

Jennifer G. Dy

Associate Professor

Department of Electrical and Computer Engineering

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RESEARCH INTERESTS

Machine learning, data mining, statistical pattern recognition, and their application to biomedical image analysis, health, science and engineering.

EDUCATION

Ph.D. in Electrical and Computer Engineering, 2001, Purdue University, West Lafayette, IN
Machine Learning and Robot Vision Laboratories. Supported by NIH.
Thesis: *Feature Selection for Unsupervised Learning Applied to Content-Based Image Retrieval*.
Advisors: Carla Brodley and Avi Kak

Master of Science in Electrical and Computer Engineering, 1997, Purdue University
Electronic Imaging Systems Laboratory. Supported by Hewlett-Packard.
Project: *Bitmap Resolution Synthesis*. Supervisor: Jan Allebach

B.S. in Electrical Engineering, 1993, *Magna Cum Laude*, Ranked First in Major
University of the Philippines, Quezon City, Philippines

APPOINTMENTS

2008-present	Associate Professor, Northeastern University, Boston, MA
2009 Fall	Sabbatical Visit, University of California, Berkeley (Michael Jordan)
2002-2008	Assistant Professor, Northeastern University, Boston, MA
1996-2000	Research Assistant, Purdue University, West Lafayette, IN
1993-1995	Instructor, University of the Philippines

HONORS, AWARDS, AND SCHOLARSHIPS

NSF CAREER Award (2004)
B.S. Magna Cum Laude (1994)
Most Outstanding All-Around Graduating Student of the College of Eng. (1994)
Best Undergraduate Research Project of the College of Engineering (1994)
BPI Philippines National Science Award (1994)
University of the Philippines Presidential Scholarship, tuition scholarship (1991-1993)
Gerry Roxas Foundation Scholarship, tuition scholarship (1989-1990)
“Students Speak” Teaching Award (2011)
US Frontiers of Engineering Participant (2013, National Academy of Engineering)

SUMMARY OF ACHIEVEMENTS

NSF CAREER Award, 2004
Total external funding (including NSF, NIH, Army, BBN Technologies): \$4,778,292.
10 Ph.D. and 8 M.S. students graduated. 7 Ph.D. students in progress.
63 publications from journals and highly selective conferences.
h-index: 23; i10-index: 35.
Action Editor, *Machine Learning*; Editorial Board Member, *JMLR*, *DAMI*, *Machine Learning*
Program Chair, SIAM International Conference on Data Mining (SDM) 2013.
Organizing Chair or Senior/Program Committee Member for several conferences,
including *ICML*, *KDD*, *AAAI*, *IJCAI*, *UAI*, *SDM*.

PROFESSIONAL ACTIVITIES

Associate (Action) Editor,

- *Machine Learning* (2007-2013)
- *Data Mining and Knowledge Discovery* (2009-2011)

Editorial Board Member,

- *Journal of Machine Learning Research* (2009-present)
- *Machine Learning* (2004-2007, 2014-present)

Guest Editor,

- *Special Issue on MultiClust, Machine Learning* (2013)
- *Special Issue of Selected Papers of SDM 2013, ASA Statistical Analysis and Data Mining* (2013)

Program Chair,

- *SIAM International Conference on Data Mining* (2013)
- *Workshop on Discovering, Summarizing and Using Multiple Clustering (MultiClust) at the International Conference on Knowledge Discovery and Databases* (2010)

Session Chair,

- *Engineering in the Context of Big Data Session, Indo-American Frontiers of Engineering Symposium, National Academy of Engineering* (2014)

Student Scholarships Chair,

- *SIAM International Conference on Data Mining* (2012)
- *International Conference on Machine Learning* (2010)

Student Awards Chair, *ACM SIGKDD Conf. on Knowledge Discovery & Data Mining* (2012)

Workshops Chair, *ACM SIGKDD Conf. on Knowledge Discovery & Data Mining* (2011)

Exhibits and Demos Chair, *ACM SIGKDD Conference on Knowledge Discovery and Data Mining* (2010)

Tutorials Chair, *SIAM International Conference on Data Mining* (2010)

Publications Chair, *International Conference on Machine Learning* (2004)

Senior Program Committee Member,

- *National Conference on Artificial Intelligence* (2013)
- *International Joint Conference on Artificial Intelligence* (2011)
- *SIAM International Conference on Data Mining* (2009)
- *International Conference on Machine Learning* (2007)

Program Committee Member,

- *ACM SIGKDD International Conference on Knowledge Discovery and Data Mining* (2001, 2003, 2005, 2006, 2007, and 2008),
- *Int'l Conference on Machine Learning* (2005, 2006, 2008, 2009, 2010, 2011, 2012),
- *National Conference on Artificial Intelligence (AAAI)* (2005, 2007, 2008, 2014),
- *International Joint Conference on Artificial Intelligence* (2009, 2011),
- *Uncertainty in Artificial Intelligence* (2013, 2014),
- *European Conference on Machine Learning* (2009),
- *SIAM International Conference on Data Mining* (2004),
- *SIAM Data Mining (SDM) Workshop on Feature Selection* (2005),
- *SIAM Data Mining (SDM) Workshop on Clustering High-Dimensional Data* (2005).

Reviewer,

Machine Learning,

Journal of Machine Learning Research,

Journal of Artificial Intelligence Research,

IEEE Transactions on Pattern Analysis and Machine Intelligence,

Neural Information Processing Systems (2008, 2011, 2012, 2013, 2014),

Pattern Recognition Letters,
Knowledge and Information Systems,
Bioinformatics,
Encyclopedia of Computer Science and Engineering,
Data Mining and Knowledge Discovery,
Information Fusion
IEEE Transactions on Geoscience and Remote Sensing
National Science Foundation (2003, 2004, 2005, 2008, 2010, 2012, 2014)

External Reviewer,

International Conference on Machine Learning,
IEEE Conference on Computer Vision and Pattern Recognition,
IEEE Workshop of Content-Based Access of Image and Video Databases

Member, IEEE, ACM

PATENTS

G. Fung, R. E. Rosales, J. G. Dy, and Y. Yan, "Automatic Labeler Assignment Using a Model Built from Multi-Labeler Data," Patent No. **US 8,027,939 B2**, Sept. 27, 2011.

Micha Moffie, David Kaeli, Aviram Cohen, Javed Aslam, Malak Alshwabkeh, Jennifer Dy, Fatemeh Azmandian, "VMM-based intrusion detection system," **US 20110004935 A1**, US Patent App. 12/865,795, Jan. 6, 2011.

BOOK CHAPTERS

J. G. Dy, "Feature Selection (Unsupervised Learning)," **Encyclopedia of the Sciences of Learning**, Springer, 2012.

J. G. Dy, "Unsupervised Feature Selection," invited book chapter in **Computational Methods of Feature Selection**, edited by Huan Liu and Hiroshi Motoda, *Chapman and Hall/CRC Press*, 2007.

