

Qi Cheng

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Stillwater, OK 74078
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RESEARCH INTERESTS

- + Machine learning and artificial intelligence
- + Smart and secure cyber-physical systems
- + Biomedical data analytics
- + Distributed detection/estimation
- + Data fusion
- + Dynamic modeling

EDUCATION

- + **Ph.D. in Electrical Engineering** **05/2003 – 07/2006**
Department of Electrical Engineering & Computer Science, Syracuse University, Syracuse, NY
Adviser: Professor Pramod K. Varshney
Dissertation: *Distributed Fault Detection for Dynamic Systems*
- + **M.S. in Electrical Engineering** **01/2001 - 05/2003**
Department of Electrical Engineering & Computer Science, Syracuse University, Syracuse, NY
Adviser: Professor Pramod K. Varshney
Thesis: *Distributed Sequential Detection and Bandwidth Management*
- + **B.E. in Electrical Engineering** **09/1995 - 07/1999**
Department of Electrical Engineering, Shanghai Jiao Tong University, Shanghai, China

EXPERIENCE

- + **Oklahoma State University**, Stillwater, OK **08/2021 – present**
Adjunct Associate Professor, Teaching Assistant Professor, Associate Professor
School of Electrical and Computer Engineering
- + **Embry-Riddle Aeronautical University**, Daytona Beach, FL **01/2021 – 08/2021**
Associate Professor
Department of Electrical Engineering and Computer Science
- + **Lawrence Livermore National Lab**, Livermore, CA **12/2017 – 01/2021**
Research Scientist, CED
Mapping Behavior Through the Human Brain: study real-time emotional state recognition through a combination of electrocorticography (ECoG) and depth sensors network; propose event of interest localization in time to alleviate the bias in human annotation.
Transforming Research and Clinical Knowledge in Traumatic Brain Injury (TRACK-TBI): characterize the landscape of the high dimensional heterogeneous outcome space through data fusion based stratification; characterize the patient evolving trajectories in time and across different function groups to facilitate diagnosis and optimal treatment.
Statistical Methods for Nuclear Security: design transfer learning approaches for automated anomaly detection in Gas Centrifuge Enrichment Plant Safeguards.

Cross Infrastructure Resilience Enhancement: model the gas-electricity-weather interdependence and conduct multilayer graph analytics to improve prediction performance and further enhance gas-grid resilience.

+ **Air Force Research Lab**, Rome, NY **08/2015 - 08/2016**

NRC Research Fellow with Dr. Kevin Kwiat (during sabbatical leave)

Cyber Assurance and Graph Signal Processing: explore probabilistic graphical models to represent the complex causal dependencies and interactions between network components and diverse signals that a sophisticated attack can give off in cyber space; explore collaborative intelligence to detect and mitigate advanced persistent threats and to improve network survivability.

+ **School of Electrical & Computer Engineering,** **Oklahoma State University**, Stillwater, OK **07/2012 – 12/2017**

Associate Professor (tenured)

Director, Statistical Signal Processing Lab

Signal processing and communications: explore multitask learning and sparsity for biometric recognition; develop a model-based data-driven framework for anomaly detection; explore array signal processing for sound event detection, sound source localization and tracking.

+ **School of Electrical & Computer Engineering,** **Oklahoma State University**, Stillwater, OK **08/2006 – 06/2012**

Assistant Professor

Director, Statistical Signal Processing Lab

Signal Processing and Communications: develop algorithms for detecting nonhomogeneous event regions promptly and tracking their dynamic behaviors accurately; investigate cognitive radios and self-organizing networks for improving spectrum utilization.

+ **Dept. of Electrical Engineering & Computer Science,** **Syracuse University**, Syracuse, NY **01/2001 – 07/2006**

Research Assistant with Prof. Pramod K. Varshney

Distributed Signal Processing and Data Fusion: studied various collaborative signal processing issues in a distributed framework, including how to deal with a very large number of sensors, the impact of nonideal communication channels between local nodes and a command and control center, online sequential processing and data compression, computational complexity and design optimization.

