trans. Medical Imaging, IEEE Transactions on Aero Space Engineering, International Journal of Computer Vision, Visual Communication and Image Representation, Image and Vision Computing, Machine Vision and Applications, IEEE Signal Processing Letters, Optical Engineering, Real-time Imaging, EURASIP, Pattern Recognition Letters, Medical Engineering, Physics, etc.

FUNDED PROJECTS

- "Fixation-Driven Contour Integration of Natural Images for Early Visual Processing," NSF, $170,619, 8/1/2011-7/31/2014.
- "Performance Study of Liver Tumor Segmentation Algorithms", Susquehanna University Summer Research Partnership Program, 2008.
- "Validation of a spatial-constraint optimization model for oceanic hyperspectral remote-sensing inversion in case-2 waters." NASA-Texas Space Grant New Investigators Program. (co-PI), $22,708, 9/1/2008-8/31/2010. (I am listed as a co-PI as the proposed research is tied closely to collaborative works PI conducted with me. There is no budget for my involvement, as the grant is sponsored by the Texas Space Grant Consortium with 1:1 match from the home institute – Taxas A&M.)
- "Shape Exploration for Medical Applications - From Representation, Correspondence, Deformation to Image Segmentation," (co-PI), NSF-ITR, $355,904, 9/1/03-8/31/06.
- NSF-REU Supplements. 9/1/03-8/31/06.
- "A Biologically Motivated Vision System: Multi-disciplinary Study," Medicine and Engineering Research Development Fund, (PI), $20,000, 3/1/03-2/29/04.
- "Biological Information Technology for Visual Sensor Processing," USC Office of Research, $50,000, (PI), 11/1/01 – 6/30/02.
- "An automated Fault Detection and Classification System for Silicon Carbide Wafers – Image processing and Pattern Recognition Approaches," CMAT Grant, (PI), $12,321, 1/1/2002-6/30/2002.
- "Wavelet based algorithms for automated target detection and recognition," (Senior researcher – I took over the project after the PI left the university in 1999), Office of Naval Research. $510,000, 6/1/97-5/30/2001.

INVENTION

- System and Method for Robust Segmentation of Pulmonary Nodules of Various Densities. A provisional patent application submitted by Siemens Medical Solutions, Oct. 2008.
- Pulmonary nodule segmentation with free-trace region growth and partition. A provisional patent application submitted by Siemens Medical Solutions, Jan. 2008.
- A segmentation algorithm with reaction-diffusion and distance transform for automated estimate of pulmonary nodule diameter. Filed for US Patent on Jan. 9th, 2008.
- System and Method for Computer Aided Detection via Asymmetric Cascade of Sparse Linear Classifiers. File No. 2005P20810US01, with J. Bi, S. Periaswamy, G. Fung, M. Salganicoff, and B. Rao.
- System and Method for Whole Body Landmark Detection, Segmentation and Change Quantification in Digital Images, No. 11/542,477 with X. Huang, Z. X. Zhou, A. Jerebko, A. Krishnan, H. Guan, and V. Potesil.
- Estimation of Solitary Pulmonary Nodule Diameters with Reaction-Diffusion Segmentation 2005E06159-US.
- Estimation of Solitary Pulmonary Nodule Diameters with Hybrid Segmentation, 2005E06163-US with K. Okada .
- Nondestructive defect delineation in SiC wafer using optical stress technique. Univ. of South Carolina Research Foundations Invention Disclosure Category 2 (No. 367), with T. Sudarshan, X. Ma, M. Parker and P. Talekar.
- Method and system for generating and implementing orientational filters for real-time computer vision applications, US patent #6,009,447, 12/28/99 with C. O. Alford.