JOURNAL PUBLICATIONS

1. D. Niu, J. G. Dy, and M. I. Jordan, "*Iterative Discovery of Multiple Alternative Clustering Views*," **IEEE Transactions on Pattern Analysis and Machine Intelligence**, 36(7): 1340-1353, 2014.
2. Y. Yan, R. Rosales, G. Fung, R. Subramanian, and J. G. Dy, "*Learning from Multiple Annotators with Varying Expertise*," **Machine Learning**, 95(3): 291-327, 2014.
3. F. Azmandian, A. Yilmazer, J. G. Dy, J. A. Aslam, D. R. Kaeli, "*Harnessing the Power of GPUs to Speed Up Feature Selection for Outlier Detection*," **Journal of Computer Science and Technology**, 29(3): 408-422, 2014.
4. J. Sourati, D. Erdogmus, J. G. Dy, and D. H. Brooks, "*Accelerated Learning-Based Interactive Image Segmentation using Pairwise Constraints*," **IEEE Transactions on Image Processing**, 23(7): 3057-3070, 2014.
5. D. Das, J. Dy, J. Ross, Z. Obradovic, and A.R. Ganguly, "*Non-parametric Bayesian mixture of sparse regressions with application towards feature selection for statistical downscaling*," **Nonlinear Processes in Geophysics, Discussions**, 1, 615-648, 2014.

6. P. Castaldi, J. Dy, J. Ross, Y. Chang, G. Washko, ... (COPDGene Study team), E. Silverman, M. Cho, "Cluster Analysis in the COPDGene Study Identifies Subtypes of Smokers with Distinct Patterns of Airway Disease and Emphysema," **Thorax**, 2014.
7. J. C. Ross, G. L. Kindlmann, Y. Okajima, H. Hatabu, A. A. Diaz, E. K. Silverman, G. R. Washko, J. Dy, R. San Jose Estepar, "Pulmonary Lobe Segmentation based on Ridge Surface Sampling and Shape Model Fitting," **Medical Physics**, 40(12): 121903-, 2013.
8. J. Fan, J. G. Dy, C. C. Chang, X. Zhou, "Identification of SNP-Containing Regulatory Motifs in the Myelodysplastic Syndromes Model using SNP Arrays and Gene Expression Arrays," **Chinese Journal of Cancer**, 32 (4): 170-, 2013.
9. J. Fan, X. Xia, Y. Li, J. G. Dy, S. T. Wong, "A quantitative analytic pipeline for evaluating neuronal activities by high throughput synaptic vesicle imaging," **Neuroimage**, 62(3):2040-54, 2012. Pubmed ID: 22732566.
10. H. Tan, J. Fan, J. Bao, J. G. Dy, X. Zhou, "A Computational model for compressed sensing RNAi cellular screening," **BMC Bioinformatics**, 27(13): 337-, 2012. doi: 10.1186/1471-2105-13-337.
11. F. Azmandian, M. Moffie, M. Alshawabkeh, J. Dy, J. Aslam, and D. Kaeli, "Virtual Machine Monitor-based Lightweight Intrusion Detection," **ACM SIGOPS Operating Systems Review**, 45(2): 38-53, 2011.
12. S. Kurugol, J. G. Dy, M. Rajadhyaksha and D. H. Brooks, "Semi-Automated Localization of Dermal Epidermal Junction in Confocal Microscopy Images of Skin," **Journal of Biomedical Optics**, 16(3): 036005-13, March 2011.
13. Y. Cui, X. Fern, and J. G. Dy, "Learning Multiple Non-Redundant Clusterings," **ACM Transactions on Knowledge Discovery from Data**, 4(3), Article No. 15, 2010.
14. S. Patel, R. Hughes, T. Hester, J. Stein, M. Akay, J. G. Dy, and P. Bonato, "A Novel Approach to Monitor Rehabilitation Outcomes in Stroke Survivors Using Wearable Technology," **Proceedings of the IEEE**, 98(3): 450-461, March 2010.
15. V. Vural, G. Fung, B. Krishnapuram, J. G. Dy, and B. Rao, "Using Local Dependencies within Batches to Improve Large Margin Classifiers," **Journal of Machine Learning Research**, 10(Feb):183--206, 2009.
16. J. Fan, X. Zhou, J. G. Dy, Y. Zhang, and S. T. Wong, "An Automated Pipeline for Dendrite Spine Detection and Tracking of 3D Optical Microscopy Neuron Images of in vivo Mouse Models," **Neuroinformatics**, 7(2):113-30, 2009.
17. S. Patel, K. Lorincz, R. Hughes, N. Huggins, J. Growdon, D. Standaert, M. Akay, J. Dy, M. Welsh, and P. Bonato, "Monitoring Motor Fluctuations in Patients with Parkinson's Disease Using Wearable Sensors", **IEEE Transactions on Information Technology in Biomedicine**, 13(6): 864-873, November 2009.
18. T. Lin, R. Li, X. Tang, J. G. Dy, and S. B. Jiang, "Markerless Gating for Lung Cancer Radiotherapy based on Machine Learning Techniques," **Physics in Medicine and Biology**, 54: 1555-1563, 2009.

19. V. Vural, G. Fung, J. G. Dy, and B. Rao, “Fast Semi-supervised SVM Classifiers Using A-priori Metric Information,” **Optimization Methods and Software, Special Issue on Mathematical Programming in Data Mining and Machine Learning**, 23(4): 521-532, 2008.
20. A. Farhangfar, L. Kurgan, and J. Dy, “Impact of Imputation of Missing Values on Classification Error for Discrete Data,” **Pattern Recognition**, 41(12): 3692-3705, 2008.
21. Y. Cui, J. G. Dy, B. Alexander, and S. B. Jiang, “Fluoroscopic gating without implanted fiducial markers for lung cancer radiotherapy based on support vector machines,” **Physics in Medicine and Biology**, 53: N315-N327, 2008.
22. Y. Cui, J. G. Dy, G. C. Sharp, B. Alexander, and S. B. Jiang, “Multiple Template Based Fluoroscopic Tracking of Lung Tumor Mass without Implanted Fiducial Markers,” **Physics in Medicine and Biology**, 52(20): 6229-6242, 2007.
23. F. Azmandian, D. Kaeli, J. Dy, E. Hutchinson, M. Ancukiewicz, A. Niemierko, and S. B. Jiang, “Towards the Development of an Error Checker for Radiotherapy Treatment Plans: A Preliminary Study,” **Physics in Medicine and Biology**, 52(21): 6511-6524, 2007.
24. T. Su and J. G. Dy, “In Search of Deterministic Methods for Initializing K-Means and Gaussian Mixture Clustering,” **Intelligent Data Analysis**, 11(4): 319-338, 2007.
25. Y. Cui, J. G. Dy, G. C. Sharp, B. Alexander and S. B. Jiang, “Robust Fluoroscopic Respiratory Gating for Lung Cancer Radiotherapy without Implanted Fiducial Markers,” **Physics in Medicine and Biology**, 52(3): 741-755, 2007.
26. J. Dy, “Feature Selection for Unlabeled Data,” *Evolving Feature Selection*, **IEEE Intelligent Systems, Trends & Controversies**, 20(6): 66-68, November/December, 2005.
27. J. G. Dy and C. E. Brodley, “Feature Selection for Unsupervised Learning,” **Journal of Machine Learning Research**, 5: 845-889, August 2004.
28. J. G. Dy, C. E. Brodley, A. Kak, L. S. Broderick, and A. M. Aisen, “Unsupervised Feature Selection Applied to Content-Based Retrieval of Lung Images,” **IEEE Transactions on Pattern Analysis and Machine Intelligence**, 25(3): 373-378, March 2003.
29. M. Aisen, L. S. Broderick, H. Winer-Muram, C. E. Brodley, A. C. Kak, C. Pavlopoulou, J. Dy, A. Marchiori, “Automated Storage and Retrieval of Medical Images to Assist Diagnosis: Implementation and Preliminary Assessment,” **Radiology**, 228(1): 265-270, July 2003.

HIGHLY SELECTIVE CONFERENCE PUBLICATIONS

1. J. C. Ross, P. J. Castaldi, M. H. Cho, and J. G. Dy, “Dual Beta Process Priors for Latent Cluster Discovery in Chronic Obstructive Pulmonary Disease,” **Proceedings of the ACM Knowledge Discovery and Data Mining (KDD)**, 2014. (14.6% accept rate.)
2. J. Ross and J. Dy, “Nonparametric Mixture of Gaussian Processes with Constraints,” **Proceedings of the International Conference on Machine Learning (ICML), JMLR W&CP 28 (3)**: 1346-1354, 2013. (24% accept rate.)

3. D. Niu, J. G. Dy, Z. Ghahramani, "A Nonparametric Bayesian Model for Multiple Clustering with Overlapping Feature Views," **Journal of Machine Learning Research - Proceedings Track 22 (International Conf. on Artificial Intelligence and Statistics (AISTATS))**, pp. 814-822, 2012.
4. Y. Yan, R. Rosales, G. Fung, F. Farooq, B. Rao, J. G. Dy, "Active Learning from Multiple Knowledge Sources," **Journal of Machine Learning Research - Proceedings Track 22 (International Conf. on Artificial Intelligence and Statistics (AISTATS))**, pp. 1350-1357, 2012.
5. F. Azmandian, J. G. Dy, J. A. Aslam, D. R. Kaeli, "Local Kernel Density Ratio-Based Feature Selection for Outlier Detection," **Journal of Machine Learning Research - Proceedings Track 25 (Asian Conference on Machine Learning)**, pp. 49-64, 2012. (Best Poster Award)
6. F. Azmandian, A. Yilmazer, J. G. Dy, J. A. Aslam, D. R. Kaeli, "GPU-Accelerated Feature Selection for Outlier Detection Using the Local Kernel Density Ratio," **IEEE International Conference on Data Mining (ICDM)**, pp. 51-60, 2012. (10.71% acceptance rate.)
7. M. Alshawabkeh, J. A. Aslam, J. G. Dy, D. R. Kaeli, "Feature Weighting and Selection Using Hypothesis Margin of Boosting," **IEEE International Conference on Data Mining (ICDM)**, pp. 41-50, 2012. (10.71% acceptance rate.)
8. Y. Yan, R. Rosales, G. Fung, and J. Dy, "Active Learning from Crowds," **Proceedings of the 28th International Conference on Machine Learning (ICML)**, pp. 1161-1168, 2011. (26% acceptance rate.)
9. Y. Guan, J. G. Dy, and M. I. Jordan, "A Unified Probabilistic Model for Global and Local Unsupervised Feature Selection," **Proceedings of the 28th International Conference on Machine Learning (ICML)**, pp. 1073-1080, 2011. (26% acceptance rate.)
10. D. Niu, J. G. Dy, and M. I. Jordan, "Dimensionality Reduction for Spectral Clustering," **JMLR Workshop and Conference Proceedings Volume 15: AISTATS (Artificial Intelligence and Statistics)**, pp. 552-560, 2011. (36% acceptance rate.)
11. M. Alshawabkeh, J. A. Aslam, D. R. Kaeli, J. G. Dy, "Feature Selection Metric Using AUC Margin for Small Samples and Imbalanced Data Classification Problems" **IEEE International Conference on Machine Learning and Applications (ICMLA)**, pp. 145-150, 2011.
12. M. Alshawabkeh, J. A. Aslam, D. R. Kaeli, J. G. Dy, "A Novel Feature Selection for Intrusion Detection in Virtual Machine Environments," **Proceedings of the IEEE International Conference on Tools with Artificial Intelligence, ICTAI 2011**, pp. 879-881, 2011. (28.9% acceptance rate)
13. F. Azmandian, M. Moffie, J. G. Dy, J. A. Aslam, D. R. Kaeli, "Workload Characterization at the Virtualization Layer," **IEEE International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems, MASCOTS 2011**, pp. 63-72, 2011. (26% acceptance rate)
14. Y. Yan, R. Rosales, G. Fung, and J. G. Dy, "Modeling Multiple Annotator Expertise in the Semi-Supervised Learning Scenario," **Proceedings of the 26th Conference on Uncertainty in Artificial Intelligence (UAI)**, pp. 674-682, 2010. (33.8% acceptance rate.)

15. M. Masaeli, G. Fung, and J. G. Dy, “*From Transformation-Based Dimensionality Reduction to Feature Selection*,” **Proceedings of the 27th International Conference on Machine Learning (ICML)**, pp. 751-758, 2010. (25.6% acceptance rate.)
16. D. Niu, J. G. Dy, and M. I. Jordan, “*Multiple Non-Redundant Spectral Clustering Views*,” **Proceedings of the 27th International Conference on Machine Learning (ICML)**, pp. 831-838, 2010. (25.6% acceptance rate.)
17. Y. Yan, G. Fung, J. G. Dy, and R. Rosales, “*Medical Coding Classification by Leveraging Inter-Code Relationships*,” **Proceedings of the ACM SIGKDD International Conference on Knowledge Discovery and Databases (KDD)**, pp. 193-202, 2010.
18. Y. Yan, R. Rosales, G. Fung, M. Schmidt, G. Hermosillo, L. Bogoni, L. Moy, and J. G. Dy, “*Modeling Annotator Expertise: Learning when Everybody Knows a Bit of Something*,” **Proceedings of the Thirteenth International Conference on Artificial Intelligence and Statistics (AISTATS)**, Vol. 9, pp. 932-939, 2010. (Among 7.8% accepted for oral presentation.)
19. S. Kurugol, N. Ozay, J. G. Dy, G. C. Sharp, and D. H. Brooks, “*Locally Deformable Shape Model to Improve 3D Level Set Based Esophagus Segmentation*,” **Proceedings of the International Conference on Pattern Recognition (ICPR)**, pp. 3955-3958, 2010.
20. M. Masaeli, Y. Yan, Y. Cui, G. Fung, and J. G. Dy, “*Convex Principal Feature Selection*,” **Proceedings of the SIAM International Conference on Data Mining (SDM)**, pp. 619-628, Columbus, OH, April 29-May 1, 2010. (23.36% acceptance rate.)
21. M. Alshawabkeh, M. Moffie, F. Azmandian, J. A. Aslam, J. G. Dy, D. R. Kaeli, “*Effective Virtual Machine Monitor Intrusion Detection Using Feature Selection on Highly Imbalanced Data*,” **ICMLA 2010**, pp. 823-827, 2010.
22. V. Vural, G. Fung, R. Rosales, and J. G. Dy, “*Multi-Class Classifiers and Their Underlying Shared Structure*,” **Proceedings of the Twenty-first International Joint Conference on Artificial Intelligence (IJCAI)**, pp. 1267-1272, 2009. (25.7% acceptance rate.)
23. Y. Guan and J. G. Dy, “*Sparse Probabilistic Principal Component Analysis*,” **Proceedings of the Twelfth International Conference on Artificial Intelligence and Statistics (AISTATS)**, Vol. 5, pp. 185-192, 2009. (40% acceptance rate.)
24. Y. Cui, J. G. Dy, G. C. Sharp, B. M. Alexander, and S. B. Jiang, “*Learning methods for lung tumor markerless gating in image-guided radiotherapy*,” **Proceedings of the fourteenth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)**, pp. 902-910, Las Vegas, Nevada, August 2008. (26% acceptance rate.)
25. Y. Cui, X. Fern, and J. G. Dy, “*Non-redundant Multi-view Clustering Via Orthogonalization*,” **Proceedings of the IEEE International Conference on Data Mining (ICDM)**, pp. 133-142, Omaha, NE, October 2007. (Acceptance rate: 19.2%, among the 7.2% accepted as regular papers.)
26. V. Vural, G. Fung, B. Krishnapuram, J. Dy, and B. Rao, “*Batch Classification with Applications in Computer Aided Diagnosis*,” **Proceedings of the Seventeenth European Conference on Machine Learning (ECML)**, vol. 4212, p. 449-460, Berlin, Germany, Sept. 18-22, 2006. (Acceptance rate: 25.5%, among the 14.5% accepted as full papers.)

27. K. Sanghai, T. Su, J. G. Dy, and D. Kaeli, "A Multinomial Clustering Model for Fast Simulation of Computer Architecture Designs," **Proceedings of the Eleventh ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)**, pp. 808-813, August 21-24, Chicago, IL, 2005. (Acceptance rate: 34.2%).
28. T. Su and J. G. Dy, "A Deterministic Method for Initializing K-means Clustering," **Proceedings of the 16th IEEE International Conference on Tools with Artificial Intelligence (ICTAI)**, pp. 784-786, November, 2004, Boca Raton, Florida. (Acceptance rate: 49.3%).
29. T. Su and J. G. Dy, "Automated Hierarchical Mixtures of Probabilistic Principal Component Analyzers," **Proceedings of the 21st International Conference on Machine Learning (ICML)**, pp. 775-782, Banff, Alberta, Canada, July 2004. (Acceptance rate: 32%, among the 17.7% unconditionally accept papers.)
30. V. Vural and J. G. Dy, "A Hierarchical Method for Multi-Class Support Vector Machines," **Proceedings of the 21st International Conference on Machine Learning (ICML)**, pp. 831-838, Banff, Alberta, Canada, July 2004. (Acceptance rate: 32%, among the 17.7% unconditionally accept papers.)
31. J. G. Dy and C. E. Brodley, "Visualization and Interactive Feature Selection for Unsupervised Data," **Proceedings of the Sixth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)**, pp. 360-364, August 20-23, 2000, Boston, MA. (Acceptance rate: 20%).
32. J. G. Dy and C. E. Brodley, "Feature Subset Selection and Order Identification for Unsupervised Learning," **Proceedings of the Seventeenth International Conference on Machine Learning (ICML)**, pages 247-254, June 29-July 2, 2000, Stanford University, CA. (Acceptance rate: 43%, among the 19% unconditionally accept papers.)
33. C. E. Brodley, A. C. Kak, J. G. Dy, C. R. Shyu, A. Aisen, and L. Broderick, "Content-based retrieval from medical image databases: A synergy of human interaction, machine learning and computer vision," **Proceedings of the Sixteenth National Conference on Artificial Intelligence (AAAI)**, pp. 760-767, July 18-22, 1999, Orlando, FL. (Acceptance rate: 27%).
34. J. G. Dy, C. E. Brodley, A. Kak, C. Shyu and L. S. Broderick, "The customized-queries approach to CBIR using EM," **Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)**, Vol. II, pp. 400-406, June 1999, Fort Collins, Colorado. (Acceptance rate: 38%).

OTHER PEER REVIEWED CONFERENCES

1. J. Ross, A. A. Diaz, Y. Okajima, D. Wassermann, G. R. Washko, J. Dy, and R. San Jose Estepar, "Airway Labeling using a Hidden Markov Tree Model," **IEEE International Symposium on Biomedical Imaging**, 2014.
2. X. An, A. R. Ganguly, Y. Fang, S. B. Scyphers, A. M. Hunter, and J. G. Dy, "Tracking Climate Change Opinions from Twitter Data," **Workshop on Data Science for Social Good at KDD**, 2014.
3. K. Kose, J. Dy, D. Brooks, and M. Rajadhyaksha, "Image Analysis Based Automated DEJ Detection Method for RCM Stacks," **SPIE Photonics West**, 2014. (abstract).

4. A. Bozkurt, K. Kose, J. Sourati, C. Alessi-Fox, J. Dy, D. Brooks, and M. Rajadhyaksha, "Computer based algorithm for estimating stratum corneum thickness from Reflectance Confocal Microscopy (RCM) images," **SPIE Photonics West**, 2014. (abstract).
5. J. Sourati, K. Kose, M. Rajadhyaksha, J. G. Dy, D. Erdogmus, and D. H. Brooks, "Automated Localization of Wrinkles and the Dermo-Epidermal Junction in Obliquely-Oriented Reflectance Confocal Microscopic Images of Human Skin," **SPIE BiOS**, 2013.
6. K. Kose, C. Alessi-Fox, J. G. Dy, D. Brooks, and M. Rajadhyaksha, "Computer-based Algorithms for Classification of Skin Cancer Morphology in Reflectance Confocal Microscopy Images," **62nd Annual Montagna Symposium on the Biology of Skin**, Light and Skin: How Light Sustains, Damages, Treats, Images and Modifies Skin Biology, Stevenson, Washington, USA, October, 2013. (abstract).
7. M. Moghadamfalahi, A. Satpute, M. Akcakaya, D. Brooks, J. Dy, D. Erdogmus, and L. Barrett, "Are affective responses in fMRI independent of previous affect-inducing stimuli?" **Organization for Human Brain Mapping (OHBM)**, 2013. (abstract).
8. J. Sourati, D. H. Brooks, J. G. Dy, E. Ataer Cansizoglu, D. Erdogmus, and M. Rajadhyaksha, "Unsupervised wrinkle detection in reflectance confocal microscopy images of the human skin," **IEEE International Conference on Acoustics, Speech, and Signal Processing**, pp. 705-708, 2012.
9. J. Sourati, D. H. Brooks, J. G. Dy, and D. Erdogmus, "Constrained spectral clustering for image segmentation," **In IEEE Workshop on Machine Learning for Signal Processing (MLSP)**, pp. 1-6. IEEE, Santander, Spain, Sept. 23-26, 2012.
10. S. Kurugol, M. Rajadhyaksha, J. G. Dy, and D. H. Brooks, "Validation study of automated dermal/epidermal junction localization algorithm in reflectance confocal microscopy images of skin," **In Proc. SPIE Photonics West**, San Francisco, USA, Feb 2012.
11. S. Ghanta, R. Birken, and J. Dy, "Automatic road surface defect detection from grayscale images," **In Proc. of SPIE Symposium on Smart Structures and Materials + Nondestructive Evaluation and Health Monitoring**, 83471E-83471E-12, San Diego, CA, March 11-15, 2012.
12. M. Alshawabkeh, D. Kaeli, J. Aslam, J. Dy, and D. Schaa, "Enhanced Boosting-based Algorithm for Intrusion Detection in Virtual Machine Environments," **First International Workshop on Secure and Resilient Architectures and Systems (SRAS), Minneapolis, MN, held in conjunction with PACT (International Conference on Parallel Architectures and Compilation Techniques)**, Sept. 19, 2012.
13. F. Azmandian, D. Kaeli, J. Aslam, J. Dy, and D. Schaa, "Securing Cloud Storage Systems through a Virtual Machine Monitor," **First International Workshop on Secure and Resilient Architectures and Systems (SRAS), Minneapolis, MN, held in conjunction with PACT (International Conference on Parallel Architectures and Compilation Techniques)**, pp. 19-24, Sept. 19, 2012.
14. R. Subramanian, R. Rosales, G. Fung, and J. Dy, "Evaluating Crowdsourcing Participants in the Absence of Ground-Truth," **Workshop on Human Computation for Science and Computational Sustainability, held in conjunction with NIPS (International Conference on Neural Information Processing Systems)**, Lake Tahoe, Nevada, Dec. 7, 2012.

15. Y. Yan, R. Rosales, G. Fung , and J. Dy, “*Active Learning from Multiple Knowledge Sources,*” **2nd NIPS workshop on Computational Social Science and the Wisdom of Crowds**, 2011.
16. S. Kurugol, J. G. Dy, M. Rajadhyaksha, K. W. Gossage, J. Weissman, and D. H. Brooks. “*Semi-automated Algorithm for Localization of Dermal/ Epidermal Junction in Reflectance Confocal Microscopy Images of Human Skin,*” **In Proc. SPIE Photonics West**, San Francisco, USA, January 2011.
17. S. Kurugol, E. Bas, D. Erdogmus, J. Dy, G. C. Sharp, and D. Brooks, “*Centerline Extraction with Principal Curve Tracing to Improve 3D Level Set Esophagus Segmentation in CT Images,*” **Engineering in Medicine and Biology Society, EMBC, 2011 Annual International Conference of the IEEE**, 2011.
18. S. Patel, B.-R. Chen, C. Mancinelli, S. Paganoni, L. Shih, L., M. Welsh, J. Dy, and P. Bonato, “*Longitudinal monitoring of patients with Parkinson's disease via wearable sensor technology in the home setting,*” **Engineering in Medicine and Biology Society, EMBC, 2011 Annual International Conference of the IEEE**, pp. 1552—1555, 2011.
19. Y. Guan, J. G. Dy, D. Niu, and Z. Ghahramani, “*Variational Inference for Nonparametric Multiple Clustering,*” **Workshop on Discovering, Summarizing and Using Multiple Clustering (MultiClust) at the International Conference on Knowledge Discovery and Databases**, 2010. (Paper)
20. S. Kurugol, J. G. Dy, G.C. Sharp, and D. H. Brooks, “*3D Level Set Esophagus Segmentation in Thoracic CT Images Using Spatial, Appearance and Shape Models,*” **IEEE International Symposium on Biomedical Imaging: From Nano to Macro, 2010, ISBI**, 2010. (Paper)
21. S. Kurugol, N. Ozay, G. C. Sharp, J. G. Dy, and D. H. Brooks, “*3D Segmentation of Esophagus in Thoracic CT Images for Radiation Therapy Planning,*” **Proceedings of the XVth International Conference on the Use of Computers in Radiation Therapy**, 2010. (Paper)
22. S. Patel, B. Chen, T. Buckley, R. Rednic, D. McClure, D. Tarsy, L. Shih, J. Dy, M. Welsh, and P. Bonato, “*Home Monitoring of Patients with Parkinson's Disease via Wearable Technology and a Web-based Application,*” **32nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'10)**, 2010. (Extended Abstract)
23. S. Kurugol, J. G. Dy, M. Rajadhyaksha, and D. H. Brooks, “*Localizing the dermis/epidermis boundary in reflectance confocal microscopy images with a hybrid classification algorithm,*” **IEEE International Symposium on Biomedical Imaging: From Nano to Macro, 2009, ISBI**, pp. 1322-1325, June 28-July 1, 2009. (Paper)
24. S. Kurugol, G. Sharp, J. Dy, and D. Brooks, “*Esophagus Segmentation in Thoracic CT Images for Radiotherapy Planning,*” **American Association of Physicists in Medicine (AAPM) 51st Annual Meeting, Med. Phys.**, Vol. 36, Issue 6, pp. 2454-2454, June 2009. (Abstract)
25. Y. Cui and J. G. Dy, “*Orthogonal Principal Feature Selection,*” **Sparse Optimization and Variable Selection Workshop at the International Conference on Machine Learning**, Helsinki, Finland, July 9, 2008.

26. S. Kurugol, J. G. Dy, M. Rajadhyaksha, and D. H. Brooks, “*Detection of the dermis/epidermis boundary in reflectance confocal images using multi-scale classifier with adaptive texture features,*” **IEEE International Symposium on Biomedical Imaging: From Nano to Micro (ISBI)**, pp. 492-495, Paris, France, May 2008. (*Paper*)
27. S. Patel, R. Hughes, N. Huggins, D. Standaert, J. Growdon, J. Dy and P. Bonato, “*Using Wearable Sensors to Predict the Severity of Symptoms and Motor Complications in Late Stage Parkinson's Disease,*” **30th Annual International Conference of the IEEE Engineering in Medicine and Biology Society**, pp. 3686-3689 Aug 20-Aug 24, 2008, Vancouver, Canada.
28. S. Patel, K. Lorincz, R. Hughes, N. Huggins, J. Growdon, D. Standaert, J. Dy, M. Welsh and P. Bonato, “*A Body Sensor Network to Monitor Parkinsonian Symptoms: Extracting Features on the Nodes,*” **5th International Workshop on Wearable, Micro and Nano Technologies for the Personalized Health, pHealth 2008**, May 21-23, 2008, Valencia, Spain.
29. J. Fan, X. Zhou, J. Dy, Y. Zhang and S. Wong, “*Spine Detection Using Curvilinear Structure Detector and Spine Tracking in In Vivo Image,*” **Third IEEE-NIH Life Science Systems and Application (LISA) Workshop**, November 2007. (*Paper*)
30. Y. Cui, J. G. Dy, G. C. Sharp, B. Alexander, and S. B. Jiang, “*Fluoroscopic Tracking of Lung Tumor Mass without Implanted Fiducial Markers,*” **American Association of Physicists in Medicine (AAPM) 48th Annual Meeting, Medical Physics**, Vol. 33, Issue 6, pp. 2162, Orlando, FL, July 30-August 3, 2006. (*Abstract*)
31. Y. Cui, J. G. Dy, G. C. Sharp, B. Alexander, and S. B. Jiang, “*Correlation Score Based Respiratory Gating for Lung Cancer Radiotherapy without Implanted Fiducial Markers,*” **American Association of Physicists in Medicine (AAPM) 48th Annual Meeting, Medical Physics**, Vol. 33, Issue 6, pp. 2244, Orlando, FL, July 30-August 3, 2006. (*Abstract*)
32. B. Cordes, J. Dy, M. Leeser, and J. Goebel, “*Enabling a Real-Time Solution for Neuron Detection with Reconfigurable Hardware,*” **IEEE International Workshop on Rapid System Prototyping**, pp. 128-134, 2005. (*Paper*)
33. J. G. Dy, C. E. Brodley, A. Kak, C. Shyu, and L. S. Broderick, “*The customized-queries approach to CBIR,*” **Proceedings of the Storage and Retrieval for Image and Video Databases VII, IS&T/SPIE Electronic Imaging '99**, Vol. 3656, pp. 22-32, January 1999, San Jose, CA. (*Paper*)
34. J. G. Dy and J. Allebach, “*Bitmap Resolution Synthesis,*” **1997 IEEE Workshop on Nonlinear Signal and Image Processing**, Grand Hotel on Mackinac Island, Michigan, September 8-10, 1997. (*Paper*)

GRANTS

EXTERNAL GRANTS:

NSF CyberSEES:Type 2: SEA-MASCOT: Spatio-temporal Extremes and Associations: Marine Adaptation and Survivorship under Changes in extreme Ocean Temperatures, \$1,199,617.

PI: Jennifer G. Dy, co-PIs: Auroop Ganguly, Tarik Gouhier, Aidong Ding, Sept. 1, 2014 – July, 31, 2018. My share is \$335,861.

NIH/NHLBI (R01HL089856 & R01HL089857): Genetic Epidemiology of COPD

(PI: Edwin Silverman and James Crapo),

NU-Subcontract from Brigham and Women's Hospital, \$926,757.

NU PI: Jennifer G. Dy, July 1, 2012 to June 31, 2017. My share is \$926,757.

Role: Co-Investigator and NU Site PI.

NIH (NEI-1R21EY022387): Automated Classification of Retinopathy of Prematurity Using Machine Learning, \$482,166.

PI: Jayashree Kalpathy-Cramer and Michael Chiang, I: Deniz Erdogmus and Jennifer Dy, Sept. 1, 2013 to Aug. 31, 2015.

NU-Subcontract from Oregon Health and Science University, \$155,500.

NU I: Deniz Erdogmus and Jennifer G. Dy. My share is \$74,815.

Role: Co-Investigator and NU Site co-PI.

NSF III:Small: Exploring Data in Multiple Clustering Views, \$470,112.

PI: Jennifer G. Dy, 100% participation, July 15, 2009 - June 30, 2013.

NIH Center for Integrative Biomedical Computing Supplement, NU subaward, \$100,000.

NU PI: Dana Brooks, co-PIs: Jennifer G. Dy and Deniz Erdogmus. 09/01/2011 - 08/31/2013. My share is 33%.

NIH: Novel Machine Learning Approaches for Automatic Labeling of Medical Text by Using Knowledge from Multiple Annotators, \$377,968.

PI: Jennifer G. Dy, Oct. 1, 2010 – Sept. 30, 2012.

NSF CAREER: A Foundation for Unsupervised Learning of High-Dimensional Data, \$507,394.

PI: Jennifer G. Dy, 100% participation, March 1, 2004 - February 28, 2009.

NSF: Student Travel Scholarships SIAM Conference on Data Mining, \$26,010.

PI: Jennifer G. Dy, April 15, 2012 to March 31, 2014.

Unilever, Validating and Applying Machine-Learning Based Segmentation of Reflectance Confocal Microscopy Measurements of Skin for Large Datasets, \$85,500.

PI: Dana Brooks, co-PI: Jennifer G. Dy, 50% participation. Oct. 15, 2009 – June 30, 2010.

Army STTR Phase II: In-Building Acoustic Signature Identification and Localization, \$263,443.

PI: Michael Silevitch, co-PIs: David Brady and Jennifer G. Dy, 33% participation (\$86,936). August 31, 2006 – August 30, 2008.

BBN Technologies, \$34,657.

PI: Jennifer G. Dy, 100% participation.

January 1, 2007 – August 31, 2007.

The Methodist Hospital Research Institute: Algorithms for Segmentation and Tracking of Neuron Images, \$54,626.

PI: Jennifer G. Dy, 100% participation.

July 1, 2007 – June 30, 2009.

Harvard Medical School: Algorithms for Segmentation and Tracking of Neuron Images, \$7,940.88.

PI: Jennifer G. Dy, 100% participation.
March 1, 2007 – June 30, 2007.

Mass. General Hospital: Algorithms for Tracking Tumors in Fluoroscopic Images, \$4,078.

PI: Jennifer G. Dy, 100% participation.
July 1, 2006 – August 31, 2006.

Center for Subsurface Sensing and Imaging Systems (CenSSIS): Machine Learning Applied to Subsurface Images, \$35,528.

Senior Investigator: Jennifer G. Dy, 100% participation.
January 2003 – October 2003.

EQUIPMENT GRANTS:

NSF Major Research Instrumentation: MRI: Enabling Research on Terabyte-Scale Datasets, \$199,000.

PI: Gene Cooperman, co-PIs: Javed Aslam, Jennifer G. Dy, David Kaeli, Ravi Sundaram, 20% participation (\$39,800).
August 1, 2006 – July 31, 2008.

Xilinx, Inc. Equipment Donation, \$3,495.

Jan. 1, 2004 – Dec. 31, 2004. Jennifer G. Dy, 100% participation.

INTERNAL GRANTS:

Research and Scholarship Development Fund (RSDF) award: Identifying Metabolic Bottlenecks in the Production of Valuable Anti-Cancer Compounds from *Catharanthus roseus* Cell Cultures through Proteomics and Data Mining, \$25,000.

PI: Carolyn Lee-Parsons,
co-PIs: Marina Hincapie, Tomas Rejtar, and Jennifer G. Dy, 25% participation.
July 2006 – December 2007.

Communications and Digital Signal Processing (CDSF) center seed grant: Automated Processing and Classification of Confocal Skin Images, \$10,000.

PI: Jennifer G. Dy, 50% participation.
co-PIs: Dana Brooks, Milind Rajadhyaksha, and Dr. Allan Halpern.
May 1, 2006 – August 2006.

INVITED TALKS

- “Active Learning from Uncertain Crowd Annotations,” Crowdsourcing Session, 52nd Annual Allerton Conference on Communication, Control, and Computing, University of Illinois at Urbana-Champaign, Oct. 1-3, 2014.
- “Discovering Subtypes of Disease Trajectories and Learning from the Crowd,” Meaningful Use of Complex Medical Data (MUCMD), Aug. 8-9, 2014.
- “Brief Tutorial on Clustering and Machine Learning,” International COPD Genetics Conference, Amsterdam, Netherlands, Sept. 27-28, 2012.

- “Machine Learning Algorithms for Biomedical Data, Learning from the Crowd,” ADSA08 Workshop, **Northeastern University**, Oct. 25, 2012.
- “Novel Machine Learning Approaches for Automatic Labeling of Medical Text by Using Knowledge from Multiple Annotators,” **NIH NLM**, June 17-19, 2012.
- “Novel Machine Learning Approaches for Automatic Labeling of Medical Text by Using Knowledge from Multiple Annotators,” **NIH NLM**, June 2011.
- “Machine Learning in Bio-Medical Applications,” CDSP Workshop, **Northeastern University**, April 2010.
- “Non-Redundant Multi-View Clustering,” Center for Applied Mathematics Colloquium, **Cornell**, Ithaca, NY, April 18, 2008.
- “Clustering High-Dimensional Data,” **BBN**, Oct. 27, 2006.
- “Clustering High-Dimensional Data,” **Workshop for Women in Machine Learning**, Oct. 4, 2006.
- “Clustering High-Dimensional Data,” Electrical and Computer Engineering Colloquium (jointly held with Computer Science Colloquium), **Tufts University**, April 18, 2006.
- “Algorithms for Tumor Tracking in Image Guided Radiotherapy,” CDSP Workshop, **Northeastern University**, March 3, 2007.
- “Clustering High-Dimensional Data and Multi-Class Support Vector Machines,” **Motorola**, August 25, 2005.
- “Clustering High-Dimensional Data,” **Boston University**, Nov., 2004.
- “Clustering High-Dimensional Data,” CDSP Workshop, **Northeastern University**, April 2005.
- “Machine Learning and Content-Based Image Retrieval,” **Memorial Sloan-Kettering Cancer Center**, July, 2004.
- “Feature Selection for Unsupervised Learning Applied to Content-Based Image Retrieval,” **CCIS, Northeastern University**, March, 2004.
- “Feature Selection for Unsupervised Learning Applied to Content-Based Image Retrieval,” Statistical AI Reading Group, **Massachusetts Institute of Technology**, June 27, 2002.
- “Feature Selection for Unsupervised Learning Applied to Content-Based Image Retrieval,” Information and Computer Science, **University of California, Irvine**, January 9, 2001.
- “Feature Selection for Unsupervised Learning”, Department of Computer Science, **Oregon State University**, November 20, 2000.
- “Feature Selection and Interactive Visualization for Unsupervised Learning”, **Silicon Graphics**, October 6, 2000.

INVITED PANEL

- “Panel topic: What can I do with a Ph.D.? Perspectives on research, teaching, and industry careers,” **Young Professionals Panel, AAAI(American Association for Artificial Intelligence)/SIGART(ACM Special Interest Group on Artificial Intelligence) Doctoral Consortium 2006**, July 17, 2006.

GRADUATE STUDENTS:

Current Ph.D. Students:

Sarah Brown, Yale Chang, Sindhu Ghanta, Jamshid Sourati, Junxiang Chen, Uri Peer, Kathryn Piattelli

Ph.D. Graduates:

1. Ting Su (April 2007).
Thesis: *Clustering High-Dimensional Data*
She is currently at Mathworks.

2. Ying Cui (Nov. 2008).
Thesis: *Non-Redundant Clustering, Principal Feature Selection and Learning Methods Applied to Lung Tumor Image-Guided Radiotherapy*
She is now at Apple.
3. Volkan Vural (Jan. 2009).
Thesis: *Improving Large Margin Classifiers using Relationships among Samples*
He is currently at Eze Software Group.
4. Sila Kurugol (Aug. 2011)
Thesis: *Machine Learning and Model Based 3D Segmentation Algorithms for Challenging Medical Imaging Problems*
She is currently a Post-Doc at Boston Children's Hospital.
5. Shyamal Patel (April 3, 2012)
Thesis: *Quantitative Motor Assessment in Patients with Mobility Limiting Conditions using Wearable Sensors*
He is now a Research Coordinator at Spaulding Rehabilitation Hospital.
6. Yue Guan (March 12, 2012)
Thesis: *Bayesian Models for Unsupervised Feature Selection*
He is now at Tremor Video.
7. Donglin Niu (Sept. 17, 2012)
Thesis: *Multiple Alternative Clusterings and Dimensionality Reduction*
He is now at Yahoo!
8. Yan Yan (Sept. 17, 2012)
Thesis: *Learning from Imperfect and Related Labels*
He is now at Yahoo! Labs.
9. Jing Fan (April 26, 2013)
Thesis: *Understanding Neurodegenerative Disease with Multi-Scale Images – An Integrated Neural Image Analysis System*
He is currently at Humana.
10. James Ross (June 24, 2014)
Thesis: *Probability Models and Bayesian Nonparametrics for Subtyping Chronic Obstructive Pulmonary Disease*
He is now at Harvard Medical School.

M.S. Graduates:

1. Ting Su (May 2003).
Project: *Non-Random Initialization Method for K-Means Clustering*
2. Volkan Vural (April 2004).
Project: *A Hierarchical Method for Multi-Class Support Vector Machines*
3. Hongyan Liu (April 2005).
Project: *A Comparative Study of Feature Subspace Selection Algorithms for Unsupervised Learning*
4. Jing Fan (August 2009)
Project: *An Automated Pipeline for Dendrite Spine Detection and Tracking of 3D Optical Microscopy Neuron Images of in vivo Mouse Models*
5. Yan Yan (August 2009)
Project: *Machinery Classification from Vibrational Measurements*
Co-Advised with Prof. David Brady
6. Mahdokht Masaeli (August 2009)
Project: *Convex Principal Feature Selection*
7. Carolyn Buracton (May 2011)

Project: *A Practical Approach to Markerless Fluoroscopic Gating for Lung Cancer Radiotherapy using Active Learning*

8. Sarah Brown (July 2013)

Thesis: *Machine Learning Analysis of Peripheral Physiology for Emotion Detection*

Undergraduate Project Advising:

1. Sufeng Li (April 2005).

Honors Research Project: *A Graphical User Interface for Medical Image Retrieval*
Supported by the Northeastern University's Matthews Award.

She is currently pursuing graduate studies at Stanford University.

2. Amanda Funai (Dec. 2004).

Research Project: *Feature Selection and Clustering Visualization Toolbox*

Supported by my NSF Career Award.

She is currently pursuing her Ph.D. degree at University of Michigan, Ann Arbor,
and was awarded with an NSF Graduate Research Fellowship in 2007.

3. Michael Mazzello

Research Project: *Radioisotope Detection*

Supported by CENSSIS.

Ph.D. Thesis Committees:

1. Juan Carlos Rojas (Thesis, Aug. 2003). "*Multimedia Macros for Portable Optimized Programs.*" Advisor: Miriam Leeser
2. Anupama Jagannathan (Proposal, Nov. 2004; Thesis, Aug. 2005). "*Segmentation and Recognition of 3D Point Clouds within Graph-theoretic and Thermodynamic Frameworks.*" Advisor: Eric Miller
3. Yijian Wang (Proposal, June 2005; Thesis, Dec. 2006). "*Modeling and Acceleration of File-I/O Dominated Parallel Workloads.*" Advisor: David Kaeli
4. Ashley Tarokh (Proposal and Thesis, Aug. 2005). "*Shape-Based Methods for Linear Inverse Scattering Problems.*" Advisor: Eric Miller
5. Alireza Aliamiri (Proposal and Thesis, Dec. 2006). "*Statistical Methods for Unexploded Ordnance Discrimination.*" Advisor: Eric Miller
6. Haiqian Yu (Proposal, Mar. 2005; Thesis, Dec. 2006). "*Optimizing Data Intensive Window-based Image Processing on Reconfigurable Hardware Boards.*" Advisor: Miriam Leeser
7. Bing Zhang (Proposal, Aug. 2006; Thesis, April 2007). "*Discriminative Feature Optimization for Speech Recognition.*" Advisors: John Makhoul and Gene Cooperman
8. Mei Li (Proposal, Dec. 2006; Thesis, Aug. 2007). "*Symbolic Reasoning About Dynamic Systems in Conflict Alert Situations.*" Advisor: Mitch Kokar
9. John Oldham (Proposal, Feb. 2006). "*Proteomic Investigation of the Relationship between Primary and Secondary Metabolism in Plants and Plant Cell Culture.*" Advisor: Carolyn Lee-Parsons
10. Lucio Cetto (Thesis, July 2007). "*Analysis of DNA Chromatograms for Base Calling Using Unsupervised Statistical Learning Methods.*" Advisor: Elias Manolakos
11. Xiaojun Wang (Thesis, Dec. 2007). "*Variable Precision Floating-Point Divide and Square Root for Efficient FPGA Implementation of Image and Signal Processing Algorithms.*" Advisor: Miriam Leeser
12. Keary Helen LeBeau (Thesis, April 2008). "*A Bi-Directional Model for Load Rating Applied to a Prestressed Concrete Bridge Beam.*" Advisor: Sara Wadia-Fascetti.
13. Robert Linnehan (Proposal, Nov. 2007; Thesis, July 2008). "*Performance Bounds and New Detection Methods for Synthetic Aperture Radar.*" Advisor: David Brady
14. Jie Cheng (Proposal, Dec. 2007; Thesis, April 2009). "*Automated Detection and Time Lapse Analysis of Dendritic Spines in Laser Scanning Microscopy Images.*" Advisor: Eric Miller

15. Cheng Wu (Thesis, April 9, 2010). “*Novel Function Approximation Techniques for Large-Scale Reinforcement Learning*,” Advisor: Waleed Meleis
16. Erhan Bas (Thesis, Aug. 2011). “*Extracting Structural Information on Manifolds from High Dimensional Data and Connectivity Analysis of Curvilinear Structures in 3D Biomedical Images*.” Advisor: Deniz Erdogmus
17. Tian Lan (Thesis, Oct. 2011). “*Extraction, Feature Selection and Dimensionality Reduction Techniques for Brain Computer Interfaces*.” Advisor: Deniz Erdogmus
18. Mustafa Ayazoglu (Proposal, Dec. 2011; Thesis, June 14, 2012). “*Fast Sparse Subspace Identification Tools with Applications to Dynamic Vision*.” Advisor: Mario Sznaiier
19. Fatemeh Azmandian (PhD Proposal, Oct. 2011; Thesis, July 26, 2012). “*Learning at the Virtualization Layer: Intrusion Detection and Workload Characterization from within the Virtual Machine Monitor*” Advisor: David Kaeli
20. Alexandru Vasile (PhD Thesis, April 2, 2013) “*Hierarchical Image Geo-Location on a World-Wide Scale*.” Advisor: Octavia Camps
21. Noushin Golabchi (PhD Proposal, 1/2012; Thesis, Aug. 22, 2013). “*Graphical model based segmentation of massive numbers of irregular small objects in images, with application to axon characterization in histological sections*,” Advisor: Dana Brooks
22. Sidi Niu (Proposal, June 2012; Thesis April 18, 2013). “*Quantification of Chemical Gaseous Plumes on Hyperspectral Imagery*.” Advisor: Vinay Ingle
23. Jennifer Mankin (PhD Proposal, 9/2012; Sept. 26, 2013) “*Classification of Malware Persistence Mechanisms using Low-Artifact Disk Instrumentation*.” Advisor: David Kaeli
24. Curtis Watson (PhD Thesis, Sept. 12, 2013) “*Signal Detection and Digital Modulation Classification-Based Spectrum Sensing for Cognitive Radio*.” Advisor: Waleed Meleis
25. Sheng You (PhD Proposal, 11/5/2012; Thesis, March 31, 2014) “*Automatic sublingual microcirculatory image analysis and quantitative assessment of the microcirculation*,” Advisor: Deniz Erdogmus
26. Binlong Li (PhD Proposal, 12/18/2012; Thesis, June 14, 2013). “*Dynamics-Based Invariants for Video Analytics*,” Advisor: Octavia Camps
27. Umut Orhan (PhD Thesis, Dec. 4, 2013). “*RSVP Keyboard: An EEG Based BCI Typing System with Context Information Fusion*.” Advisor: Deniz Erdogmus
28. Fei Xiong (PhD Proposal, June 2013; Thesis, April 7, 2014). “*Manifold Embedding with Dynamic and/or Classification Supervision*,” Advisor: Octavia Camps
29. Kang Li (PhD Proposal, April 15, 2014). “*Video Event Recognition and Prediction Based on Temporal Structure Analysis*,” Advisor: Raymond Fu
30. Ming Shao (PhD Proposal, April 15, 2014). “*Leveraging the Structure of Visual Data for Social Media Analytics*,” Advisor: Raymond Fu

M.S. Thesis Committees:

1. Michael Estlick (Aug. 2002). “*An FPGA Implementation of the K-Means Algorithms for Image Processing*.” Advisor: Miriam Leiser
2. Haiqian Yu (Aug. 2003). “*Memory Architecture for Data Intensive Image Processing Algorithms in Reconfigurable Hardware*.” Advisor: Miriam Leiser
3. Shawn Miller (April 2004). “*Enabling a Real-time Solution to Retinal Vascular Tracing Using FPGAs*.” Advisor: Miriam Leiser
4. Evangelia Komisopoulou (July 2004). “*Clustering Methods For Accurate Background/Foreground Estimation in cDNA Microarray Images*.” Advisor: Elias Manolakos
5. Anita Thomas (Aug. 2004). “*Value Prediction with Perceptrons*.” Advisor: David Kaeli
6. Govindarajan Thattai (Aug. 2004). “*Discriminative Initialization methods to HMM parameter estimation for Speech recognition*.” Advisor: John Makhoul
7. Sushanth Dabhiru (Nov. 2004). “*Statistical Modeling for Story Segmentation of Audio Broadcasts*.” Advisor: John Makhoul

8. Hardik Virani (April 2005). "*Self-Organizing Feature Maps combined with Ecological Ordination Techniques for Effective Watershed Management.*" Advisor: Elias Manolakos
9. Guruprasad Saikumar (Aug. 2005). "*MMI Training for Automatic Segmentation of Conversational Telephone Speech.*" Advisor: John Makhoul
10. Fatemeh Azmandian (Jan. 2008). "*The Chart Checker: Applying Data Mining Techniques to Detect Major Errors in Radiotherapy Treatment Charts.*" Advisor: David Kaeli
11. Harish Kashyap Krishnamurthy (April 2009). "*Study of Algorithms to Combine Multiple Automatic Speech Recognition (ASR) System Outputs.*" Advisor: John Makhoul
12. Minyang Huang (MS Thesis, April 2011). "*Dynamic Based Video Data Registration.*" Advisor: Octavia Camps
13. Teresa Mao (MS Thesis, Dec. 2011). "*Dynamics Based Approach for Human Activity Understanding.*" Advisor: Octavia Camps
14. Jennifer Rogers (March 2012). "*Change Detection Using Linear Prediction in Hyperspectral Imagery.*" Advisor: Vinay Ingle
15. Eric Truslow (July 2012). "*Performance Evaluation of the Adaptive Cosine Estimator Detector for Hyperspectral Imaging Applications.*" Advisor: Vinay Ingle
16. Hanjiao Qiu (April 2014). "*Managing Bulk Sensor Data for Heterogeneous Distributed Sensor Systems.*" Advisor: Gunar Schirner