+ **Guoxin Lucent Technologies Network Technologies Co. Ltd.,** **07/1999 - 12/2000**
Shanghai, China

Engineer

Dense Wave Division Multiplex Network and Synchronous Digital Hierarchy Network Management Systems

FUNDED RESEARCH PROJECTS

+ Co-PI (PI: Jason Hayward, Co-PI: Xianfei Wen), “Improving the DEtection of shielded contraband by advancing Algorithms and Systems (IDEAS) for Mobile Active Interrogation using Neutrons (MAIN)”, Department of Homeland Security, 2021-2026. \$2.5M

+ PI (Co-PI: E. Chan-Tin, A. Pourhabib), “Privacy Issues in Smart Grid Data Sharing”, OSU Foundation for National Energy Solution Institute – Smart Energy Source Association, 2015-2016. \$50,000

+ Co-PI (PI: W. Sheng), “SHB: Type I (EXP): Context-aware Ubiquitous Human Health Monitoring”, National Science Foundation, 2012-2016. \$350,000

- + PI, “Future Flexible and Secure Communication Paradigm for Public Safety”, Oklahoma State University Planning Grant, 2013-2014. \$34,000
- + Co-PI (PI: R. Ramakumar), “Center for Integrated Renewable Energy Systems”, Oklahoma State University Planning Grant, 2012-2013. \$46,000
- + PI, “CPS:Small: A Unified Distributed Spatiotemporal Signal Processing Framework for Structural Health Monitoring”, National Science Foundation, 2009-2013. \$326,617
- + Co-PI (PI: R. Bulut), “Evaluation of Enhanced Integrated Climatic Model for Oklahoma Pavements”, Oklahoma Transportation Center/Oklahoma Department of Transportation, 2011-2013. \$188,969
- + Co-PI (PI: D. Chandler), “Enabling Battlefield Situational Awareness through a Cooperative and Intelligent Video Sensor Network”, US Army Research, 2009-2013. \$300,000+\$176,242 (matching)
- + PI (co-PIs: D. Chandler, W. Sheng), “OKCARS: Oklahoma Collision Analysis and Response Systems”, Oklahoma Transportation Center, 2009-2012. \$300,000+\$300,000 (matching)
- + Co-PI (PI: W. Sheng), “MRI: Acquisition of an Optical Motion Capture System for Human-Centered Computing Research”, National Science Foundation, 2009-2012. \$300,000+\$128,571 (matching)
- + PI, “Inference-Centric Distributed Signal Processing in Integrated Vehicle Health Management Systems”, NASA EPSCoR, 2007. \$21,000
- + Co-PI (PI: W. Sheng), “Acquisition of a Mobile Sensor Network Testbed for Research in Human-integrated and Performance driven Cooperative Surveillance”, United States Army Research, 2009-2010. \$100,000
- + PI, “Distributed Quickest Detection of Cyber Attacks”, Center for Telecommunications and Network Security, 2009-2010. \$30,000

STUDENT ADVISING

(@ LLNL)

Summer intern mentoring

1. Cuiwen Li, (California State University East Bay, M.S. student), Project: TBI patient stratification and outcome landscape characterization, summer 2018.
2. Patrick O’Neal, (TAMU, Ph.D. student), Project: Forensics Attribution of Separated Plutonium, summer, 2020.

(@ OSU)

Graduate student advising (Ph.D. students)

1. *Tao Wu*. Preliminary exam: Jan. 2008. Graduated, Aug. 2013.
Dissertation title: System Design in Wireless Sensor Networks for Parameter Estimation and Dynamic Event Region Detection
2. *Hoa Nguyen*. Preliminary exam: May. 2009. Graduated, April 2013.
Dissertation title: A Classification Framework and Application to Sleep Apnea Analysis
3. *Sandeep Gutta*. Preliminary exam: Nov. 2013. Graduated, Dec. 2016.
Dissertation title: Biomedical Signal Processing and Inference in Wearable Sensing Applications
4. *Abdulhamid Zaidi*. Preliminary exam: Dec. 2016. Graduated, Dec. 2018.
Dissertation title: Design of Intelligent PID Controllers for Load Frequency Control and Automatic Voltage Regulation

Graduate student advising (M.S. [Thesis option])

5. *Blair Baldrige*. Thesis title: Microphone Array based Surveillance Systems. July 2015.
6. *Manoj Kumar Vegi*. Thesis title: Study of Byzantine Attacks and Countermeasures in Spectrum Sensing. July 2014.
7. *Longji Sun*. Thesis title: Blind source separation and localization using microphone arrays. Nov. 2012.
8. *Kelkar, Aditya*. Thesis title: Spectrum sensing scheduling in cognitive radio networks. July 2012.
9. *Chen, Chao*. Thesis title: Traffic scene analysis using an array of microphones. May 2012.

10. *Sandeep Gupta*. Thesis title: A new distributed framework for cyber-attack detection and classification, Dec. 2011
11. *Raghavendra Rao*. Thesis title: Distributed spectrum sensing in cognitive radio, May 2010
12. *Bhargav Kollimarla*. Thesis title: Power and spectrum management in cognitive radio, Nov. 2009.
13. *Victor Selvaraj*. Thesis title: Testbed design for target detection and tracking using wireless sensor networks. Aug. 2008.

Undergraduate student advising

14. Brett Mathis, “Visual Microphone”, Honors credit for Honors College Degree, Spring 2017.
15. Kamran Coulter, “M2M Communications for IoT”, Honors credit for Honors College Degree, Spring 2017.
16. Derrian Glynn, Rahul Chidurala and Dakota French, “Autonomous Navigation with Discrete Markers,” Senior Design II, Fall 2016.
17. Carlos Parente, Spencer Hood, Thomas DeWalt and Zachary Smith, “Mercury Robot Competition”, Senior Design II, Spring 2014.
18. Jason E. Semien, Honors credit for Honors College Degree, Fall 2013.
19. Corey Vyhldal, Heather Sorey, Rui Ji and Robert Barnes, “Automated Ping Pong Scorekeeper”, Senior Design II, Fall 2012.

COURSE TAUGHT

- + Signal Analysis (Undergraduate)
- + Communication Theory (Undergraduate)
- + Senior Design I and II (Undergraduate)
- + Wireless Communications (Graduate)
- + Stochastic Processes (Graduate)
- + Information Theory (Graduate)
- + Distributed Signal Processing and Information Fusion (Graduate, new course)
- + Optimization for systems engineering (Undergraduate)
- + Sensors and Data Links (Graduate)
- + DSP (Undergraduate)
- + Probability theory and Statistics (Undergraduate)

PROFESSIONAL ACTIVITIES AND SERVICES

- + Senior Member of IEEE since 2012, Member of IEEE Communication Society since 2007
- + Member of International Society of Information Fusion (ISIF) since 2005
- + Member of WEPAN (Women in Engineering ProActive Network) 2012 - 2017
- + Editor, IEEE Communication Letters, 2011-2015
- + Editorial Board, Journal of Applied Mathematics, 2014
- + Chair, 4th International Conference on Sensor Networks and Applications, 2012
- + Organizer, invited session, 7th IEEE Sensor Array and Multichannel Signal Processing Workshop, 2012
- + Student Paper Competition Chair, 2012 IEEE Green Technology Conference and the Region 5 Business Meeting and Student Competitions
- + External reviewer for the Maryland Industrial Partnerships Program, 2011, Natural Sciences and Engineering Research Council of Canada, 2014
- + NSF CAREER panelist 2008, NSF Smart and Connected Health panelist 2016, 2017, 2019
- + Sensor Networks and Applications Panelist at the International Conference on Computer Applications in Industry and engineering 2011, 2012
- + Session Chair at CISS'09, IEEE-VTC'10-Spring

- + FUSION 2019 Awards Committee member
- + Nominator for Dr. Hairong Qi (University of Tennessee, Knoxville) IEEE Fellow application, 2015
- + Technical Program Committee member for various conferences
- + Reviewer for IEEE Transactions and conferences

Services at Oklahoma State University

- + Member of National Energy Solution Institute (NESI) Internal Advisory Board, Oklahoma State University 2016- 2017
- + Member of College of Engineering, Architecture and Technology (CEAT) Research Council, Oklahoma State University 2016- 2017
- + Chair of Recruiting and Tours Committee, School of Electrical and Computer Engineering, Oklahoma State University 2016- 2017
- + Chair of Graduate Program Committee, School of Electrical and Computer Engineering, Oklahoma State University 2013-2015, member 2009-2013
- + Member of Department Head Search Committee, School of Electrical and Computer Engineering, Oklahoma State University, 2014-2015
- + Member of Cumulative Review Committee, School of Electrical and Computer Engineering, Oklahoma State University, 2014
- + Member of Reappointment, Promotion and Tenure (RPT) Committee, School of Electrical and Computer Engineering, Oklahoma State University, 2015

Invited Talks:

1. "Machine Learning in Ubiquitous Healthcare: Data-driven and Model-based Approaches", Lawrence Livermore National Lab, Livermore, CA, Aug. 2017.
2. "Signal Processing for Ubiquitous Healthcare Applications", GE Global Research Center, Niskayuna, NY, Aug. 2016.
3. "Probabilistic Graph Model for Assured Network Design", Air Force Research Lab, Rome, NY, Aug. 2016.
4. "Distributed Spatio-temporal Signal Processing and Application to System Health Management", School of Transportation and Logistics, Southwest JiaoTong University, Chengdu, China, May 2016.
5. "Multitask Learning and Application to ECG based Biometric Identification", Center for Information Engineering Science Research, Xi'an JiaoTong University, Xi'an, China, May 2016.
6. "Dynamic Event Region Detection and Tracking", Syracuse University, Sept. 30, 2015.
7. "Distributed Dynamic Event Region Tracking", Industrial Engineering and Management Seminar Series, OSU, Jan. 21, 2015.
8. "Audio Surveillance: Multi-sound Detection and Localization", Center for Information Engineering Science Research, Xi'an JiaoTong University, Xi'an, China, July 2014.
9. "Distributed Spatiotemporal Signal Processing for Fault Detection", Center for Information Engineering Science Research, Xi'an JiaoTong University, Xi'an, China, July 2013.
10. "Methods for Blind Audio Source Separation and Localization", CS Colloquium, OSU, Nov. 30, 2012.
11. "Dynamic Event-Region Detection: Challenges, Modeling and Solutions", University of New Orleans, Nov. 14, 2012.
12. "Distributed Spatiotemporal Signal Processing for System Health Management", University of Science and Technology of China, Hefei, China, July 2012.
13. "Distributed Signal Processing and Data Fusion in Large Dynamic Systems", CEAT Associates meeting, OSU, Oct. 14, 2011.
14. "Distributed Spatiotemporal Signal Processing for Fault Region Detection", University of Oklahoma, Mar. 1, 2011.
15. "Cyber-physical systems and structural health monitoring", National Sun Yat-sen University, Taiwan, May 2010.

16. "Wireless sensor networks: Opportunities and Challenges". Okstate University Multispectral Laboratory, Sept. 21, 2009.
17. "Distributed spatial-temporal signal processing for fault detection", CS Colloquium, OSU, Nov. 20, 2008.
18. "Distributed Fault Detection and Diagnosis for Dynamic Systems". NASA Langley Research Center, Hampton, VA, Dec. 6, 2006.
19. "Distributed Change Detection in Dynamic Systems", Oklahoma State University, Mar. 2006.
20. "Distributed Fault Detection in Dynamic Systems", Stochastic System Group, MIT, Cambridge, MA, Mar. 2006.

HONORS & AWARDS

- + NNSA Joule Award, National Nuclear Security Administration, **2019**
- + GS 2019 Directorate Silver Award, Lawrence Livermore National Lab, **2019**
- + Extension Grant, Air Force Research Lab of Rome, NY **2016**
- + Best Paper Award, 19th International Conference on Information Fusion **2016**
- + National Research Council (NRC) Research Associateship Award **2015**
- + Best Paper Award, 4th International Conference on Sensor Networks and Applications **2012**
- + IEEE Communications Letters Exemplary Reviewer **2010**
- + IEEE TSP Reviewer Appreciation **2008**
- + NASA EPSCoR Research Initiation Grant **2007**
- + NASA EPSCoR Travel Grant **2006**
- + Wilbur R. LePage Graduate Scholarship, Syracuse University **2006**
- + First runner up in the Student Paper Contest for IEEE Radar Conf. 2006 **2006**
- + Graduate Fellowship, Syracuse University, NY **08/2005-05/2006**
- + Finalist in Asilomar Conf. Student Paper Contest 2004 **11/2004**
- + Graduate School Master's Prize, Syracuse University, NY **05/2003**
- + First runner up in the Student Paper Contest for ISIF's Fusion Conf. 2002 **07/2002**
- + The Graduate with the highest honor, Shanghai, China **7/1999**
- + Title of Exceptional Student, Shanghai Jiao Tong University, Shanghai, China (1.25%) **1996, 1998**
- + Outstanding Student Scholarship, Shanghai Jiao Tong University, Shanghai, China **1995-1999**

PUBLICATIONS

- O'Neal, P., Chirayath, S., & Cheng, Q. (2021). A Machine Learning Method for the Forensics Attribution of Separated Plutonium. *Nuclear Science and Engineering*, accepted, 12/2021.
- AD Kaplan, Q Cheng, KAM al. (2021). Mixture Model Framework for Traumatic Brain Injury Prognosis Using Heterogeneous Clinical and Outcome Data. *IEEE Journal of Biomedical and Health Informatics*, 2021.
- Andrew Glenn, Qi Cheng, Alan D. Kaplan, Ron Wurtz (2021). Pulse pileup rejection methods using a two-component Gaussian Mixture Model for fast neutron detection with pulse shape discriminating scintillator. *Nuclear Instruments and Methods in Physics Research Section A Accelerators*, 2, 2021.
- Q Cheng, AD Kaplan, P Karande, M Bijanzadeh, H Dawes, E Chang (2019). Emotion Discrimination through Electrode Network Connectivity Pattern Recognition. *53rd Asilomar Conference on Signals, Systems, and Computers*, 2139-2143, 2019.
- AD Kaplan, Q Cheng, P Karande, E Tran, M Bijanzadeh, H Dawes, (2019). Localization of Emotional Affect in Electroencephalography Using a Model Based Discrimination Measure. *53rd Asilomar Conference on Signals, Systems, and Computers*, 1709-1713, 2019.
- Dang, X., Cheng, Q., & Zhu, H. (2019). Indoor Multiple Sound Source Localization via Multi-Dimensional Assignment Data Association. *IEEE/ACM Transactions on Audio Speech and Language Processing*, 27(12), 1944-1956. doi:[10.1109/TASLP.2019.2935837](https://doi.org/10.1109/TASLP.2019.2935837)
- Zaidi, A., & Cheng, Q. (2019). An Approximation Solution of the Swing Equation Using Particle Swarm Optimization. In *2018 IEEE Conference on Technologies for Sustainability, SusTech 2018*.

doi:[10.1109/SusTech.2018.8671355](https://doi.org/10.1109/SusTech.2018.8671355)

Dang, X., Zhu, H., & Cheng, Q. (2018). Multiple Sound Source Localization Based on a Multi-Dimensional Assignment Model. In *2018 21st International Conference on Information Fusion, FUSION 2018* (pp. 1732-1737). doi:[10.23919/ICIF.2018.8455616](https://doi.org/10.23919/ICIF.2018.8455616)

Gutta, S., Cheng, Q., Nguyen, H. D., & Benjamin, B. A. (2018). Cardiorespiratory Model-Based Data-Driven Approach for Sleep Apnea Detection. *IEEE Journal of Biomedical and Health Informatics*, 22(4), 1036-1045. doi:[10.1109/JBHI.2017.2740120](https://doi.org/10.1109/JBHI.2017.2740120)

Anand, A., Ray, P., & Cheng, Q. (2017). Joint transmit power and sensing duration optimization for MIMO cognitive radios. *Physical Communication*, 25, 167-172. doi:[10.1016/j.phycom.2017.10.004](https://doi.org/10.1016/j.phycom.2017.10.004)

Yang, G., Cheng, Q., Guo, Y., & Zhu, H. (2017). Acoustic source tracking using multiple weighted peaks of the localization function. In *Chinese Control Conference, CCC* (pp. 5312-5317).

doi:[10.23919/ChiCC.2017.8028196](https://doi.org/10.23919/ChiCC.2017.8028196)

Zhu, H., Li, Z., & Cheng, Q. (2017). Sound source localization through optimal peak association in reverberant environments. In *20th International Conference on Information Fusion, Fusion 2017 - Proceedings*.

doi:[10.23919/ICIF.2017.8009685](https://doi.org/10.23919/ICIF.2017.8009685)

Guo, Y., Zhu, H., & Cheng, Q. (2017). Indoor multi-sound source localization based on nonparametric Bayesian clustering. In *ICASSP, IEEE International Conference on Acoustics, Speech and Signal Processing - Proceedings* (pp. 6135-6139). doi:[10.1109/ICASSP.2017.7953335](https://doi.org/10.1109/ICASSP.2017.7953335)

Cheng, Q., Kwiat, K., Kamhoua, C. A., & Njilla, L. (2017). Attack graph based network risk assessment: Exact inference vs region-based approximation. In *Proceedings of IEEE International Symposium on High Assurance Systems Engineering* (pp. 84-87). doi:[10.1109/HASE.2017.8](https://doi.org/10.1109/HASE.2017.8)

Zaidi, A., & Cheng, Q. (2017). Online and offline load frequency controller design. In *2017 IEEE Texas Power and Energy Conference, TPEC 2017*. doi:[10.1109/TPEC.2017.7868283](https://doi.org/10.1109/TPEC.2017.7868283)

Gutta, S., & Cheng, Q. (2017). Modeling of oxygen saturation and respiration for sleep apnea detection. In *Conference Record - Asilomar Conference on Signals, Systems and Computers* (pp. 1636-1640).

doi:[10.1109/ACSSC.2016.7869657](https://doi.org/10.1109/ACSSC.2016.7869657)

Gutta, S., Cheng, Q., Nguyen, H. D., & Benjamin, B. A. (2016). Model-based data-driven approach for sleep apnea detection. In *FUSION 2016 - 19th International Conference on Information Fusion, Proceedings* (pp. 828-835).

Cheng, Q., Niu, R., Sundaresan, A., & Varshney, P. K. (2016). Distributed Detection and Decision Fusion with Applications to Wireless Sensor Networks. In *Integrated Tracking, Classification, and Sensor Management: Theory and Applications* (pp. 619-660). doi:[10.1002/9781118450550.ch16](https://doi.org/10.1002/9781118450550.ch16)

Gutta, S., & Cheng, Q. (2016). Joint Feature Extraction and Classifier Design for ECG-Based Biometric Recognition. *IEEE Journal of Biomedical and Health Informatics*, 20(2), 460-468.

doi:[10.1109/JBHI.2015.2402199](https://doi.org/10.1109/JBHI.2015.2402199)

Cheng, Q., Kwiat, K., & Kamhoua, C. A. (2016). Design Diversity for Mitigating Monoculture Induced Threats. In *Proceedings of IEEE International Symposium on High Assurance Systems Engineering* Vol. 2016-March

(pp. 17-18). doi:[10.1109/HASE.2016.37](https://doi.org/10.1109/HASE.2016.37)

Majee, S., Ray, P., & Cheng, Q. (2016). Efficient wideband spectrum sensing using random projection. In *Conference Record - Asilomar Conference on Signals, Systems and Computers* Vol. 2016-February (pp. 141-145). doi:[10.1109/ACSSC.2015.7421100](https://doi.org/10.1109/ACSSC.2015.7421100)

Gutta, S., Cheng, Q., & Benjamin, B. A. (2016). Control mechanism modeling of human cardiovascularrespiratory

system.

In *2015 IEEE Global Conference on Signal and Information Processing, GlobalSIP 2015*

(pp. 918-922). doi:[10.1109/GlobalSIP.2015.7418331](https://doi.org/10.1109/GlobalSIP.2015.7418331)

Sheng, W., Du, J., Cheng, Q., Li, G., Zhu, C., Liu, M., & Xu, G. (2015). Robot semantic mapping through human activity recognition: A wearable sensing and computing approach. *Robotics and Autonomous Systems*, 68,

47-58. doi:[10.1016/j.robot.2015.02.002](https://doi.org/10.1016/j.robot.2015.02.002)

Sun, L., & Cheng, Q. (2015). Indoor sound source localization and number estimation using infinite Gaussian mixture models. In *Conference Record - Asilomar Conference on Signals, Systems and Computers* Vol. 2015

-April (pp. 1189-1193). doi:[10.1109/ACSSC.2014.7094646](https://doi.org/10.1109/ACSSC.2014.7094646)

Cheng, Q., & Chan-Tin, E. (2015). A unified framework for robust cooperative spectrum sensing. In *Conference Record - Asilomar Conference on Signals, Systems and Computers* Vol. 2015-April (pp. 1589-1593).

doi:[10.1109/ACSSC.2014.7094733](https://doi.org/10.1109/ACSSC.2014.7094733)

Sun, L., & Cheng, Q. (2015). Indoor multiple sound source tracking using refined TDOA measurements. In

2015 49th Annual Conference on Information Sciences and Systems, CISS 2015.

doi:[10.1109/CISS.2015.7086868](https://doi.org/10.1109/CISS.2015.7086868)

Wu, T., & Cheng, Q. (2014). Adaptive bandwidth allocation for dynamic event region detection in wireless sensor networks. *IEEE Transactions on Wireless Communications*, 13(9), 5107-5119.

doi:[10.1109/TWC.2014.2335206](https://doi.org/10.1109/TWC.2014.2335206)

Wu, T., & Cheng, Q. (2014). Online dynamic event region detection using distributed sensor networks. *IEEE Transactions on Aerospace and Electronic Systems*, 50(1), 393-405. doi:[10.1109/TAES.2013.120308](https://doi.org/10.1109/TAES.2013.120308)

Yue, E., Chen, L., Bulut, R., & Cheng, Q. (2014). Climatic parameter TMI in subgrade soils. In *Climatic Effects on Pavement and Geotechnical Infrastructure - Proceedings of the International Symposium of Climatic Effects on Pavement and Geotechnical Infrastructure 2013* (pp. 109-116).

doi:[10.1061/9780784413326.011](https://doi.org/10.1061/9780784413326.011)

Du, J., Sheng, W., Cheng, Q., & Liu, M. (2014). Proactive 3D robot mapping in environments with sparse features. In *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* Vol. 8887 (pp. 773-782). doi:[10.1007/978-3-319-14249-4_74](https://doi.org/10.1007/978-3-319-14249-4_74)

Nguyen, H. D., & Cheng, Q. (2014). Feature selection and decision fusion for distributed classification. *International Journal of Computers and their Applications*, 21(2), 121-132.

Cheng, Q., & Tin, E. C. (2014). Efficient routing and scheduling in Ad-Hoc cognitive radio networks. In *Proceedings - 2014 National Wireless Research Collaboration Symposium: Rapidly Transitioning Wireless Spectrum-Using Research to Deployable Innovations, NWRCS 2014* (pp. 37-42).

doi:[10.1109/NWRCS.2014.11](https://doi.org/10.1109/NWRCS.2014.11)

Nguyen, H. D., Wilkins, B. A., Cheng, Q., & Benjamin, B. A. (2014). An online sleep apnea detection method based on recurrence quantification analysis. *IEEE Journal of Biomedical and Health Informatics*, 18(4), 1285-1293. doi:[10.1109/JBHI.2013.2292928](https://doi.org/10.1109/JBHI.2013.2292928)

Sun, L., & Cheng, Q. (2014). Indoor multiple sound source localization using a novel data selection scheme. In *2014 48th Annual Conference on Information Sciences and Systems, CISS 2014*.

doi:[10.1109/CISS.2014.6814189](https://doi.org/10.1109/CISS.2014.6814189)

Wu, T., & Cheng, Q. (2013). Bandwidth-efficient dynamic event region detection and reconstruction in wireless sensor networks. In *International Symposium on Wireless Personal Multimedia Communications, WPMC*.

Gutta, S., & Cheng, Q. (2013). Joint multitask feature learning and classifier design. In *2013 47th Annual Conference on Information Sciences and Systems, CISS 2013*. doi:[10.1109/CISS.2013.6552296](https://doi.org/10.1109/CISS.2013.6552296)

Longji, S., & Qi, C. (2013). Real-time microphone array processing for sound source separation and localization. In *2013 47th Annual Conference on Information Sciences and Systems, CISS 2013*.

doi:[10.1109/CISS.2013.6552257](https://doi.org/10.1109/CISS.2013.6552257)

Kelkar, A., & Cheng, Q. (2012). Spectrum sensing scheduling in a cost-based framework. In *Conference Record - Asilomar Conference on Signals, Systems and Computers* (pp. 1051-1055).

doi:[10.1109/ACSSC.2012.6489179](https://doi.org/10.1109/ACSSC.2012.6489179)

Nguyen, M., & Cheng, Q. (2012). Efficient data routing for fusion in wireless sensor networks. In *25th International Conference on Computer Applications in Industry and Engineering, CAINE 2012 and 4th International Symposium on Sensor Network and Application, SNA 2012* (pp. 145-149).

Gu, Y., Cheng, Q., & Sheng, W. (2012). Classifier Fusion for Gesture Recognition using a Kinect Sensor. In *25th International Conference on Computer Applications in Industry and Engineering, CAINE 2012 and 4th International Symposium on Sensor Network and Application, SNA 2012* (pp. 187-192).

Gutta, S., & Cheng, Q. (2012). Data-based distributed classification and its performance analysis. In *15th International Conference on Information Fusion, FUSION 2012* (pp. 1519-1526).

Wu, T., Sun, L., Cheng, Q., & Varshney, P. K. (2012). Fusion of multiple microphone arrays for blind source separation and localization. In *Proceedings of the IEEE Sensor Array and Multichannel Signal Processing Workshop* (pp. 173-176). doi:[10.1109/SAM.2012.6250458](https://doi.org/10.1109/SAM.2012.6250458)

Li, G., