Curriculum Vita
Hairong Qi

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EDUCATION

August 1999
Ph.D. in Computer Engineering
North Carolina State University (NCSU), Raleigh, NC
Dissertation: A High-Resolution, Large-Area, Digital Imaging System
Advisor: Prof. Wesley E. Snyder

May 1995
M.S. in Computer Science
Northern JiaoTong University, Beijing, P.R.China
Thesis: Analysis and Optimization of the Chinese Transportation Management Information System
Advisor: Prof. Quanshou Zhang

July 1992
B.S. in Computer Science
Northern JiaoTong University, Beijing, P.R.China

WORKING EXPERIENCE

2014 - present
The University of Tennessee, Knoxville
Gonzalez Family Professor in Electrical Engineering and Computer Science Department. Research and teaching interests include collaborative processing in resource-constrained distributed systems, automatic target recognition with advanced imaging, computer vision and smart camera networks, machine learning.

2011 - 2014
The University of Tennessee, Knoxville
Professor in Electrical Engineering and Computer Science Department.

2005 - 2011
The University of Tennessee, Knoxville
Associate Professor in Electrical Engineering and Computer Science Department.

1999 - 2005
The University of Tennessee, Knoxville
Assistant Professor in Electrical and Computer Engineering Department.

1996 - 1999	**Center for Advanced Computing and Communication, NCSU** Research Assistant in Image Processing and Medical Imaging. Conducted research in image restoration, optimization, image fusion, and medical imaging.
Summer 1996	**Long, Miller & Associates, LLC, Greensboro, NC** Software Designer. Developed a large insurance information management system.
1995 - 1996	**Center for Robotics and Intelligent Machines, NCSU** Research Assistant in Computer Vision. Conducted research in multisensor data fusion using agent technology, knowledge discovery in database, and content-based image retrieval.
Summer 1995	**Microsoft Corporation, Beijing, P.R.China** Software Engineer
1993 - 1995	**Ministry of Railway, Beijing, P.R.China** Chief Project Member in Information Management. Worked on the project titled "Transformation Management Information System".

HONORS AND AWARDS

April 2020	Research Fellow, College of Engineering, University of Tennessee.
January 2018	Fellow of IEEE, for contributions to collaborative signal processing in sensor networks.
October 2017	Alumni Hall of Fame, Electrical and Computer Engineering Department, North Carolina State University.
April 2017	Chancellor's Award for Research and Creative Achievement, University of Tennessee.
April 2017	Gonzalez Family Faculty and Staff Award (Excellence in Research), Electrical Engineering and Computer Science Department, University of Tennessee
April 2016	Research Fellow, College of Engineering, University of Tennessee.
September 2015	Top 10% Paper Recognition, IEEE International Conference on Image Processing, Quebec City, Canada. (out of 1280 accepted papers)
June 2015	Best Paper Award, Seventh IEEE International Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS), Tokyo, Japan.
August 2014	Gonzalez Family Endowed Professorship
July 2012	GRSS Highest Impact Paper Award, IEEE Geoscience and Remote Sensing Society.

April 2012	Outstanding Faculty Advisor Award, UT College of Engineering.
September 2009	Best Paper Award, Third ACM/IEEE International Conference on Distributed Smart Cameras.
April 2008	Research Fellow Award, UT College of Engineering.
October 2006	Min Kao Faculty Fellowship, Department of Electrical and Computer Engineering, University of Tennessee.
August 2006	Best Paper Award in Systems, Robotics and Applications, International Conference on Pattern Recognition (ICPR).
April 2006	Allen & Hoshall Engineering Faculty Award, UT College of Engineering.
May 2005	NSF CAREER Award.
July 2004	Commendation for Excellence in Technical Communications, LaserFocusWorld.
April, 2004	Chancellor's Award for Professional Promise in Research and Creative Achievement, University of Tennessee.
April 2004	Angie Warren Perkins Awards for Women Junior-Level Faculty Scholarship, Teaching, and/or other significant contributions, University of Tennessee.
April 2003	Leon and Nancy Cole Superior Teaching Award, UT College of Engineering.
October 2001	Science Alliance Faculty Award, University of Tennessee and Oak Ridge National Laboratory.

PATENTS AND INVENTION DISCLOSURES

E. Greenbaum, M. Rodriguez, Jr., **H. Qi**, X. Wang. *Biosensor Method and System Based on Feature Vector Extraction.* Patent No.: US 8,476,062 B2. Date of Patent: July 2, 2013.

E. Greenbaum, M. Rodriguez, Jr., J. Wu, **H. Qi**. *Method and Apparatus for Enhanced Detection of Toxic Agents.* Patent No.: US 8,198,075 B2. Date of Patent: June 12, 2012.

PROFESSIONAL AFFILIATIONS

2018	Fellow, IEEE
2005 - 2017	Senior Member, IEEE
2000 - 2004	Member, IEEE
1997 - 1999	Student Member, IEEE
2000 - 2010	Member, Sigma Xi

SERVICE ACTIVITIES

Professional Services

Editorial Board, IEEE Multimedia Magazine, 2020 - 2021.

Member (2018-2020) and Advisory Member (2021-2023), Multimedia Signal Processing Technical Committee (MMSP-TC), IEEE Signal Processing Society.

Associate Editor, *IEEE Transactions on Image Processing*, 2018-2021.

Guest Editor, *Remote Sensing*. Special Issue on "Learning-Based Hyperspectral Information Extraction: Algorithms and Applications."

Associate Editor, *Computers in Biology and Medicine*, 2003-2013.

Member of Editorial Board, *International Journal of Distributed Sensor Networks*, 2010-present.

Member of Editorial Board, *Journal of Mechanics in Medicine and Biology (JMMB)*, 2007-present.

Panelist, "IEEE Fellow and Beyond: How to Get There," Women in Signal Processing Luncheon, *IEEE International Conference on Image Processing*, September 24, 2019.

Guest Editor, Special Issue on "Recent Advances in Remote Spectral Sensing" at *Journal of Sensors*, 2016.

Session Chair, *IEEE International Conference on Image Processing*, 2015, 2019.

Session Chair, *7th Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS)*, Tokyo, Japan, June 2015.

TPC Member, *IEEE SmartGridComm, Data Management and Grid Analytics Symposium*, Venice, November 2014.

Editorial Advisory Board for Book *Medical Infrared Imaging*. Edited by Nicholas Diakides, Joseph D. Bronzino, CRC Press, 2011.

Editorial Advisory Board for Book *Visual Information Processing in Wireless Sensor Networks*. Edited by Li-minn Ang and Kah Phooi Seng, IGI Global, 2010.

Associate Editor, *International Conference on Intelligent Robots and Systems (IROS)*, 2011-2013.

Technical Program Co-Chair, *2nd International Workshop on Compressive Sensing in Cyber-Physical Systems (CSCPS)*, in conjunction with *IEEE International Conference on Mobile Ad hoc and Sensor Systems (MASS)*, Philadelphia, Pennsylvania, October 28-30, 2014.

Organization Committee Member, *1st International Workshop on Compressive Sensing in Cyber-Physical Systems (CSCPS)*, in conjunction with MASS, Hangzhou, China, October 13, 2013.

TPC Member, *Sixth ACM/IEEE International Conference on Distributed Smart Cameras*, Hong Kong, October 30 - November 2, 2012.

TPC Member, *First IEEE International Conference on Communications in China (ICCC)*, Beijing, China, August 15-18, 2012.

Publicity Co-Chair, *Cyber-Physical Networking Systems (CPNS) Workshop* in conjunction with *ICDCS 2012*, Macau, China, June 18-21, 2012.

TPC Member, *3rd International Workshop on Mobility in Wireless sensor Networks (MobiSensor)*, in conjunction with *8th IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS)*, Hangzhou, China, May 18-20, 2012.

Technical Program Committee (TPC) Member, *International Symposium on Visual Computing (ISVC)*, 2010-2012.

TPC Member, *2nd International Workshop on Collaborative Mobile Systems and Sensors Networks (CMSSN)*, Denver, Colorado, May 21-25, 2012.

TPC Member, *IEEE Wireless Communications and Networking Conference (WCNC)*, Paris, France, April 1-4, 2012.

Associate Editor, *International Conference on Intelligent Robots and Systems (IROS)*, Taipei, Taiwan, October 18-22, 2010.

TPC Member, *Fifth ACM/IEEE International Conference on Distributed Smart Cameras*, Ghent, Belgium, August 23-26, 2011.

TPC Member, *Second International Workshop on Mobility in Wireless Sensor Networks (MobiSensor)*, Barcelona, Spain, June 27-29, 2011.

TPC Member, *International Symposium on Visual Computing (ISVC)*, Las Vegas, NV, November 29 - December 1, 2010.

Program Committee Member, *IEEE International Conference on Intelligent Robotics, Automations, Telecommunication Facilities and Applications (IRoA-11)*, Gwangju, Korea, October 20-22, 2011.

PhD Forum Chair, *ACM/IEEE International Conference on Distributed Smart Camera Networks*, Atlanta, GA, August 31 - September 3, 2010.

TPC Member, *1st International Workshop on Mobility in Wireless Sensor Networks (MobiSensor)* in conjunction with the *6th IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS)*, Santa Barbara, CA, June 21-23, 2010.

TPC Member, *Distributed Collaborative Sensor Networks Workshop* in conjunction with the 2010 *International Symposium on Collaborative Technologies and Systems (CTS)*, Chicago, IL, May 17-21, 2010.

TPC Member, *IEEE Wireless Communications & Networking Conference (WCNC)*, Sydney, Australia, April 18-21, 2010.

Publication Co-Chair, *International Conference on Robotics and Automation (ICRA)*, Anchorage, Alaska, May 3-7, 2010.

Session Chair, *The Fifth International Conference on Mobile Ad-hoc and Sensor Networks (MSN)*, Wu Yi Mountain, China, December 14-16, 2009.

TPC Member, *IEEE International Conference on Automation and Logistics (ICAL)*, Shenyang, China, August 5-7, 2009.

TPC Member, *Workshop on Knowledge Discovery for Patient-Centric Healthcare (PCH)* at *The 15th ACM SIGKDD Conference on Knowledge Discovery and Data Mining*, Paris, June 28 - July 1, 2009.

TPC Member, *International Conference on Mobile Communications and Pervasive Computing (MCPC)*, Leipzig, Germany, March 23-25, 2009.

TPC Member, *IEEE Radio and Wireless Symposium (RWS'09)*, subcommittee on *Emerging Wireless Technologies and Applications*, 2009.

Member of International Advisory Board, *International Congress on Pervasive Computing and Management (ICPCM)*, Delhi, India, December 12-14, 2008.

TPC Member, *IEEE International Conference on Automation and Logistics (ICAL)*, Qingdao, China, September 1-3, 2008.

International Program Committee, *2008 SIWN International Conference on Networking, Internet and Mobile Communications (NIMC)*, Glasgow, UK, July 21-24, 2008.

TPC Member, *IEEE Wireless Communications & Networking Conference*, Las Vegas, NV, March 31 - April 3, 2008.

PC Member, *13th Iberoamerican Congress on Pattern Recognition*, Havana, Cuba, September 9-12, 2008.

OC (Organizing Committee)/IPC (International Program Committee), *ASME/IEEE International Conference on Mechatronic and Embedded Systems and Applications*, Las Vegas, September 4-7, 2007.

International Program Committee (IPC) Member, *10th International Conference on Computer and Information Technology (ICCIT)*, Bangladesh, December 27-29, 2007.

TPC Member, *International Conference on Intelligent Computing (ICIC'07)*, Qingdao, China, August 21-24, 2007.

TPC Member, *IEEE International Conference on Mechatronics and Automation (ICMA'07)*, Harbin, Heilongjiang, China, August 5-8, 2007.

TPC Member, *IEEE International Conference on Pervasive Computing (ICPS) 2007 Workshop on Information Fusion and Dissemination in Wireless Sensor Networks (SensorFusion)*, Istanbul, Turkey, July 2007.

TPC Member, *IEEE Radio and Wireless Symposium (RWS'07)*, subcommittee on *Wireless Sensors / Ad Hoc Networks*, Long Beach, CA, January 7-12, 2007.

Track Chair, Image Registration and Segmentation, *International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS)*, New York, September 2006.

TPC Member, *2nd IEEE International Conference on Sensor Networks and Applications (SNA'06)*, Beijing, China, October 2006.

TPC Member, *International Conference on Wireless and Mobile Communications (ICWMC'06)*, Bucharest, Romania, July 2006.

TPC Member, *IEEE International Conference on Mechatronics and Automation (ICMA'06)*, LuoYang, HeNan, China, June 25-28, 2006.

TPC Member, *IEE Mobility Conference*, Bangkok, Thailand, 2006.

TPC Member, *International Conference on Intelligent Computing (ICIC'06)*, Kunming, China, 2006.

International Program Committee (IPC) Member, *International Conference on Computer and Information Technology (ICCIT)*, Bangladesh, December 21-23, 2006.

TPC Member, *First International Workshop on Software for Sensor Networks (SensorWare)* in conjunction with *First International Conference on Communication System Software and Middleware 2006*, New Delhi, India, January 2006.

Session Co-Chair on *Infrared Imaging* at the *27th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS)*, Shanghai, China, September 2005.

Special Session Co-Chair on *Sensor Networks* at *IEEE International Conference on Intelligent Computing*, Hefei, China, August 2005.

Co-organizer and Lecturer, Tutorial Workshop on *Task-Oriented Mobile Actuator and Sensor Networks* at *IEEE/RSJ International Conference on Intelligent Robots and Systems*, Alberta, Canada, August 2005.

Organizing Committee and TPC Member, *Wireless Internet Conference (WICON) 2005 Workshop on Information Fusion and Dissemination in Wireless Sensor Networks*, Budapest, Hungary, July 2005.

TPC Member, *IEEE International Conference on Mechatronics and Automation*, Niagara Falls, Ontario, Canada, July 2005.

Session Chair and TPC Member, *IEEE International Conference on Image Processing*, 2004, 2005.

Session Chair on *Algorithms* at *5th International Conference on Computer Vision, Pattern Recognition and Image Processing*, Research Triangle Park, NC, September 2003.

Program Committee and Session Chair on "Distributed Data Mining," *C. Warren Neel Conference on the New Frontier of Data Mining (DM), Knowledge Discovery (KD), and E-Business*, Knoxville, TN, June 22-25, 2002.

Guest Editor, *Distributed Sensor Networks for Real-time Systems with Adaptive Reconfiguration.* Special Issue of *Journal of Franklin Institute*, May, 2001.

Session Chair, *IEEE International Joint Symposia on Intelligence and Systems*, Rockville, Maryland, May 21-23, 1998.

Editorial Reviews

Canadian Journal of Electrical and Computer Engineering
EURASIP Journal on Applied Signal Processing
Information Fusion Journal
International Journal on Distributed Sensor Networks
Journal of American Society of Information Science
Journal of Systemics, Cybernetics and Informatics
Journal on Computer Science and Technology
Journal on Parallel and Distributed Computing
IEEE Geoscience and Remote Sensing Letters
IEEE Journal on Selected Areas in Communications
IEEE Network
IEEE Signal Processing Letters
IEEE Transactions on Geoscience and Remote Sensing
IEEE Transactions on Image Processing
IEEE Transactions on Knowledge and Data Engineering
IEEE Transactions on Multimedia
IEEE Transactions on Signal Processing
IEEE Transactions on Systems, Man, and Cybernetics, Part B
IEEE Transactions on Wireless Communications
IEEE Transactions on Computers
Proceedings of the IEEE
Optical Engineering

University and Departmental Services

Member, Committee for Honorary Degree, UT, 2014 -

Secretary, *The University of Tennessee Chapter of Sigma Xi*, 2000-2012. Organizing the Annual Sigma Xi Graduate Student Competition (2001-2011).

Treasurer, *The East Tennessee Chapter of IEEE EMBS Society*, 2006-present.

Member, University of Tennessee Center for International Education (CIT), International Scholar Services, International Advisor Search Committee, 2002.

Member, Departmental Faculty Search Committee (Computer Engineering Area, Image Processing Area, Systems and Control Area, Power System Area, Embedded System Area), 2000—2003, 2005—2007, 2009, 2011, 2017.

Member, Departmental Ad-Hoc Curriculum Committee, 2001.

Member, Departmental Undergraduate Committee, 2002-2007.

Member, CS/ECE Merger Committee, 2006.

Chair, Departmental Faculty Search Committee (Computer Engineering area, 2008; Cybersecurity area, 2016; Edge Computing area, 2019).

Member, Dean's Search Committee, 2008.

Internal Reviewer for the Department of Civil and Environmental Engineering Academic Program Review, 2009, 2015.

Member, Associate Dean's Search Committee, 2009.

Graduate Coordinator, EECS Department, 2010-2012.

Chair, Computer Engineering Curriculum Reform Committee, 2011.

Graduate Teaching Assistant Assignment, 2013-2018.

Chair, Cybersecurity Minor Program, 2014.

Member, Nuclear Engineering Department Search Committee, 2011.

Member, Civil and Environmental Engineering Department Search Committee, 2017.

Member, College P & T Committee, 2016-2019 (excluding 2018).

Public Services

NSF Review Panel

Proposal Reviewer, *U.S. Army Research Office*

Panel Member, *Careers in Science - A Symposium for Undergraduates*. Organized by Department of Ecology and Evolutionary Biology, University of Tennessee, March 2002.

Judge, *State Science Olympiad Competition*, April 2001, 2006.

PUBLICATIONS

Books

W. E. Snyder, **H. Qi**, *Machine Vision*, Cambridge University Press, New York, January 2004.

W. E. Snyder, **H. Qi**, *Fundamentals of Computer Vision*, Cambridge University Press, New York, October 2017.

Book Chapters

(1) **H. Qi**, T. Wang, J. D. Birdwell, "Chapter 19: Global principal component analysis for dimensionality reduction in distributed data mining," *Statistical Data Mining and Knowledge Discovery*. Editor: Hamparsum Bozdogan, pages 327-342, Boca Raton, Chapman & Hall, CRC Press, 2004.

(2) X. Wang, **H. Qi**, S. Beck, "Chapter 14: Distributed multi-target detection in sensor networks," *Frontiers in Distributed Sensor Networks*. Editor: R. Brooks, S. S. Iyengar, pages 265-279, CRC Press, 2004.

(3) **H. Qi**, Y. Xu, P. T. Kuruganti, "Chapter 41: The mobile agent framework for collaborative processing in sensor networks," *Frontiers in Distributed Sensor Networks*. Editor: R. Brooks, S. S. Iyengar, pages 783-800, CRC Press, 2004.

(4) X. Wang, **H. Qi**, S. Beck, H. Du, "Progressive approach to distributed multiple-target detection in sensor networks," pp. 486-503, *Sensor Network Operations*. Editor: Shashi Phoha, Thomas F. La Porta, Christopher Griffin. Wiley-IEEE Press, March 2006.

(5) **H. Qi**, D. A. Diakides, "Thermography (Invited)," *Encyclopedia of Medical Devices and Instrumentation*, 2nd Ed. Editor: John G. Webster. John Wiley & Sons, March 2006.

(6) **H. Qi**, P. T. Kuruganti, W. E. Snyder, "Detecting breast cancer from thermal infrared images by asymmetry analysis," *Medical Infrared Imaging*. Editor: Nicholas A. Diakides, Joseph D. Bronzino, pages 11-1 – 11-14, CRC Press, 2008.

(7) L. Miao, **H. Qi**, W. E. Snyder, "Chapter 6: Mosaicking and demosaicking in the design of multispectral digital cameras," *Single-Sensor Imaging: Methods and Applications for Digital Cameras*. Editor: Rastislav Lukac, pages 153-181, CRC Press, Spring 2008.

(8) **H. Qi**, N. A. Diakides, "Chapter 6: Thermal infrared imaging in early breast cancer detection - A survey of recent research," *Augmented Vision Perception in Infrared: Algorithms and Applied Systems*. Editor: Riad I. Hammoud. Series: *Advances in Pattern Recognition*, pages 139-152, Springer, 2009.

(9) Q. Cao, R. Gunasekaran, **H. Qi**, "Rule-based data aggregation in a distributed diagnostic system," *Distributed Diagnosis and Home Healthcare (D2H2)*. Vol. 3. Editor: Eddie YK Ng, Rajendra U. Acharya, and Toshiyo Tamura. American Scientific Publishers, 2012.

(10) Ying Qu, Hairong Qi, Chiman Kwan, "Application of deep learning approaches to enhancing Mastcam images," *Recent Advances in Image Restoration with Applications to Real World Problems*, 2020.

Refereed Journals

(1) **H. Qi**, W. E. Snyder, "Content-based image retrieval in picture archiving and communications systems," *J. of Digital Imaging*, 12(2): 81-82, Suppl 1 (May), 1999.

(2) W. E. Snyder, **H. Qi**, L. Elliott, J. Head, C. X. Wang, "Increasing the effective resolution of thermal infrared images," *IEEE Engineering in Medicine and Biology Magazine*, 19(3): 63-70, May/June 2000.

(3) **H. Qi**, W. E. Snyder, D. Marchette, "An efficient approach to segment man-made targets from unmanned aerial vehicle imagery," *Optical Engineering*, 39(5): 1267-1274, May 2000.

(4) **H. Qi**, S. S. Iyengar, K. Chakrabarty, "Distributed sensor networks - a review of recent research," *Journal of the Franklin Institute*, 338(6): 655-668, 2001. (Most downloaded article in Journal of the Franklin Institute (ranked #5))

(5) S. S. Iyengar, K. Chakrabarty, **H. Qi**, "Introduction to special issue on 'distributed sensor networks for real-time systems with adaptive configuration'," *Journal of the Franklin Institute*, 338(6): 651-653, 2001

(6) **H. Qi**, S. S. Iyengar, K. Chakrabarty, "Multi-resolution data integration using mobile agents in distributed sensor networks," *IEEE Transactions on Systems, Man, and Cybernetics Part C: Applications and Reviews*, 31(3): 383-391, August 2001.

(7) K. Chakrabarty, S. S. Iyengar, **H. Qi**, E. Cho, "Grid coverage for surveillance and target location in distributed sensor networks," *IEEE Transactions on Computers*, 51(12): 1448-1453, December 2002.

(8) **H. Qi**, P. T. Kuruganti, Y. Xu, "The development of localized algorithms in wireless sensor networks (Invited Paper)," *Sensors Journal*, 2(7): 270-285, July 2002.

(9) **H. Qi**, X. Wang, S. S. Iyengar, K. Chakrabarty, "High performance sensor integration in distributed sensor networks using mobile agents," *International Journal of High Performance Computing Applications*, 16(3):325-335, Fall 2002.

(10) **H. Qi**, Y. Xu, X. Wang, "Mobile-agent-based collaborative signal and information processing in sensor networks," *Proceedings of the IEEE*, 91(8):1172-1183, August 2003.

(11) Q. Wu, N. S. V. Rao, J. Barhen, S. S. Iyengar, V. K. Vaishnavi, **H. Qi**, K. Chakrabarty, "On computing mobile agent routes for data fusion in distributed sensor networks," *IEEE Transactions on Knowledge and Data Engineering*, 16(6):740-753, June 2004.

(12) **H. Qi**, W. E. Snyder, "Infrared imaging learns from camera industry (Invited Paper)," *Laser Focus World*, pages 78-82, July 2004.

(13) Y. Xu, **H. Qi**, "Distributed computing paradigms for multi-sensor data fusion in sensor networks," *Journal of Parallel and Distributed Computing*, 64(8):945-959, August 2004.

(14) B. Arazi, I. Elhanany, O. Arazi, **H. Qi**, "Revisiting public key cryptography for wireless sensor network," *IEEE Computer Magazine*, pages 85-87, November 2005.

(15) S. Venkataraman, D. P. Allison, **H. Qi**, J. L. Morrell-Falvey, N. L. Kallewaard, J. E. Crowe Jr., M. J. Doktycz, "Automated image analysis of atomic force microscopy images of rotavirus particles," *Ultramicroscopy*, 106(8-9):829-837, June-July, 2006.

(16) L. Miao, **H. Qi**, "The design and evaluation of a generic method for generating mosaicked multispectral filter arrays," *IEEE Transactions on Image Processing*, 15(9):2780-2791, September, 2006.

(17) L. Miao, **H. Qi**, R. Ramanath, W. E. Snyder, "Binary tree-based generic demosaicking algorithm for multispectral filter arrays," *IEEE Transactions on Image Processing*, 15(11):3550-3558, November, 2006.

(18) O. Arazi, **H. Qi**, "Load-balanced key establishment methodologies in wireless sensor networks," *International Journal of Security and Networks (IJSN)*, Special Issues in Sensor Networks, 1(3/4):158-166, 2006.

(19) S. Venkataraman, M. J. Doktycz, **H. Qi**, J. L. Morrell-Falvey, "Automated analysis of fluorescence microscopy images to identify protein-protein interactions," *International Journal of Biomedical Imaging*, vol. 2006, Article ID 69851, pp. 1-10, 2006.

(20) H. Du, **H. Qi**, "A reconfigurable FPGA system for parallel independent component analysis," *EURASIP Journal on Embedded Systems*, vol. 2006, Article ID 23025, pp. 1-12, 2006.

(21) C. H. Wang, W. Kuo, **H. Qi**, "An integrated approach for process monitoring using wavelet analysis and a competitive neural network," *International Journal of Production Research*, 45(1):227-244, 2007.

(22) H. Du, **H. Qi**, X. Wang, "Comparative study of VLSI solutions to independent component analysis," *IEEE Transactions on Industrial Electronics*, 54(1):548-558, February, 2007.

(23) Y. Xu, **H. Qi**, "Dynamic mobile agent migration in wireless sensor networks," *International Journal of Ad Hoc and Ubiquitous Computing*, 2(1/2):73-82, 2007.

(24) L. Miao, **H. Qi**, "Endmember extraction from highly mixed data using minimum volume constrained non-negative matrix factorization," *IEEE Transactions on Geoscience and Remote Sensing*, 45(3):765-777, March 2007.

(25) L. Miao, **H. Qi**, H. Szu, "A maximum entropy approach to unsupervised mixed pixel decomposition," *IEEE Transactions on Image Processing*, 16(4):1008-1021, April 2007.

(26) Y. Xu, **H. Qi**, "Mobile agent migration modeling and design for target tracking in wireless sensor networks," *Ad Hoc Networks (Elsevier) Journal*, 6(1):1-16, January 2008.

(27) P. K. Biswas, **H. Qi**, Y. Xu, "Mobile-agent-based collaborative sensor fusion," *Information Fusion*, Elsevier 9(3):399-411, July 2008. [25 hottest (most downloaded) articles, ranked 22nd]

(28) O. Arazi, **H. Qi**, "On calculating multiplicative inverses modulo 2^m," *IEEE Transactions on Computers*, 57(10):1435-1438, October 2008.

(29) T. G. Hallam, A. Raghavan, H. Kolli, D. T. Dimitrov, P. Federico, **H. Qi**, G. F. McCracken, M. Betke, J. K. Westbrook, K. Kennard, T. H. Kunz, "Dense and sparse aggregations in complex motion: Video coupled with simulation modeling," *Elsevier Journal on Ecological Complexity*, 211:1-6, 2009.

(30) M. Karakaya, **H. Qi**, "Distributed target localization using a progressive certainty map in visual sensor networks," Special Issue on *Multimedia AdHoc and Sensor Networks, Elsevier Ad Hoc Networks Journal*, vol. 2010, 15 pages, 2010. doi:10.1016/j.adhoc.2010.08.006

(31) Y. Bai, **H. Qi**, "Feature-based image comparison for semantic neighbor selection in resource-constrained visual sensor networks," *Eurasip Journal on Image and Video Processing (IVP)*, vol. 2010, Article ID 469563, 11 pages, 2010. doi: 10.1155/2010/469563.

(32) D. Yi, C. Wang, **H. Qi**, L. Kong, F. Wang, A. Adibi, "Real-time multispectral imager for home-based health care," *IEEE Transactions on Biomedical Engineering*, 58(3):736-740, March 2011. Epub 2010 September 27. doi:10.1109/TBME.2010.2077637.

(33) **H. Qi**, L. Kong, C. Wang, L. Miao, "A hand-held mosaicked multispectral imaging device for early stage pressure ulcer detection," *Springer Journal of Medical Systems*, 35(5): 895-904, October 2011. doi:10.1007/s10916-010-9508-x

(34) **H. Qi**, X. Wang, L. M. Tolbert, F. Li, F. Z. Peng, P. Ning, M. Amin, "A resilient real-time system design for a secure and reconfigurable power grid," *IEEE Transactions on Smart Grid*, 2(4):770-781, December 2011.

(35) Z. Tu, Q. Wang, **H. Qi**, Y. Shen, "Flocking based distributed self-deployment algorithms in mobile sensor networks," *Journal of Distributed and Parallel Computing*, 72(3):437-449, March 2012.

(36) Z. Tu, Q. Wang, **H. Qi**, Y. Shen, "Flocking based sensor deployment in mobile sensor networks," *Computer Communications*, 35(7):849-860, April 2012.

(37) S. Moon, **H. Qi**, "A hybrid dimensionality reduction method based on support vector machine and independent component analysis," *IEEE Transactions on Neural Networks and Learning Systems*, 23(5):749-761, May 2012.

(38) M. Karakaya, **H. Qi**, "Coverage estimation for crowded targets in visual sensor networks," *ACM Transactions on Sensor Networks*, 8(3), pages: 26:1-26:22, August 2012.

(39) J. Luo, G. Wang, **H. Qi**, Y. Yokoyama, P. K. Liaw, A. Inoue, "Interpreting temperature evolution of a bulk-metallic glass during cyclic loading through spatial temporal modeling," *Intermetallics*, 29:1-13, October 2012.

(40) M. Chen, X. Wang, **H. Qi**, M. Shankar, "Adaptive response time control for metadata matching in information dissemination systems," *Elsevier Journal of Systems Architecture*, 58(10):412-425, November 2012.

(41) J. Luo, W. Wang, **H. Qi**, "Feature extraction and representation for distributed multi-view human action recognition," *IEEE Journal on Emerging and Selected Topics in Circuits and Systems*, 3(2):145-154, June 2013.

(42) M. Karakaya, **H. Qi**, "Collaborative localization in visual sensor networks," *ACM Transactions on Sensor Networks*, 10(2):18:1–18:24, January 2014.

(43) W. Wang, L. He, P. Markham, **H. Qi**, Y. Liu, Q. Cao, L. Tolbert, "Multiple event detection and recognition through sparse unmixing for high-resolution situational awareness in power grid," *IEEE Transactions on Smart Grid*, 5(4):1654-1664, July 2014.

(44) Zhibo Wang, J. Liao, Q. Cao, **H. Qi**, Zhi Wang, "Achieving k-barrier coverage in hybrid directional sensor networks," *IEEE Transactions on Mobile Computing*, 13(7):1443-1455, July 2014.

(45) Jilong Liao, Zhibo Wang, Qing Cao, **Hairong Qi**, "Smart diary: A smartphone-based framework for inference and prediction of users' behaviors," *IEEE Sensors Journal*, 15(5):2761-2773, July 2014.

(46) J. Luo, W. Wang, **H. Qi**, "Spatio-temporal feature extraction and representation for RGB-D human action recognition", *Pattern Recognition Letters*, 50(1):139-148, December 2014.

(47) Yanjun Yao, Sisi Xiong, **Hairong Qi**, Yilu Liu, Leon Tolbert, Qing Cao, "Efficient histogram estimation for smart grid data processing with loglog-BF," *IEEE Transactions on Smart Grid*, 6(1):199-208, January 2015.

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(78) M. Chen, C. Nolan, X. Wang, S. Adhikari, F. Li, **H. Qi**, "Hierarchical utilization control for real-time and resilient power grid," *21st Euromicro Conference on Real-Time Systems (ECRTS)*, pages 66-75, Dublin, Ireland, July 1-3, 2009.

(79) R. Gunasekaran, M. Shankar, D. Gawlick, S. Fisher, A. Yalamanchi, R. Fehling, **H. Qi**, "An event-driven information dissemination model," *The Third ACM International Conference on Distributed Event-based Systems*, Article No. 34, 3 pages, Nashville, TN, July 6-9, 2009.

(80) Y. Bai, **H. Qi**, "Redundancy removal through semantic neighbor selection in visual sensor networks," *Third ACM/IEEE International Conference on Distributed Smart Cameras (ICDSC)*, 8 pages, Como, Italy, August 30 - September 2, 2009. Acceptance rate for oral presentation: 22%

(81) M. Karakaya, **H. Qi**, "Target detection and counting using a progressive certainty map in distributed visual sensor networks," *Third ACM/IEEE International Conference on Distributed Smart Cameras (ICDSC)*, 8 pages, Como, Italy, August 30 - September 2, 2009. (**Best Paper Award**) Acceptance rate for oral presentation: 22%.

(82) W. Oyeyele, **H. Qi**, "A robust node selection strategy for lifetime extension in wireless sensor networks," *The 5th International Conference on Mobile Ad-hoc and Sensor Networks (MSN)*, pages 196-203, Wu Yi Mountain, Fujian, China, December 14-16, 2009.

(83) D. Yang, **H. Qi**, "An effective nonparametric quickest detection procedure based on Q-Q distance," *The 35th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pages 3786-3789, Dallas, TX, March 14 - 19, 2010.

(84) S. Sahyoun, S. Djouadi, **H. Qi**, "Dynamic plume tracking using mobile sensors," *American Control Conference (ACC)*, pages 2915-2920, Baltimore, MD, June 30 - July 2, 2010.

(85) L. He, J. Luo, **H. Qi**, C. Kwan, "A comparative study of several unsupervised unmixing algorithms to detecting anomalies in hyperspectral images," *International Symposium on Spectral Sensing Research*, Missouri, July 2010.

(86) S. Moon, **H. Qi**, "Effective dimensionality reduction based on support vector machine," *International Conference on Pattern Recognition (ICPR)*, pages 173-176, Istanbul, Turkey, August 23-26, 2010.

(87) D. Yang, **H. Qi**, "An effective decentralized nonparametric quickest detection approach," *International Conference on Pattern Recognition (ICPR)*, pages 2278-2281, Istanbul, Turkey, August 23-26, 2010.

(88) J. Luo, **H. Qi**, "Distributed object recognition via feature unmixing," *ACM/IEEE International Conference on Distributed Smart Cameras (ICDSC)*, 8 pages, Atlanta, GA, August 31 - September 4, 2010.

(89) M. Karakaya, **H. Qi**, "Fault detection, correction, and tolerance for collaborative target localization in visual sensor networks," *ACM/IEEE International Conference on Distributed Smart Cameras (ICDSC)*, 8 pages, Atlanta, GA, August 31 - September 4, 2010.

(90) **H. Qi**, Y. Liu, F. Li, J. Luo, L. He, K. Tomsovic, L. Tolbert, Q. Cao, "Increasing the resolution of wide-area situational awareness of the power grid through event unmixing," *Hawaii International Conference on System Sciences (HICSS)*, 8 pages, Manoa, Hawaii, January 4-7, 2011.

(91) Q. Cao, X. Wan, **H. Qi**, T. He, "r-Kernel: An operating system foundation for highly reliable networked embedded systems," *The 30th International Conference on Computer Communications (INFOCOM)*, Shanghai, China, April 10-15, 2011.

(92) S. Li, **H. Qi**, "Sparse representation based band selection for hyperspectral images," *IEEE International Conference on Image Processing (ICIP)*, pages 2693-2696, Brussels, Belgium, September 11-14, 2011.

(93) Y. Bai, **H. Qi**, "An effective approach to corner point detection through multiresolution analysis," *IEEE International Conference on Image Processing (ICIP)*, Brussels, Belgium, September 11-14, 2011.

(94) Z. Wang, C. Taylor, Q. Cao, **H. Qi**, Z. Wang, "Demo abstract: Friendbook: Privacy-preserving friend matching based on shared interests," *The 9th ACM Conference on Embedded Networked Sensor Systems (SenSys)*, pages 397-398, Seattle, WA, November 1-4, 2011.

(95) M. Karakaya, **H. Qi**, "Detection-based tracking for crowded targets in distributed visual sensor networks," *2nd International Workshop on Future of Instrumentation*, Oak Ridge, November 2011.

(96) L. He, **H. Qi**, "Non-parametric Bayesian dictionary learning for image super resolution," *2nd International Workshop on Future of Instrumentation*, Oak Ridge, November 2011.

(97) M. Karakaya, **H. Qi**, "Coverage estimation in heterogeneous visual sensor networks," *IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS)*, pages 41-49, Hangzhou, China, May 16-18, 2012.

(98) M. Karakaya, **H. Qi**, "Communication and energy efficiency in visual sensor networks for people localization," *3rd International Workshop on Future of Instrumentation*, Gatlinburg, TN, October 8, 2012.

(99) H. Xia, **H. Qi**, X. Zhao, "ECG quality assessment based on image processing techniques," *Dynamic Systems and Control Conference*, Fort Lauderdale, FL, October 17-19, 2012.

(100) J. Luo, **H. Qi**, "Motion local ternary pattern for distributed multi-view human action recognition," *6th ACM/IEEE International Conference on Distributed Smart Cameras*, Hong Kong, October 30-November 2, 2012.

(101) L. He, S. D. Miller, **H. Qi**, "Advanced processing methodologies improve neutron radiograph image quality," *The American Society for Nondestructive Testing (ASNT) 22nd Research Symposium,* Memphis, TN, March 18-21, 2013.

(102) J. Yin, B. Ayhan, C. Kwan , W. Wang, S. Li, **H. Qi**, and S. Vance, "Enhancement of JMARS," *44th Lunar and Planetary Science Conference*, Houston, TX, March, 2013.

(103) W. Wang, B. Ayhan, C. Kwan, **H. Qi**, S. Vance, "A novel and effective multivariate method for composition analysis using laser induced breakdown spectroscopy," *35th International Symposium on Remote Sensing Environment (ISRSE)*, Beijing, China, April 22-26, 2013.

(104) R. Guo, S. Li, L. He, W. Gao, **H. Qi**, G. Owens, "Pervasive and unobtrusive emotion sensing for human mental health," *3rd International Workshop on Pervasive Computing Paradigms for Mental Health*, pages 436-439, San Servolo Island, Venice, Italy, May 5, 2013.

(105) S. Li, **H. Qi**, "Distributed data aggregation for sparse recovery in wireless sensor networks," *IEEE Int. Conf. on Distributed Computing in Sensor Systems (DCOSS)*, pages 62-69, Cambridge, MA, May 21-23, 2013.

(106) L. He, **H. Qi**, R. Zaretzki, "Beta process joint dictionary learning for coupled feature spaces with application to single image super-resolution," *Int. Conf. on Computer Vision and Pattern Recognition (CVPR),* Portland, Oregon, June 23-28, 2013. (Acceptance rate: 26.2%)

(107) W. Wang, **H. Qi**, "Unsupervised nonlinear unmixing of hyperspectral images using sparsity constrained probabilistic latent semantic analysis," *5th Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS)*, Gainesville, FL, June 25-28, 2013.

(108) W. Wang, L. Liu, L. He, L. Zhan, **H. Qi**, Y. Liu, "Highly accurate frequency estimation for FNET," *IEEE Power & Energy Society General Meeting (PESGM)*, pages 1-5, Vancouver, Canada, July 21-25, 2013.

(109) Z.B. Wang, J. Liao, Q. Cao, **H. Qi**, Z. Wang"Barrier coverage in hybrid directional sensor networks," *The 10th IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS)*, Hangzhou, China, October 14-16, 2013.

(110) W. Wang, L. He, P. Markham, **H. Qi**, Y. Liu, "Detection, recognition, and localization of multiple attacks through event unmixing," *IEEE International Conference on Smart Grid Communications (SmartGridComm)*, pages 73-38, Vancouver, Canada, October 21-24, 2013.

(111) W. Wang, J. Luo, **H. Qi**, "Action recognition across cameras by exploring reconstructable paths," *Seventh ACM/IEEE International Conference on Distributed Smart Cameras (ICDSC)*, Palm Springs, CA, October 29 - November 1, 2013.

(112) S. Li, **H. Qi**, "Pattern-based compressed phone sensing," *IEEE GlobalSIP Symposium on Controlled Sensing for Inference: Applications, Theory and Algorithms*, pages 169-172, Austin, TX, December 3-5, 2013.

(113) J. Luo, W. Wang, **H. Qi**, "Group sparsity and geometry constrained dictionary learning for action recognition from depth maps," *IEEE International Conference on Computer Vision (ICCV)*, Sydney, Australia, December 3-6, 2013. (Acceptance rate: 30.2%)

(114) R. Guo, **H. Qi**, "Partially-sparse restricted Boltzman machine for background modeling and subtraction," *The 12th International Conference on Machine Learning and Applications (ICMLA)*, Miami, FL, December 4-7, 2013.

(115) B. Johnson, **H. Qi**, J. Isaacs, "Optimizing coverage of three-dimensional wireless sensor network by means of photon mapping," *Winter Simulation Conference (WSC)*, Washington, DC, December 8-11, 2013.

(116) Z.B. Wang, H. Chen, Q. Cao, **H. Qi**, Z. Wang, "Fault tolerant barrier coverage for wireless sensor networks," *The 33rd Annual IEEE International Conference on Computer Communications (INFOCOM)*, Toronto, Canada, April 27 - May 2, 2014.

(117) Bruce Johnson, Jason Isaacs, **Hairong Qi**, "A photon-mapping informed Chan-Vese segmentation algorithm to enable multispectral sensing and path-planning in 3D virtual environments," *10th IEEE Workshop on Perception Beyond the Visible Spectrum (PBVS)* in conjunction with CVPR 2014, Columbus, Ohio, June 23, 2014.

(118) Wei Wang, Shuangjiang Li, **Hairong Qi**, Bulent Ayhan, Chiman Kwan, Steven Vance, "Revisiting the preprocessing procedures for elemental concentration estimation based on CHEMCAM LIBS on MARS rover," *6th Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS)*, Lausanne, Switzerland, June 24-27, 2014.

(119) Bruce Johnson, **Hairong Qi**, Jason Isaacs, "A comparative study of methods to solve the watchman route problem in a photon mapping-illuminated 3D virtual environment," *IEEE Applied Imagery and Pattern Recognition Workshop (AIPR)*, Washington, DC, October 14-16, 2014.

(120) Liu Liu, Jidong Chai, **Hairong Qi**, Yilu Liu, "Power grid disturbance analysis using frequency information at the distribution level," *IEEE International Conference on Smart Grid Communications (SmartGridComm)*, Venice, Italy, November 3-6, 2014.

(121) Shuangjiang Li, Rui Guo, Li He, Wei Gao, **Hairong Qi**, Gina Owens, "Demo Abstract: MoodMagician - A pervasive and unobtrusive emotion sensing system using mobile phones for improving human mental health," *ACM SenSys*, Memphis, TN, November 3-6, 2014.

(122) Shuangjiang Li, **Hairong Qi**, "Recursively low-rank and sparse recovery of surveillance video using compressed sensing," *Eighth ACM/IEEE International Conference on Distributed Smart Cameras*, Venezia, Italy, November 4-7, 2014.

(123) Bruce Johnson, **Hairong Qi**, Jason Isaacs, "Computing a heuristic solution to the watchman route problem by means of photon mapping within a 3D virtual environment testbed," *AAAI Knowledge, Skill, and Behavior Transfer in Autonomous Robots Symposium (KSBT)*, Arlington, Virginia, November 13-15, 2014.

(124) Shuangjiang Li, **Hairong Qi**, "Compressed dictionary learning for detecting activations in fMRI using double sparsity," *GlobalSIP - Information Processing for Big Data*, Atlanta, December 2014.

(125) Wei Wang, **Hairong Qi**, "Real time multi-vehicle tracking and counting at Intersection from a fish eye camera," *IEEE Winter Conference on Applications of Computer Vision (WACV)*, Waikoloa Beach, HI, January 6-9, 2015.

(126) Rui Guo, Wei Wang, Hairong Qi, "Hyperspectral image unmixing using cascaded autoencoder," *IEEE Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensor (WHISPERS)*, Tokyo, Japan, June 2-5, 2015. (Best Paper Award)

(127) Wei Wang, Shuangjiang Li, Hairong Qi, Bulent Ayhan, Chiman Kwan, Steven Vance, "Identify anomaly component by sparsity and low rank," *IEEE Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensor (WHISPERS)*, Tokyo, Japan, June 2-5, 2015.

(128) Ali Taalimi, Hairong Qi, "Online multi-modal task-driven dictionary learning and robust representation for visual tracking," *IEEE International Conference on Advance Video- and Signal-based Surveillance (AVSS)*, Karlsruhe, Germany, August 25-28, 2015.

(129) Zhifei Zhang, Yang Song, Haochen Cui, Jayne Wu, Hairong Qi, "Early mastitis diagnosis through topological analysis of biosignals from low-voltage alternate current," *the 37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Milan, Italy, August 25-29, 2015.

(130) Shuangjiang Li, Wei Wang, Hairong Qi, Bulent Ayhan, Chiman Kwan, Steven Vance, "Low-rank tensor decomposition based anomaly detection for hyperspectral imagery," *IEEE International Conference on Image Processing (ICIP)*, Quebec City, Canada, September 27-30, 2015. (specifically recognized as part of the "Top 10%" papers)

(131) Rui Guo, Hairong Qi, "Facial feature parsing and landmark detection via low-rank matrix decomposition," *IEEE International Conference on Image Processing (ICIP)*, Quebec City, Canada, September 27-30, 2015.

(132) Ali Taalimi, Hairong Qi, "Robust multi-object tracking using confident detections and safe tracklets," *IEEE International Conference on Image Processing (ICIP)*, Quebec City, Canada, September 27-30, 2015.

(133) Ali Taalimi, Shahab Ensafi, Hairong Qi, Shijian Lu, Ashraf A. Kassim, Chew Lim Tan, "Multimodal dictionary learning and joint sparse representation for HEp-2 cell classification," *18th International Conference on Medical Image Computing and Computer Assisted Interventions (MICAAI)*, Munich, Germany, October 5-9, 2015.

(134) Yang Song, Wei Wang, Zhifei Zhang, Hairong Qi, Yilu Liu, "Multiple event analysis for large-scale power systems through cluster-based sparse coding," *IEEE International Conference on Smart Grid Communications (SmartGridComm)*, Miami, FL, November 2-5, 2015.

(135) Alireza Rahimpour, Hairong Qi, David Fugate, Teja Kurugani, "Non-intrusive load monitoring of HVAC components using signal unmixing," *IEEE Global Conference on Signal & Information Processing (GlobalSIP) - Symposium on Signal Processing Applications in Smart Buildings*, Orlando, FL, December 14-16, 2015.

(136) Rui, Guo, Hairong Qi, "Deep tree-structured face: A unified representation for facial biometrics," *IEEE Winter Conference on Applications of Computer Vision (WACV)*, Lake Placid, NY, March 7-9, 2016.

(137) Wei Wang, Hairong Qi, "Learning patch-dependent kernel forests for person re-identification," *IEEE Winter Conference on Applications of Computer Vision (WACV)*, Lake Placid, NY, March 7-9, 2016.

(138) Ying Qu, Rui Guo, Wei Wang, Bulent Ayhan, Chiman Kwan, Steven Vance, "Anomaly detection in hyperspectral images through spectral unmixing and low rank decomposition," *International Geoscience and Remote Sensing Symposium (IGARSS)*, Beijing, China, July 10-15, 2016. (First Prize in Student Competition, out of 174 entries)

(139) Wei Wang, Kun Duan, Tai-Peng Tian, Ting Yu, Ser Nam Lim, Hairong Qi, "Visual tracking based on object appearance and structure preserved local patches matching," *IEEE Advanced Video and Signal-based Surveillance (AVSS)*, Colorado Springs, Colorado, August 24-26, 2016.

(140) Ali Taalimi, Hairong Qi, "Multimodal weighted dictionary learning," *IEEE Advanced Video and Signal-based Surveillance (AVSS)*, Colorado Springs, CO, August 24-26, 2016.

(141) Ali Taalimi, Cristian Capdevila, Alireza Rahimpour, Zhifei Zhang, Hairong Qi, "Robust coupling in space of sparse codes for multi-view recognition," *IEEE International Conference on Image Processing (ICIP)*, Phoenix, AZ, September 25-28, 2016.

(142) Alireza Rahimpour, Jiajia Luo, Hairong Qi, "Distributed object recognition in smart camera networks," *IEEE International Conference on Image Processing (ICIP)*, Phoenix, AZ, September 25-28, 2016.

(143) Zhifei Zhang, Yang Song, Wei Wang, Hairong Qi, "Derivative delay embedding: Online modeling of streaming time series," *The 25th ACM International Conference on Information and Knowledge Management (CIKM)*, Indianapolis, IN October 24-28, 2016. (Acceptance rate: 23%)

(144) Yang Song, Zhifei Zhang, Liu Liu, Alireza Rahimpour, Hairong Qi, "Dictionary reduction: Automatic compact dictionary learning for classification," *The 13th Asian Conference on Computer Vision (ACCV)*, Taipei, Taiwan, November 20-24, 2016. (Acceptance rate: 25%)

(145) Liu Liu, Austin Albright, Alireza Rahimpour, Jiahui Guo, Hairong Qi, "Multivariate empirical mode decomposition based signal analysis and efficient-storage in smart grid," *IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Washington, D.C., December 7-9, 2016.

(146) Alireza Rahimpour, Hairong Qi, "Feature encoding in band-limited distributed surveillance systems," *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, New Orleans, March 5-9, 2017. (Finalist, Student Paper Competition)

(147) Liu Liu, Hairong Qi, "Learning effective binary descriptors via cross entropy," *IEEE Winter Conference on Applications of Computer Vision (WACV)*, Santa Rosa, CA, March 27-29, 2017.

(148) Zhifei Zhang, Yang Song, Hairong Qi, "Age progression/regression by conditional adversarial autoencoder," *IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*, Spotlight Presentation, 9.7% acceptance rate, 2017.

(149) Ying Qu, Rui Guo, Hairong Qi, "Spectral unmixing through part-based non-negative constraint denoising autoencoder," *IEEE Geoscience and Remote Sensing Symposium (IGARSS)*, Fort Worth, TX, July 23-28, 2017.

(150) Ying Qu, Hairong Qi, Bulent Ayhan, Chiman Kwan, Richard Kidd, "Does multi-spectral/hyperspectral pansharpening improve the performance of anomaly detection?" *IEEE Geoscience and Remote Sensing Symposium (IGARSS)*, Fort Worth, TX, July 23-28, 2017.

(151) Liu Liu, Alireza Rahimpour, Ali Taalimi, Hairong Qi, "End-to-end binary representation learning via direct binary embedding," *IEEE International Conference on Image Processing (ICIP)*, Beijing, September 2017.

(150) Alireza Rahimpour, Liu Liu, Ali Taalimi, Yang Song, Hairong Qi, "Person re-identification using visual attention," *IEEE International Conference on Image Processing (ICIP)*, Beijing, September 2017.

(151) Ali Taalimi, Liu Liu, Hairong Qi, "Addressing ambiguity in multi-target tracking by hierarchical strategy," *IEEE International Conference on Image Processing (ICIP)*, Beijing, September 2017.

(152) Ali Taalimi, Alireza Rahimpour, Liu Liu, Hairong Qi, "Multi-view task-driven recognition in visual sensor networks," *IEEE International Conference on Image Processing (ICIP)*, Beijing, September 2017.

(153) Yang Song, Zhifei Zhang, Hairong Qi, "Cross domain face composition and synthesis from limited facial parts," *AAAI Conference on Artificial Intelligence (AAAI)*, New Orleans, LA, February 2018.

(154) Liu Liu, Hairong Qi, "Discriminative cross-view binary representation learning," *IEEE Winter Conference on Applications of Computer Vision (WACV)*, Lake Tahoe, NV, March 2018.

(155) Zhifei Zhang, Yang Song, Hairong Qi, "Decoupled learning for conditional adversarial networks," *IEEE Winter Conference on Applications of Computer Vision (WACV)*, Lake Tahoe, NV, March 2018.

(156) Ying Qu, Hairong Qi, Chiman Kwan, "Unsupervised sparse Dirichlet-net for hyperspectral image super-resolution," *IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*, Spotlight Presentation, 9.7% acceptance rate, June 2018.

(157) Chengcheng Li, Zi Wang, Hairong Qi, "Fast-converging conditional generative adversarial networks for image synthesis," *IEEE International Conference on Image Processing (ICIP)*, October 2018.

(158) Zhibo Wang, Mengkai Song, Zhifei Zhang, Yang Song, Qian Wang, Hairong Qi, "Beyond inferring class representatives: User-level privacy leakage from federated learning," IEEE INFOCOM, April 2019.

(158) Alireza Rahimpour, Sujitha Martin, Ashish Tawari, Hairong Qi, "Context aware road-user importance estimation (iCARE)," *IEEE Intelligent Vehicles Symposium (IV)*, Paris, France, June 9-12, 2019.

(159) Chengcheng Li, Zi Wang, Dali Wang, Xiangyang Wang, Hairong Qi, "Investigating channel pruning through structural redundancy reduction - A statistical study," *Joint Workshop on On-Device Machine Learning & Compact Deep Neural Network Representations (ODML-CDNNR)* in conjunction with *International Conference on Machine Learning (ICML)*, Long Beach, CA, June 14, 2019.

(160) Zhifei Zhang, Zhaowen Wang, Zhe Lin, Hairong Qi, "Image super-resolution by neural texture transfer," *IEEE International Conference on Computer Vision and Pattern Recognition (CVPR)*, Long Beach, CA, June 16-20, 2019.

(161) Jia Liang, Fanqi Wang, Xiaogang Lin, Hairong Qi, Jayne Wu, "Serologic diagnosis of Taenia Solium Cysticercosis through linear unmixing analysis of biosignals from ACEK capacitive sensing method," *The 41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS)*, Berlin, Germany, July 23-27, 2019.

(162) Ying Qu, Razieh Kaviani Baghbaderani, Hairong Qi, "Few-shot hyperspectral image classification through multitask transfer learning," *Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing (WHISPERS)*, July 2019.

(163) Yuanchao Su, Jun Li, Hairong Qi, Paolo Gamba, Antonio Plaza, Javier Plaza, "Multi-task learning with low-rank matrix factorization for hyperspectral nonlinear unmixing," *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Yokohama, Japan, July 28 - August 2, 2019.

(164) Razieh Kaviani Baghbaderani, Fanqi Wang, Craig Stutts, Ying Qu, Hairong Qi, "Hybrid spectral unmixing in land-cover classification," *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Yokohama, Japan, July 28 - August 2, 2019.

(165) Yang Song, Jingwen Zhu, Xiaolong Wang, Hairong Qi, "Talking face generation by conditional recurrent adversarial network," *International Joint Conference on Artificial Intelligence (IJCAI)*, Macao, China, August 10-16, 2019.

(166) Razieh K. Baghbaderani, Hairong Qi, "Incorporating spectral unmixing in satellite imagery semantic segmentation," *IEEE International Conference on Image Processing (ICIP)*, Taipei, Taiwan, September 22-25, 2019.

(167) Ramin Nabati, Hairong Qi, "RRPN: Radar region proposal network for object detection in autonomous vehicles," *IEEE International Conference on Image Processing (ICIP)*, Taipei, Taiwan, September 22-25, 2019.

(168) Yang Song, Zhifei Zhang, Razieh K. Baghbaderani, Fanqi Wang, Ying Qu, Craig Stutts, Hairong Qi, "Land cover classification for satellite images through 1D CNN," *10th Workshop on Hyperspectral Imaging and Signal Processing: Evolution in Remote Sensing (WHISPERS)*, Amsterdam, Netherlands, September 23-26, 2019. doi: 10.1109/WHISPERS.2019.8921180.

(169) Zhibo Wang, Siyan Zheng, Mengkai Song, Qian Wang, Alireza Rahimpour, Hairong Qi, "advPattern: Physical-world attacks on deep person re-identification via adversarially transformable patterns," *International Conference on Computer Vision (ICCV)*, Seoul, Korea, October 27 - November 2, 2019.

(170) Alireza Rahimpour, Hairong Qi, "Class-discriminative feature embedding for meta-learning based few-shot classification," *IEEE Winter Conference on Applications of Computer Vision (WACV)*, Aspen, CO, March 1-5, 2020.

(171) Peng Sun, Zhibo Wang, Yunhe Feng, Liantao Wu, Yanjun Li, Hairong Qi, Zhi Wang, "Towards personalized privacy-preserving incentive for truth discovery in crowd-sourced binary-choice question answering," *IEEE Conference on Computer Communications (INFOCOM)*, Beijing, China, April 27-30, 2020.

(172) Razieh K. Baghbaderani, Ying Qu, Hairong Qi, Craig Stutts, "Representative-discriminative learning for open-set land cover classification of satellite imagery," *16th European Conference on Computer Vision (ECCV)*, Virtual, August 23-28, 2020.

(173) Yunhe Feng, Qing Cao, Hairong Qi, Scott Ruoti, "SenCAPTCHA: A mobile-first CAPTCHA using orientation sensors," *UbiComp/ISWC*, Virtual, September 12-16, 2020.

(174) Maofeng Tang, Ying Qu, Hairong Qi, "Hyperspectral nonlinear unmixing via generative adversarial network," *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Virtual, September 26 - October 2, 2020.

(175) Ramin Nabati, Hairong Qi, "Radar-camera sensor fusion for joint object detection and distance estimation in autonomous vehicles," *12th Workshop on Planning, Perception and Navigation for Intelligent Vehicles* at *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Virtual, October 25 - November 25, 2020.

(176) Chengcheng Li, Hairong Qi, "An efficient pipeline for pruning convolutional neural networks," *The 19th International Conference on Machine Learning and Applications (ICMLA)*, Virtual, December 14-17, 2020.

(177) Ramin Nabati, Hairong Qi, "CenterFusion: Center-based radar and camera fusion for 3d object detection," *IEEE Winter Conference on Applications of Computer Vision (WACV)*, 2021.

(178) Jiangnan Li, Yingyuan Yang, Jinyuan Sun, Kevin Tomsovic, Hairong Qi, "ConAML: Constrained adversarial machine learning for cyber-physical systems," *ACM AsiaCCS.* Hong Kong, June 7 - 11, 2021.

(179) Ramin Nabati, Landon Harris, Hairong Qi, "CFTrack: Center-based radar and camera fusion for 3d multi-object tracking," *3rd Workshop on 3D-Deep Learning for Automated Driving (3D-DLAD)*, in conjunction with *IEEE Intelligent Vehicles Symposium (IV)*, Nagoya, Japan, July 11-12, 2021.

(180) Xiao Yang, Yang Zhao, Hairong Qi, George T. Tabler, "Characterizing sounds under commercial broiler environment," *American Society of Agricultural and Biological Engineers Annual International Meeting (ASABE)*, vol. 1, pp. 579-584. Virtual, July 12-16, 2021.

(181) Chengcheng Li, Ahmad M. Karimi, Woong Shin, Hairong Qi, Feiyi Wang, "The challenge of disproportionate importance of temporal features in predicting HPC power consumption," *Workshop on Monitoring and Analysis for HPC Systems Plus Applications (HPCMASPA)* in conjunction with *IEEE CLUSTER.* Virtual, September 7, 2021.

(182) Chengcheng Li, Zi Wang, Hairong Qi, "Online knowledge distillation by temporal-spatial boosting," *IEEE Winter Conference on Applications of Computer Vision (WACV)*, Waikoloa, HI January 4 – 8, 2022.

(183) Taher Naderi, Amir Sadovnik, Jason Hayward, Hairong Qi, "Monocular depth estimation with adaptive geometric attention," *IEEE Winter Conference on Applications of Computer Vision (WACV)*, Waikoloa, HI January 4 – 8, 2022.

Dissertation

H. Qi, *A High-Resolution, Large-Area, Digital Imaging System*, Ph.D. Dissertation, North Carolina State University, August, 1999.

Invited Talks

(1) **H. Qi**, "Use of Thermal Texture Maps (TTM) in Breast Cancer Detection - Bioyear Concept," *From Tanks to Tumors: A Workshop on the Applications of IR Imaging and Automatic Target Recognition (ATR) Image Processing for Early Detection of Breast Cancer*, Arlington, VA, December 4-6, 2001.

(2) **H. Qi**, "Detecting Breast Cancer from Thermal Infrared Images by Asymmetry Analysis," *Era of Hope*, Department of Defense Breast Cancer Research Program Meeting, vol. 1, p15-10, Orlando, FL, September 25-28, 2002.

(3) **H. Qi**, "Breast Cancer Identification through Shape Analysis in Thermal Texture Maps," *IEEE Annual EMBS Conference*, Houston, TX, October 24-26, 2002.

(4) **H. Qi**, "Thermal infrared imaging in early breast cancer detection - a survey of recent research," *IEEE Annual EMBS Conference*, Cancun, Mexico, 2003.

(5) **H. Qi**, "Parallel ICA and its hardware implementation in hyperspectral image analysis," *Independent Component Analyses, Wavelets, Unsupervised Smart Sensors, and Neural Network II* at *SPIE Defense and Security Symposium*, Orlando (Kissimmee), FL, April 12-16, 2004.

(6) Y. Q. Chen, **H. Qi**, "Task-oriented Mobile Actuator and Sensor Networks (TOMAS-net)," A Full-Day Tutorial Workshop at IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Edmonton, Alberta, Canada, August 2, 2005.

(7) **H. Qi**, "Energy-efficient, Fault-tolerant Collaborative Processing in Sensor Networks," Lecture Series on Computer Vision, Robotics and Human-Computer Interaction, Computer Science Department, City University of New York (CCNY), November 16, 2005.

(8) **H. Qi**, "Detecting Breast Cancer from Thermal Infrared Imaging by Asymmetry Analysis," *Workshop on Infrared Imaging* at *IEEE Annual EMBS Conference*, New York, April 29, 2006.

(9) L. Parker, **H. Qi**, "Energy-efficient, Fault-tolerant Collaborative Processing in Sensor Networks," Invited Tutorial at *the 9th IEEE International Conference on Control, Automation, Robotics and Vision (ICARCV)*, Singapore, December 5-8, 2006.

(10) **H. Qi**, "Collaborative Processing in Sensor Networks," *Lecture Series at ZheJiang University*, Hangzhou, China, May 21 - July 3, 2008.

(11) **H. Qi**, "Collaborative Processing in Sensor Networks," *Invited Seminar at ShenYang Institute of Automation, Chinese Academy of Science*, Shen Yang, China, July 29-31, 2008.

(12) **H. Qi**, "Collaborative Signal and Image Processing in Sensor Networks," *Invited Graduate Seminar at Texas Tech University*, Lubbock, TX, April 3, 2009

(13) **H. Qi**, "A Resilient Real-Time System for a Secure and Reconfigurable Power Grid," *EPRI Workshop on Self-Healing Protection & Control toward Smart Transmission Grid*, Knoxville, TN, April 16, 2009.

(14) **H. Qi**, "Multiple Event Detection and Recognition through Sparse Unmixing for High-Resolution Situational Awareness in Power Grid," *Invited Seminar*, Power & Energy Systems Group, Energy & Transportation Science Division, Oak Ridge National Laboratory, May 14, 2012.

(15) **H. Qi**, "Distributed Solutions in Smart Camera Networks," *Invited Seminar*, Zhejiang University, Hangzhou, China, March 8, 2013.

(16) **H. Qi**, "Collaborative Processing in Sensor Networks," *Invited Seminar*, Chinese Academy of Science, Beijing, China, April 26, 2013.

(17) **H. Qi**, "Collaborative Processing in Sensor Networks," *Invited Seminar*, Chinese Academy of Science, Shanghai, China, May 15, 2013.

(18) **H. Qi**, "Beta Process Joint Dictionary Learning for Coupled Feature Spaces and Its Application to Single Image Super-Resolution," *Invited Speaker*, *Minisymposium on Recent Trends in Single Image Super-Resolution* at *SIAM Conference on Imaging Science*, Hong Kong, May 12-14, 2014.

(19) **H. Qi**, "Seeing the Unseen: Unmixing," *Invited Seminar*, Chinese Academy of Science, Shanghai, China, June 18, 2015.

(20) **H. Qi**, "Panel Discussion: Cyber Physical Systems Challenges with Information Fusion," *Invited Panelist*, SPIE Defense and Commercial Sensing Conference, Baltimore, MA, April 2016.

(21) **H. Qi**, "Beyond Spectral Unmixing?" *Invited Seminar*, Northern University of Nationalities, Yinchuan, China, June 2016.

(22) **H. Qi**, "The World Is a Mixture - How to Unmix It?" *Invited Seminar*, Capital Normal University, Beijing, China, July 2016.

(23) **H. Qi**, "Should We Go Deep and How Deep?" *Invited Seminar*, China University of Petroleum - Qingdao, July 2017.

(24) **H. Qi**, "Is Traditional Image Processing Needed in the Era of Deep Learning?" Zhejiang University, Hangzhou, China, June 2018.

(25) **H. Qi**, "Deep Learning Seminar Series," Shandong University, Jinan, China, July 2018.

(26) **H. Qi**, "From Machine Learning to Deep Learning to Artificial Intelligence," American Legion Post, March 2019.

(27) **H. Qi,**, "Unsupervised Learning and the Incorporation of Physical Constraints in Deep Networks – Application in Hyperspectral Image Super-Resolution," ORNL AI Workshop, September 2019.

GRANTS AND CONTRACTS

Funded and In Progress

Co-Principal Investigator, "CPS: Medium: Secure Constrained Machine Learning for Critical Infrastructure CPS." Funded by *NSF*. February 1, 2021 - January 31, 2024. Grant Total: **$1,200,000**.

Principal Investigator, "Mutated – Modeling and Understanding using Temporal Analysis of Transient Earth Data." Funded by *IARPA* under a subcontract with Accenture Federal Services. Other Participants: Marc Bosch (PI: Accenture). January 28, 2021 - December 21, 2024. Subcontract Total: **$1,510,832**. My Share: **$1,510,832**.

Principal Investigator, "EcoCAR Mobility Challenge." Funded by *DOE*. August 1, 2018 - July 31, 2022. Grant Total: **$80,000**. My Share: **$80,000**.

Co-Principal Investigator, "Investigation of DEtectors, Algorithms, and Systems (IDEAS) to Advance Autonomous Radiological/Nuclear Search." Funded by *Defense Threat Reduction Agency (DTRA)*. Other Participants: Jason Hayward (PI: UT), Qibing Pei (co-PI: UCLA). October 15, 2017 - October 14, 2020. Grant Total: **$1,050,032**. My Share: **$280,676**.

Co-Principal Investigator, "CPS: Synergy: Cost-Effective Mastitis Control and Biosecurity for Sustainable Dairy Farming." Funded by *National Science Foundation and US Department of Agriculture*. Other Participants: Jie Wu (PI: UT). 2017 - 2020. Grant Total: **$1,000,000**. My Share: **$219,173**.

Co-Principal Investigator, "Investigation of DEtectors, Algorithms, and Systems for Wearable Intelligent Nuclear Detection (IDEAS for WIND)." Funded by *Department of Homeland Security*. Other Participants: Jason Hayward (PI: UT), Cari Seifert (co-PI: PNNL). September 1, 2015 - August 31, 2020. Grant Total: **$1,636,730**. My Share: **$530,259**.

Funded and Completed

Principal Investigator, "Large-scale Environment-modeling with Geometric Optimization." Funded by *IARPA* under a subcontract with Applied Research Associates, Inc. (ARA). Other Participants: M. Tarnowski (PI: ARA), M. Pollefeys, K. Schindler (ETH Zurich), D. Aliaga, A. Kak (Purdue University), J. Frahm, A. Berg (UNC-Chapel Hill), and J. Wu (Comprel, Inc.). September 18, 2017 - December 17, 2019. Contract Total: **$354,320**. My Share: **$354,320**.

Principal Investigator, "High Performance Image Processing Algorithms for Current and Future Mastcam Imagers." Funded by *NASA* under a subcontract with Advanced Research, LLC (ARLLC) through STTR Phase II. Other Participants: C. Kwan (PI: ARLLC). September 15, 2017 - December 31, 2019. Contract Total: **$194,700**. My Share: **$194,700**.

Principal Investigator, "Multi-Source Data Mining for Multi-Event Detection, Recognition, and Localization." Funded by *(LLNL)*. Other Participants: Fran Li (co-PI). July 1, 2018 - December 31, 2018. Grant Total: **$50,000**. My Share: **$25,000**.

Principal Investigator, "High Performance Image Processing Algorithms for Current and Future Mastcam Imagers." Funded by *NASA* under a subcontract with Advanced Research, LLC (ARLLC) through STTR Phase I. Other Participants: C. Kwan (PI: ARLLC). June 1, 2016 - May 31, 2017. Contract Total: **$31,810**. My Share: **$31,810**.

Principal Investigator, "University-Industry-National Laboratory Partnership to Improve Building Efficiency by Equipment Health Monitoring with Virtual Intelligent Sensing." Funded by *DOE* under a subcontract with UT-BATTELLE. Other Participants: David Fugate (PI: ORNL), Chelsea Lauriano (Richman Surrey), Wei Gao (UT). December 3, 2014 - November 30, 2016. Contract Total: **$120,000**. My Share: **$100,000**.

Principal Investigator, "CPS: Synergy: Achieving High-Resolution Situational Awareness in Ultra-Wide-Area Cyber-Physical Systems." *National Science Foundation*. October 1, 2012 - September 30, 2016. Grant Total: **$1,000,000**. My Share: **$350,000**. Other participants: Y. Liu, Q. Cao, L. Tolbert from UT.

Principal Investigator, "Real-Time Smart Tools for Processing Spectroscopy Data." Funded by *NASA* under a subcontract with Signal Processing, Inc. (SPI) through STTR Phase II. Other Participants: C. Kwan (PI: SPI). September 18, 2012 - May 30, 2015. Contract Total: **$210,416**. My Share: **$210,416**.

Principal Investigator, "NeTS Small: Distributed Solutions to Smart Camera Networks." *National Science Foundation*. July 1, 2010 - June 30, 2013. Grant Total: **$395,000**. My Share: **$237,001**. Other participants: Q. Cao from UT.

Principal Investigator, "NeTS Small: Distributed Solutions to Smart Camera Networks - REU Student Support Supplements." *National Science Foundation*. July 1, 2010 - June 30, 2013. Grant Total: **$16,000**. My Share: **$16,000**.

Principal Investigator, "Real-Time Smart Tools for Processing Spectroscopy Data." Funded by *NASA* under a subcontract with Signal Processing, Inc. (SPI) through STTR. Other Participants: C. Kwan (PI: SPI). February 1, 2011 - January 31, 2012. Contract Total: **$100,000**. My Share: **$30,000**.

Principal Investigator, "CT-M: Collaborative Research: A Resilient Real-Time System for a Secure and Reconfigurable Power Grid." *National Science Foundation*. September 1, 2008 - August 31, 2011. Grant Total: **$200,000**. UT's Share: **$50,000**. My Share: **$12,500**. Other Participants: L. Tolbert, X. Wang, Fran Li, I. Elhanany, K. Tomsovic at UT, P. Ning at NCSU, F. Z. Peng from MSU, and M. Amin from UM.

Principal Investigator, "CAREER: Collaborative Signal and Information Processing in Sensor Networks." *National Science Foundation.* May 1, 2005 - April 30, 2011. Grant Total: **$390,769**. My Share: **$390,769**.

Principal Investigator, "CAREER Graduate Research Supplements." *National Science Foundation.* Grant Total: **$8,364**.

Principal Investigator, "CAREER REU Student Support Supplements." *National Science Foundation.* Grant Total: **$6,000**.

Principal Investigator, "CAREER IREE Supplements." *National Science Foundation.* Grant Total: **$30,000**.

Principal Investigator, "A Novel and High Performance Change Detection Algorithm for Hyperspectral Images." Funded by *Air Force Office of Science and Research* under a subcontract with Signal Processing, Inc. (SPI) through STTR. Other Participants: C. Kwan (PI: SPI). July 15, 2009 - April 14, 2010. Contract Total: **$100,000**. My Share: **$33,000**.

Principal Investigator, "Data Sharing Middleware for Information Dissemination." *BWXT Y-12.* June 5, 2007 - July 31, 2009. Grant Total: **$400,000**. My Share: **$218,874**. Other Participants: X. Wang, S. Djouadi.

Principal Investigator, "Collaborative Research: CT-T: A Resilient Real-Time System for a Secure and Reconfigurable Power Grid." *National Science Foundation.* September 1, 2007 - August 31, 2008. Grant Total: **$200,000**. UT's Share: **$101,500**. My Share: **$20,300**. Other Participants: L. Tolbert, X. Wang, Fran Li, I. Elhanany at UT, P. Ning at NCSU, F. Z. Peng from MSU, and M. Amin from UM.

Co-Principal Investigator, "Electric Grid Analysis using Distributed State Estimation Techniques and Control Based Approaches." *UT-BATTELLE, Department of Energy.* Other Participants: L. Tolbert (PI), X. Wang. October 1, 2007 - September 30, 2008. Grant Total: **$120,000**. My Share: **$40,000**.

Principal Investigator, "Firmware Approaches to Smart Algorithms." Funded by *Office of Naval Research.* Period of Performance: September 1, 2004 - December 31, 2007. Grant Total: **$226,675**. My Share: **$226,675**.

Principal Investigator, "An Intelligent Agent-Based Model Framework for Optimization and Control of Distributed Sensors." Funded by *Office of Naval Research* under a subcontract with Intelligent Automation, Inc. (IAI) through SBIR Phase II. Other Participants: F. Zhang (PI: IAI), R. F. Wayland (PI: Wayland Applied Mathematicas). June 2005 - June 2007. Contract Total: **$150,000**. My Share: **$30,996**.

Principal Investigator, "Imaging Bioinformatics." Funded by *UT-Battelle Oak Ridge National Laboratory.* May 15, 2004 - September 30, 2005. Contract Total: **$34,742**. My Share: **$34,742**.

Principal Investigator, "A Mobile Sensor Network Testbed." Funded by *SARIF Equipment and Infrastructure Award, University of Tennessee*. May 2004 - April 2005. Award Total: **$12,500** (cost sharing $5,000). My Share: **$7,500**.

Principal Investigator, "Fluorescence Induction Data Analysis from Biosensors for Rapid Monitoring of Primary-Source Drinking Water." Funded by *UT-Battelle Oak Ridge National Laboratory*. July 1, 2004 - February 11, 2005. Contract Total: **$16,311**. My Share: **$16,311**.

Principal Investigator, "Multispectral Infrared Cameras Using Mosaicked Focal Plane Arrays." Funded by *US Army Space and Missile Defense Command* under a subcontract with North Carolina State University. Other Participants: W. E. Snyder (PI: North Carolina State Univ). April 2003 - September 2004. Grant Total: **$198,414**. My Share: **$83,617**.

Principal Investigator, "A New Computing Paradigm for Energy-Efficient Collaboration in Underwater Sensor Networks." Funded by *Office of Naval Research* under a subcontract with Intelligent Automation, Inc. (IAI) through SBIR. Other Participants: F. Zhang (PI: IAI). December 2, 2003 - September 2, 2004. Contract Total: **$70,000**. My Share: **$23,000**.

Principal Investigator, "A Heterogeneous Sensor Network Testbed." Funded by *SARIF Equipment and Infrastructure Award, University of Tennessee*. May 2003 - April 2004. Award Total: **$11,087** (cost sharing $5,500). My Share: **$5,587**

Principal Investigator, "Smart Automated Target Recognition Using Weighted Spectral and Geometric Information." Funded by *US Army Space and Missile Defense Command*. Other Participants: W. E. Snyder (PI: North Carolina State Univ - Subcontract). April 2002 - December 2003. Grant Total: **$182,950**. My Share: **$87,523**

Principal Investigator, "Detecting Breast Cancer from Thermal Infrared Images by Asymmetry Analysis." Funded by *U.S. Army Medical Research and Materiel Command (USAMRMC), Department of Defense Breast Cancer Research Program, Concept Award*. August 2001 - January 2003. Grant Total: **$69,841**. My Share: **$69,841**.

Principal Investigator, "MU-FASHION: Multi-Resolution Data Fusion using Agent-Bearing Sensors in Hierarchically Organized Distributed Sensor Networks." Funded by *DARPA ITO SensIT Program* under a subcontract with Duke University. Other Participants: K. Chakrabarty (PI: Duke Univ), S. S. Iyengar (PI: Louisiana State Univ). July 2000 - June 2003. Grant Total: **$713,046**. My Share: **$208,116**.

Principal Investigator, "Ubiquitous Mining of Distributed, Heterogeneous, Dynamic Database over Logistical Networks." *Challenging Grant from the Center for Information Technology Research (CITR), UTK*, December 2001 - June 2003. Other Co-PIs: D. Birdwell (UTK/ECE), H. Bozdogan (UTK/Statistics), M. Beck (UTK/CS), M. Berry (UTK/CS). Grant Total: **$29,584**. My Share: **$7,396**.

Principal Investigator, "Distributed Data Mining using Mobile Agents (DDMMA)." *UTK Computational and Information Sciences - Research Seed-Money Award*, June

2001 - July 2001. Other Co-PIs: H. Bozdogan. Award Total: **$10,100**. My Share: **$5,600**.

Collaborator, "Design of Data Acquisition System in Automated Site Modeling." *TACOM-NAC-ARC*. PI: Mongi Abidi. Amount of time: 25% in Spring 2000, 10% in Fall 2000.

TEACHING EXPERIENCE

ECE692 **Advanced Topics in Computer Vision** (S'16)
Systemetic and in-depth coverage of computer vision techniques, from kernel operators, noise removal, mathematical morphology, to segmentation, shape, parametric transform, descriptors, matching, and 3-D computer vision.

ECE406/506 **Real-Time Digital Signal Processing** (S'15)
Real-time implementation of digital signal processing algorithms on digital processor chips. Emphasis is on the tradeoffs between signal quality and implementation complexity. Case studies including digital filtering, typical communication applications, speech and image processing.

ECE692 **Advanced Topics in Signal Processing** (S'14)
Topics of current interests, such as compressed sensing, in-network computation, dictionary learning and sparse coding, supervised and unsupervised unmixing. Applications of signal processing techniques in various fields such as smart grid, sensor networks, remote sensing, will be discussed.

ECE491/692 **Real World Reasoning through Mobile Sensor Networks** (S'10, F'07, S'06, S'05, S'04)
This is a special topic course discussing how to reason (or obtain a better understanding of) the real world through a group of collaborative mobile sensors with visionary capabilities.

ECE644 **Information Theory** (S'02)
This course covers the central topics of information theory, which include the basic theory of entropy, relative entropy, and mutual information, and their support for data compression, channel capacity, rate distortion, hypothesis testing, information flow in networks, and gambling.

ECE472/572 **Digital Image Processing** (F'11, F'10, F'09, F'08, F'07, F'05, F'03, F'01, F'00)
This course covers the mathematical foundations and practical techniques for digital manipulation of images in both the spatial and frequency domains, including image enhancement, restoration, compression, and color image processing.

ECE471/571 **Pattern Recognition** (S'19, S'18, S17, F'15, F'14, F'13, S'12, S'11, S'09, S'08, S'05, S'02, S'01)
This is an introductory course to statistical decision theory, adaptive classifiers, and supervised and unsupervised learning. These techniques will be applied to areas of current interest such as face recognition, speech processing, remote sensing, data mining, and bioinformatics.

ECE505 **Digital Signal Processing** (F'15, F'13, F'10, F'09)
This course covers discrete-time signals and systems, sampling, fast Fourier transform, design of FIR filters and IIR filters, filter properties in the Z and Fourier transform domains, structures for digital filters, and hardware implementation of digital filters.

ECE599 **Internet Protocols** (S'03, F'02, F'01)
This course uses a top-down approach to discuss principles of computer networks with a focus on the Internet and TCP/IP protocol suite.

ECE453 **Computer Networking Design** (F'06, F'05, S'03, F'02)
This course covers the principles of computer networking and software design of network protocol with an emphasis on the Internet and TCP/IP protocol suite.

ECE310, ECE315 **Signals and Systems** (S'19, S'18, S'17, F'14, S'01, Su'00)
This course covers the continuous- and discrete-time functions, function transformations, signal energy and power, solution of linear differential equations, system properties, convolution and correlation, continuous- and discrete-time Fourier series, and continuous- and discrete-time Fourier transforms.

ECE205/206 **Object-Oriented Programming** (S'06, F'04, S'00, F'99)
This course covers engineering problem solving and algorithm development by programming computers. It focuses on software engineering, object-oriented design, building abstractions with procedures and data, and programming in a modern computer language.

COSC522 **Machine Learning** (F'19, F'20)
This course covers theoretical and practical aspects of machine learning techniques related to pattern recognition. Statistical methods studied include Bayesian and linear classifiers, support vector machines, neural networks, and unsupervised learning. Syntactic methods include grammatical inference, string matching and Markov chains. Ensemble methods include random forests, adaptive boosting, and classifier fusion.

COSC525, ECE599/692 **Deep Learning** (F'18, F'17)
This course covers theoretical and practical aspects of deep structures like convolutional neural network (CNN), autoencoder (AE), generative adversarial network (GAN), recurrent neural network (RNN), and reinforcement learning (RL).

All course related materials can be located at `http://aicip.ece.utk.edu/teaching.html`.

GRADUATE STUDENT SUPERVISION

Summary: Graduated 24 Ph.D., 23 M.S. with thesis option, 3 M.S. with project option, and 3 M.S. with course only option. Currently advising 7 Ph.D. and 1 M.S. student.

Major Advisor - Current Ph.D. students

Chengcheng Li (Spring 2016)

Fanqi Wang (Fall 2017)

Quan Zhou (Fall 2018)

Razieh Kaviani Baghbaderani (Fall 2018)

Taher Naderi (Fall 2018)

Maofeng Tang (Fall 2018)

Konstantinos Georgiou (Fall 2021)

Major Advisor - Current M.S. students

Michael Han (Spring 2019)

Major Advisor - Ph.D. Graduates

Ramin Nabati (Summer 2021)
Dissertation: Sensor Fusion for Object Detection and Tracking in Autonomous Vehicles

Alireza Rahimpour (Summer 2019)
Dissertation: Attention Mechanism for Recognition in Computer Vision

Yang Song (Spring 2019)
Dissertation: Cross-Domain Image Transformation and Generation by Deep Learning

Zhifei Zhang (Fall 2018)
Dissertation: Conditional Image Synthesis by Generative Adversarial Modeling

Liu Liu (Spring 2018)
Dissertation: Binary Representation Learning for Large Scale Visual Content

Ying Qu (Fall 2017)
Dissertation: Hyperspectral Image Analysis through Unsupervised Deep Learning

Ali Taalimi (Summer 2017)
Dissertation: Learning Multimodal Structures in Computer Vision

Austin Albright (Fall 2016)
Dissertation: A Quantitative Measurement of Mono-Componentness for Time-Frequency Analysis

Rui Guo (Summer 2016)
Dissertation: Face Centered Image Analysis Using Saliency and Deep Learning based Techniques

Wei Wang (Fall 2015)
Dissertation: Exploiting Cross Domain Relationships for Target Recognition

Shuangjiang Li (Summer 2015)
Dissertation: Compressed Sensing in Resource-Constrained Environments: From Sensing Mechanism Design to Recovery Algorithms

Bruce A. Johnson (Fall 2014)
Dissertation: Computing Approximate Solutions to the Art Gallery Problem and Watchman Route Problem by Means of Photon Mapping

Zhibo Wang (Summer 2014) - Co-advised with Dr. Qing Cao
Dissertation: Barrier Coverage in Wireless Sensor Networks
(Chancellor's Award for Extraordinary Professional Promise)

Jiajia Luo (Spring 2014)
Dissertation: Feature Extraction and Recognition for Human Action Recognition
(Chancellor's Award for Extraordinary Professional Promise)

Li He (Fall 2013)
Dissertation: Bayesian Dictionary Learning for Single and Coupled Feature Spaces
(Chancellor's Award for Extraordinary Professional Promise)

Mahmut Karakaya (Summer 2011)
Dissertation: Collaborative Solutions to Visual Sensor Networks
(Chancellor's Award for Extraordinary Professional Promise)

Yang Bai (Spring 2011)
Dissertation: Feature-based Image Comparison and Its Application in Wireless Visual Sensor Networks
(Chancellor's Award for Extraordinary Professional Promise)

Sangwoo Moon (Summer 2010)
Dissertation: A Novel Hybrid Dimensionality Reduction Method Using Support Vector Machines and Independent Component Analysis
(Chancellor's Award for Extraordinary Professional Promise)

Dayu Yang (Fall 2009) - Co-advised with Dr. Husheng Li
Dissertation: An Effective Approach for Nonparametric Quickest Detection and Its Decentralized Realization

Ortal Orazi (Fall 2007)
Dissertation: Self-certified Public Key Cryptographic Methodologies for Resource-constrained Wireless Sensor Networks
(Chancellor's Award for Extraordinary Professional Promise)

Lidan Miao (Fall 2007)
Dissertation: Computationally-efficient Mixed Pixel Decomposition Using Constrained Optimizations
(Chancellor's Award for Extraordinary Professional Promise)

Hongtao Du (Fall 2006) - Co-advised with Dr. Don Bouldin
Dissertation: Efficient Image Processing in Resource-Constrained Visual Sensor Networks
(Chancellor's Award for Extraordinary Professional Promise)

Yingyue Xu (Spring 2005)
Dissertation: Energy Efficient Designs for Collaborative Signal and Information Processing in Wireless Sensor Networks
(Chancellor's Award for Extraordinary Professional Promise)

Xiaoling Wang (Fall 2004)
Dissertation: High Accuracy Distributed Target Detection and Classification in Sensor Networks Based on Mobile Agent Framework

Major Advisor - M.S. Graduates

Chengyong Jiao (Fall 2019), Course Only.

Elliot Greenlee (Summer 2018)
Thesis: Real Time Fusion of Radioisotope Direction Estimation and Visual Object Tracking

Andrew August (Fall 2017), (Non-thesis Option/Project)
Project: Scene Classification in Earth-Surface Imagery

Yang Zhang (Fall 2016)
Thesis: Scheduling for Timely Passenger Delivery in a Large Scale Ride Sharing System

Liu Liu (Summer 2014)
Thesis: Statistical Analysis of Disturbances in Power Transmission System

Daniel Martinez Capilla (Summer 2012) - Co-advised with Dr. Fabrice Meriaudeau at Univerite de Bourgogne (France) through the Erasmus Mundus program VIBOT
Thesis: Sign Language Translator Using Microsoft Kinect

Bryan Bodkin (Summer 2012)
Thesis: Real-Time Mobile Stereo Vision

Shravani Yerabati (Spring 2012), (Non-thesis Option/Project)
Project: Hand Gesture Recognition - A Performance Comparison

Shuangjiang Li (Fall 2011)
Thesis: Distributed Compressive Sparse Sampling for Data Recovery in Wireless Sensor Networks

Allison Higginbotham (Spring 2011), Course only

Pei Yu (Spring 2010), Course only

Harika Tandra (Fall 2009)
Thesis: Automated System to Debug Under-performing Network Flows in Wide Area Networks

Ying Sun (Summer 2008)
Thesis: Dynamic Target Classification in Wireless Sensor Networks

Austin Albright (Fall 2007)
Thesis: The Detection of Stress Corrosion Cracking in National Gas Pipelines Using Electromagnetic Acoustic Transducers

Haritha Kolli (Summer 2007) - Co-advised with Dr. Thomas G. Hallam
Thesis: Study of Interaction Between Mexican Free tailed Bats and Moths

Raghul Gunasekarn (Spring 2007)
Thesis: A Cross-layer Routing Protocol (XLRP) for Wireless Sensor Networks

Cheng Qian (Summer 2006)
Thesis: A Distributed Solution for Visual Sensor Networks to Detect Targets in Crowds

Lu Zhang (Summer 2006)
Thesis: Automatic Image Based Time Varying 3D Feature Extraction and Tracking

Chris Beall (Summer 2006)
Thesis: Distributed Self-Deployment in Visual Sensor Networks

Balasubramanian Lakshminarayanan (Summer 2005)
Thesis: Automatic Target Recognition of Civilian Targets Using Data Fusion

Sankar Venkatraman (Summer 2005) - Co-advised with Dr. Mitchel J. Doktycz
Thesis: Automated Analysis of Fluorescent Microscopic Images to Identify Protein-protein Interactions

Aruna Raghavan (Summer 2005) - Co-advised with Dr. Thomas G. Hallam
Thesis: Study of Individual and Group Behavior of Brazilian Free Tailed Bats and Dynamic Frame Bat Counting Using Real Time Infrared Video

Gaurav Baone (Summer 2005)
Thesis: Development of Demosaicking Techniques for Multi-Spectral Imaging Using Mosaic Focal Plane Arrays

Yang Liu (Fall 2004)
Thesis: The Design of Medium Access Control (MAC) Protocols for Energy Efficiency and QoS Provision in Wireless Sensor Networks

Olawoye Oyeyele (Summer 2004)
Thesis: A Robust Node Selection Strategy for Lifetime Extension in Wireless Sensor Networks

Xuesong Ma (Fall 2003) (Non-thesis Option/Project)
Project: Evaluation of Different Routing Protocols in Ad Hoc Networks

Phani Teja Kuruganti (Summer 2003)
Thesis: Development of Mobile Agent Framework in Wireless Sensor Networks for Multi-Sensor Collaborative Processing

Hongtao Du (Summer 2003) - Co-advised with Dr. Gregory Peterson
Thesis: Dimensionality Reduction Using Parallel ICA and Its Implementation on FPGA in Hyperspectral Image Analysis

Yuxin Tian (Summer 2001)
Thesis: Target Detection and Classification Using Seismic Signal Processing in Unattended Ground Sensor Systems

Advisor - Undergraduate students participated in research

Landon Harris (Fall 2018 - present)

Steven Patrick (Fall 2017 - Spring 2019)

Jia (Jason) Liang (Spring 2017 - Spring 2019)

Andrew Wintenberg (Summer 2016 - Spring 2017), Goldwater Scholarship

Clay Taylor (Summer 2011)

Paul Donnelly (September 2006 - 2008)

Michael McCullough (January 2004 - April 2004)

Advisor - Visiting Ph.D. Students

Peng Sun, Zhejiang University, Hangzhou, China, October 2018 - November 2019

Yuanchao Su, Sun Yat-Sen University, Guangzhou, China, August 2018 - August 2019

Weisheng Tang, scholarship under the State Scholarship Fund by the Chinese Scholarship Council (CSC), Chinese Academy of Science, January 2017 - January 2019

Zhibo Wang, scholarship under the State Scholarship Fund by the Chinese Scholarship Council (CSC), ZheJiang University, December 29, 2009 - June 28, 2011.

Zhiliang Tu, scholarship under the State Scholarship Fund by the Chinese Scholarship Council (CSC), Harbin Institute of Technology, January 5, 2009 - January 4, 2010.

Advisor - Senior Design Team

Matt Anderson (CS), MacKenzie Goff (EE), Casey Lemon (CS), Stephanie Kreutz (EE, and Lead), Fareed Rafipour (EE), Zach Randall (CS), *EcoCAR Mobility Challenge*, Fall 2018 - Spring 2019.

Garrett Agresta (CS), Sam Barton (CS), Chad Davidson (CS and Lead), Nick Greene (CS), Sean Kelly (EE), Jake Mendenhall (CS), *Self Navigating Drone with 3D Mapping*, Fall 2017 - Spring 2018.

Evan Goble, Jeremy Herwig, Dillon Hunneke, Tyler Stuessi (Lead), Arthur Vidineyev, *earEEG*, Spring 2017.

Ethan Black, Holden Coppock, Victoria Florence, Elliot Greenlee (Lead), Caleb Mennen, Jacob Pollack, *Min Kao Building Drone Tour*, ECE402, Spring 2016.

Clay Taylor, Max Trueheart, *Natural User Interface - A Modern Means for Human-Computer Interaction*, ECE400, Spring 2011.

R. Arimilli, B. Hunter (Lead), L. DaSilva, D. Patel, *Wireless Smart Camera Network*, ECE400, Spring 2010.

Advisor - Visiting Scholar

Haiyan Li, *Yunnan University*, Feb. 2018 - Feb. 2019.

Min Li, *Wuhan Textile University*, Sept. 2016 - May 2017.

Ning Ma, *Beijing Forestry University*, Feb. 2015 - Feb. 2016.

Wenxing Bao, *Beifang University of Nationalities*, Aug. 2014 - Aug. 2015.

Shutai Zhang, *Shanghai Ocean University*, Feb. 2012 - Feb. 2013.

Student Awards

Alireza Rahimpour, Top 2% Graduate Student Award, EECS, 2018

Yang Song, Top 2% Graduate Student Award, EECS, 2018

Zhifei Zhang, Top 2% Graduate Student Award, EECS, 2017

Chengcheng Li, Best Graduate Teaching Assistant, EECS, 2017

Alireza Rahimpour, Finalist, Student Paper Contest, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2017.

Yang Song, Best Presentation, CURENT Industrial Day, 2016

Ying Qu, IEEE Mikio Takagi Student Prize (First Prize in Student Paper Competition), IEEE Geoscience and Remote Sensing Symposium (IGARSS), 2016.

Liu Liu, Student Travel Fund, IEEE SmartGridComm, 2014.

Zhibo Wang, Student Travel Fund, IEEE INFOCOM, 2014.

Mahmut Karakaya, Best Paper Award, Third ACM/IEEE International Conference on Distributed Smart Cameras, 2009.

Lidan Miao, Best Paper Award in Systems, Robotics and Applications, International Conference on Pattern Recognition (ICPR), 2006.

Lidan Miao, Best Presentation Award, "Thermodynamic free-energy minimization for unsupervised fusion of dual-color infrared breast images," *Independent Component Analyses, Wavelets, Unsupervised Smart Sensors, and Neural Network* at *SPIE Defense and Security Symposium*, Orlando (Kissimmee), FL, April 17-21, 2006.

Ortal Arazi, Student Travel Award, *IEEE International Conference on Computer Communications and Networks (ICCCN)*, San Diego, CA, October 17-19, 2005.

Sankar Venkatraman, Student Paper Competition Open Finalist at *The 27th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS)*, Shanghai, China, September 1-5, 2005. (11 finalists selected from around 300 submissions)

Lidan Miao, SARIF Summer Graduate Research Assistantship Fund, University of Tennessee, 2005.

Xiaoling Wang, First Place Winner in Sigma Xi Graduate Student Competition, University of Tennessee, 2002, 2004.

Olawoye Oyeyele, Second Place Winner in Sigma Xi Graduate Student Competition, University of Tennessee, 2004.

Xiaoling Wang, SARIF Summer Graduate Research Assistantship Fund, University of Tennessee, 2003.

Hongtao Du, Student Travel Fund, IEEE International Conference on Systems, Man, and Cybernetics, 2003.

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