SLECTED PUBLICATIONS

- ***Journals Papers:***

[1] M. K. Takahashi, L. M. Horner, T. Kubota, N. A. Keller, and W. G. Abrahamson "Extensive clonal spread and longevity of saw palmetto (Serenoa repens) provide insight into management plans," *Molecular Ecology*, to appear.
[2] T. Kubota, A. Jerebko, M. Dewan, M. Salganicoff, A. Krishnan. "Segmentation of pulmonary nodules of various densities with morphological approaches and convexity models," *Medical Image Analysis*, 15:133-154, 2011.
[3] A. Filippi and T. Kubota, "Conditioning of reflectance signals by linear diffusion for improving narrow-band ratio-based remote-sensing bottom depth retrieval in shallow coastal waters," *Journal of Applied Remote Sensing*, 3, 033539, doi:10.1117/1.3211116, August 2009.
[4] T. Kubota, "Designs of second-order associated memory networks with McCulloch-Pitts neurons: competition and voting," *Journal of Computers*, 4(10), 962-974, 2009.
[5] T. Kubota, "A Shape Representation with Elastic Quadratic Polynomials - Preservation of High Curvature Points under Noisy Conditions," *International Journal of Computer Vision*, 82(2), 133-155, 2009.
[6] A. Filippi and T. Kubota, "Introduction of spatial smoothness constraints via linear diffusion for optimization-based hyperspectral coastal ocean remote-sensing inversion," *Journal of Geophysical Research – Oceans*, 113, C03013, doi:10.1029/2007JC004441, March 2008.
[7] S. Wang, T. Kubota, J. Siskind, J. Wang. "Salient closed boundary extraction with ratio contour," *IEEE Pattern Analysis and Machine Intelligence*, 24(4), 546-561, 2005.
[8] T. Kubota, P. Talekar, T. Sudarshan, X. Ma and M. Parkar, "A non-destructive automated defect detection system for silicon carbide wafers," *Machine Vision and Applications*, 16(3), 170-176, 2005.
[9] T. Kubota, "Massively parallel networks for edge localization and contour integration - adaptable relaxation approach," *Neural Networks*, 17(3), 411-425, 2004.
[10] T. Kubota and T. Huntsberger. "Adaptive pattern recognition system for scene segmentation," *Optical Engineering*, 37(3), pp 829-835, 1998.
[11] F. Espinal, T. Huntsberger, B. Jewerth and T. Kubota. "Wavelet fractal signature for texture segmentation," *Optical Engineering*, 37(1): 166-174, 1998.
[12] T. Kubota, T. Huntsberger and C. O. Alford. "Vision system with real-time feature extractor and relaxation network," *Int'l. J. of Pattern Recognition and AI*, 12(3): 335-354, 1997.
[13] T. Kubota and C. O. Alford. "Computation of orientational filters for real-time computer vision problems III: steerable system and VLSI architecture," *Real-time Imaging Journal*, 3(1):37-58, 1997.
[14] T. Kubota and C. O. Alford. "Computation of orientational filters for real-time computer vision problems II: Multi-resolution image decomposition," *Real-time Imaging Journal*, 2(2):91-116, 1996.
[15] T. Kubota and C. O. Alford. "Computation of orientational filters for real-time computer vision problems I: Implementation and methodology," *Real-time Imaging Journal*, 1(4):261-281, 1995.

- ***Book Chapter:***

[1] T. Kubota, A. Jerebko, M. Dewan, M. Salganicoff, A. Krishnan. "Density and attachment agnostic CT pulmonary nodule segmentation with competition-diffusion and new morphological operators," in *Multi Modality State-of-the-Art Medical Image Segmentation and Registration Methodologies*, (eds: A. El-Baz, R. Acharya, and M. Mirmehdi), Springer, 2011.

- ***Open Journal Papers:***

[1] T. Kubota, "Efficient Automated Detection and Segmentation of Medium and Large Liver Tumors: CAD Approach." *Insight Journal*, Special issue on 3D Segmentation in the Clinic: A Grand Challenge II. (A shorter version appeared in the Proceedings of 2008 MICCAI Workshop on 3D Segmentation in the Clinic: A Grand Challenge II.)
[2] T. Kubota, "Computational models for self-organization of retinal neurons in Euclidean space," *Journal of Vision*, 8(17), 65, 2008. (An abstract from the OSA Fall Vision Conference.)

- ***Conference/Workshop Papers (Peer reviewed):***

[1] T. Kubota, "Fixation Driven Contour Completion with Angular Ordering." 7th IEEE Computer Society Workshop on Perceptual Organization in Computer Vision, San Francisco, 2010.

[2] T. Kubota, “Efficient Automated Detection and Segmentation of Medium and Large Liver Tumors: CAD Approach.” 3D Segmentation in the Clinic: A Grand Challenge II, NYC, NY. Sep. 6th 2008.
[3] T. Kubota, A. Jerebko, M. Salganicoff, A. Krishnan, M. Dewan. “General purpose segmentation of a pulmonary nodule: core detection, region growing, and region partition,” The First International Workshop on Pulmonary Image Analysis, NYC, NY. Sep. 6th 2008.
[4] T. Kubota, “Second Order Associative Memory Models with Threshold Logics - Eigen Mode Selections,” IEEE Int. Conf. Systems Man and Cybernetics, 2007
[5] T. Kubota, “A Higher Order Associative Memory with McCullouch-Pitts neurons and Plastic Synapses,” International Joint Conference on Neural Networks, Orlando FL, Aug. 12-17, 2007.
[6] T. Kubota, A. Jerebko, M. Salganicoff, A. Krishnan. “A segmentation algorithm with competition-diffusion and distance transform for automated estimate of pulmonary nodule diameter,” Computer Assisted Radiology and Surgery, Berlin, Germany, June 27-30, 2007.
[7] J. Bi, S. Periaswamy, K. Okada, T. Kubota, G. Fung, M. Salganicoff, B. Rao, “Computer Aided Detection via Asymmetric Cascade of Sparse Hyperplane Classifiers,” The Twelfth Annual SIGKDD International Conference on Knowledge Discovery and Data Mining, Philadelphia, August 20 - 23, 2006.
[8] G. Haiying, T. Kubota, X. Huang, X. S. Zouh, M. Turk, “Automatic Hot Spot Detection And Segmentation In Whole Body FDG-PET Images,” The International Conference on Image Processing , Atlanta, GA, Oct. 8-11, 2006.
[9] T. Kubota and K. Okada, “Estimating Diameters of Pulmonary Nodules with Competition-Diffusion and Robust Ellipsoid Fit,” Computer Vision for Biomedical Image Applications Workshop, Beijing, China, 324-334, 2005.
[10] S. Wang, J. Wang, T. Kubota. “From Fragments to Salient Closed Boundaries: An In-Depth Study,” IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Washington, DC, 2004.
[11] S. Wang, T. Kubota, T. Richardson. “Shape Correspondence through Landmark Sliding,” IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Washington, DC, 2004.
[12] S. Wang, T. Kubota, J. M. Siskind, “Salient boundary detection using ratio-contour,” Neural Information Processings, 2004.
[13] T. Kubota, “Contextual and Non-Combinatorial Approach to Feature Extraction,” Fourth International Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition, Lisbon, Portugal, July, 2003.
[14] X. Ma, M. Parker, Y. Ma, T. Kubota, and TS. Sudarshan, “Non-destructive SiC Wafer Evaluation Based on an Optical Stress Technique,” European Conference on Silicon Carbide and Related Materials, Linköping, Sweden, September 2002.
[15] T. Kubota, P. Talekar, T. Sudarshan, X. Ma, M. Parkar, and Y. Ma, “An Automated Defect Detection System for Silicon Carbide Wafers,” IEEE Southeast Con, Columbia SC, pages 42-47, April, 2002.
[16] R. Gruen and T. Kubota, “A Neural Network Approach to Performance Analysis of Networked Computer Systems,” IEEE Southeast Con, Columbia SC, pages 349-354, April, 2002.
[17] T. Kubota, T. Huntsberger and J. Martin, “Edge Based Probabilistic Relaxation for Sub-Pixel Contour Extraction,” Third International Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition, Sophia Antipolis, France, September, 2001.
[18] T. Kubota and F. Espinal, “Reaction-diffusion systems for hypothesis propagation,” International Conference on Pattern Recognition, Vol III, pages 547-550, Barcelona, Spain, September, 2000.
[19] J. Martin, T. Kubota, and L. Timothy Long, “Imaging Near-Surface Buried Structure with High-Resolution Surface-Wave Group-Velocity Tomography,” International Conference on Image Processing, Vancouver Canada, September, 2000.
[20] T. Kubota, “Edge estimation and directional diffusion for image restoration,” International Conference on Computer Vision, Pattern Recognition and Image Processing, Vol II, Pages 83-86, Atlantic City NJ, February, 2000.
[21] T. Kubota, “Adaptive pixel-based data fusion for boundary detection,” In Second International Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition, Lecture Notes in Computer Science, York, England, July, 1999.
[22] T. Kubota, F. Espinal, and T. Huntsberger, “Efficient parallelization of relaxation algorithms for computer vision,” 9th SIAM Conference on Parallel Processing for Scientific Computing, San Antonio TX, February, 1999.

[23] T. Huntsberger, T. Kubota and J. Rose, “Integrated vision/control system for autonomous planetary rovers,” The International Association for Pattern Recognition Workshop on Machine Vision Applications, Pages 34-37, Chiba Japan, November, 1998.
[24] K. Debure and T. Kubota, “Autoregressive texture segmentation and synthesis for wavelet image compression,” Image and Multidimensional Digital Signal Processing Workshop, Pages 131-134, Alpbach Austria, July, 1998.
[25] T. Kubota and T. Huntsberger, “Edge dipole and edge field for boundary detection,” SPIE AeroSense Symposium, Vol 3389, 179-190, Orlando Florida, February, 1998.
[26] T. Kubota and T. Huntsberger, “Adaptable Anisotropic Parameter Estimation for Weak Membrane Model,” First International Workshop on Energy Minimization Methods in Computer Vision and Pattern Recognition, Lecture Notes in Computer Science, Venice, Italy, May, 1997.
[27] F. Ghannadian, T. Kubota, J. Chamdani, and C. O. Alford, “Controller Design for the Adaptive Multistage Crossbar Network,” International Conference on Parallel and Distributed Processing Techniques and Applications, Sunnyvale California, 1996.
[28] C. O. Alford, J. Chamdani, T. Kubota and F. Ghannadian, “AMBAR: A Reconfigurable, Crossbar-Based MIMD Parallel Computer Architecture,” 14th International Association for Mathematics and Computers in Simulation World Congress, 1994.
[29] T. Kubota, C. O. Alford, and M. B. Woods, “Design and Implementation of Orientational Filters Using Separable Approximation Methods,” International Conference on Conf. on System Man and Cybernetics, Vol II, Pages 333-338, Le Touquet France, October 1993.
[30] T. Kubota, C. O. Alford, & M. B. Woods. Separable Approximation Methods for Orientational Filters and VLSI Implantation. Proc of 2nd Conf. on Optical 3D Measurement Techniques, Oct. 1993.
[31] T. Kubota, C. O. Alford, & M. B. Woods. Separable Approximation Methods for Orientational Filters and VLSI Implantation. Proc of 2nd Conf. on Optical 3D Measurement Techniques, Oct. 1993.

- ***Abstract:***

[1] T. Kubota, “Retinal coding with rapid change propagation by action potentials,” Gordon Conference on Sensory Coding and the Natural Environment, 2010.
[2] A. Filippi and T. Kubota, “Validation of a spatial-constraint optimization model for hyperspectral underwater terrain and inherent optical property-mapping in Case 2 coastal waters,” American Society for Photogrammetry and Remote Sensing, 2010.
[3] N. Mulepati, “Automated Segmentation of Liver Tumors From CT Data With A Two-Stage Multi-resolution Approach,” National Conference on Undergraduate Research, 2010. (Student Paper)
[4] T. Kubota, “Computational Models for Self-Organization of Retinal Neurons in Euclidean Space” Optical Society of America Fall Meeting 2008.
[5] A. Joshi, “Segmentation of Pulmonary Nodule: A Multi-Resolution Approach,” National Conference on Undergraduate Research, 2008. (Student Paper)
[6] T. Kubota, Neural circuits with synapse efficacy redistribution. Gordon Research Conference on Neural Circuits and Plasticity, 2007
[7] A. Filippi and T. Kubota, High-dimensional marine remote-sensing inversion using spatial constraints. Association of American Geography, 2006.
[8] P. Herzog, S. Buhmann, D. P. Naidich, N. A. Obuchowski, J. Stoeckel, M. Wolf, G. Fung, T. Kubota, A. Krishnan, & M. Salganicoff. Multi-reader study for the evaluation of a computer aided pulmonary nodule detection system, International Early Lung Cancer Action Program (I-ELCAP). Nara Japan April 2004.
[9] T. Kubota, “Adaptive low-level vision model for feature extraction, tracking and grouping,” 25th European Conference on Visual Perception, Glasgow, Scotland, 2002.
[10] T. Kubota, “Dynamic Neural Coding and Robust Feature Analysis,” Gordon Research Conference on Neural Sensory and Natural Coding, Mt. Holyoke College, MA, 2002.
[11] T. Kubota, “Neural Coding and Robust Feature Analysis,” Annual Summer Interdisciplinary Conference, Squamish, British Columbia, Canada.
[12] J. R. Shi, R. M. Bostick, D. Xie and T. Kubota, "Staging Prostate Cancer Using Backpropagation Neural Networks," 92th American Association for Cancer Research Annual Meeting, 2001.

- ***Book Review:***

[1] Sparse Image and Signal Processing: Wavelets, Curvelets, Morphological Diversity, by Starck, Murtagh, and Fadili. Cambridge University Press, 2010. Computing Review.
[2] Markov Models for Pattern Recognition: From Theory to Applications, by Fink G. Springer-Verlag New York, Inc., Secaucus, NJ, 2007. Computing Review.
[3] *Handbook of Biomedical Image Analysis, Volume III: Registration Models*, ed. J. S. Suri, D. L. Wilson, S. Laxminarayan, Klumer Academic Plenum Publishers, New York., 2005. *Computing Review.*
[4] *Kernel Methods for Pattern Analysis* by Shawe-Taylor J., Cristianini N. Cambridge University Press, New York, NY, 2004. *Computing Reviews*, Mar. 2005.
[5] *Facial Analysis trom Continuous Video with Applications to Human Computer Interface*, Colmenarez A., Xiong Z., Huang T., Kluwer Academic Publishers, Norwell, MA, 2004. Computing Reviews, Oct. 2004.
[6] *Lecture on Discrete Geometry* by Matousek J. Springer-Verlag New York, Inc., Secaucus, NJ, 2002. *Computing Reviews*, March 2003.
[7] *Algorithmics for Hard Problems* by Hromkovic J. Springer-Verlag Berlin, Heidelberg, Germany, 2003. *Computing Reviews*, April 2003.
[8] *Principles of Computerized Tomographic Imaging* by Kak A., Slaney M. Society for Industrial and Applied Mathematics, Philadelphia, PA, 2001. *Computing Reviews*, April 2002.
[9] *Binary Digital Image Processing: a Discrete Approach*, M. Sharaiha Y., Marchand-Maillet S. Academic Press, Inc., Orlando, FL, 2000. *Computing Reviews*, Feb. 2000.
[10] *Digital Compression for Multimedia*, Gibson J., Berger T., Lookabaugh T., Lindbergh D., Baker R. Morgan Kaufmann Publishers Inc., San Francisco, CA, 1998. *Computing Review*, Oct. 1998.
[11] *Machine Learning and Image Interpretation*, Caelli T., Bischof W. Plenum Press, New York, NY, 1997. *Computing Reviews*, May 1998.

RECENT PRESENTATIONS

[1] "Fixation Driven Contour Completion with Angularly Ordered Graph." Department of Cognitive and Neural Systems, Boston University, July 22nd, 2011.
[2] "Retinal coding with rapid change propagation by action potentials." Gordon Conference on Sensory Coding & the Natural Environment, Bates College, Lewiston ME, July 27th, 2010.
[3] "Fixation Driven Contour Completion with Angular Ordering." 7th IEEE Computer Society Workshop on Perceptual Organization in Computer Vision, San Francisco, June 13th, 2010.
[4] "Neural coding with prediction and error equilibrium disturbed by action potentials," Gordon Conference on Non-linear Sciences. July 1st, 2009, Mount Holyoke College.
[5] "Improving the Accuracy of Hyperspectral Coastal Ocean Remote-Sensing Inversion with Spatial Smoothness Constraints," PASSHEMA Annual Mathematics Conference, Mansfield University of Pennsylvania, March 21st, 2009.
[6] "Computational Models for Self-Organization of Retinal Neurons in Euclidean Space" Optical Society of America Fall Meeting 2008, University of Rochester, October 25th, 2008.
[7] "Efficient Automated Detection and Segmentation of Medium and Large Liver Tumors: CAD Approach," 3D Segmentation in the Clinic: A Grand Challenge II, New York NY, September 6th 2008.
[8] "General purpose segmentation of a pulmonary nodule: core detection, region growing, and region partition," The First International Workshop on Pulmonary Image Analysis, New York NY, September 6th 2008.
[9] "Second Order Associative Memory Models with Threshold Logics - Eigen Mode Selections," IEEE Int. Conf. Systems Man and Cybernetics, Montreal Canada, October 2007.
[10] "A Higher Order Associative Memory with McCullouch-Pitts neurons and Plastic Synapses," International Joint Conference on Neural Networks, Orlando FL, Aug. 2007.
[11] "Neural circuits with synapse efficacy redistribution," Neural Circuits & Plasticity, Gordon Research Conferences, Salve Regina University, July, 2007.

INDUSTRIAL EXPERIENCE

Consulting – Siemens Medical Solutions.

- Development of nodule segmentation algorithm.
- Development of automated colon de-tagging algorithm.

Siemens Medical Solutions, Inc. – Computer Aided Diagnosis and Therapy Group

- Research and development of LungCAD - software that helps radiologists as a *second reader* to detect lung nodules from CT data. I was the technical lead of the team.
- Research on Grand Glass Opacity detection from CT images
- Proto-type development of a pulmonary embolism detection system
- Research on hot-spot detection from PET-CT images
- Design and implementation of LightViewer – a DICOM viewing and marking tool. It has been deployed for research purposes to a number of clinical collaborators.

eFusion LLC

- Research and development of video bsased intruder detection system for home security. The product has been sold through www.Hyperacuity.com.
- Development of an automated system that non-destructively detects structural defects on SiC wafers from CCD images.

PROFESSIONAL ASSOCIATIONS

- IEEE
  - Computer Society
  - Signal Processing Society
  - Computational Intelligence Society
- Association for Computing Machinery
- Mathematical Association of America

RESEARCH INTEREST

Computer Vision, Image Processing, Medical Imaging, Neural Networks, Computer Graphics

SKILLS

C/C++, Matlab, C#, SQL, Perl, OpenGL, Visual Studio, Mathematica, MFC, COM, XML, DICOM, Unix, UML, Excel, Access, SQL Server, ClearCase, CVS, Subversion, Java, Python, Ruby, Lisp, Fortran, lex, bison, Pascal, S-Plus, Flash, Dreamweaver, Fireworks.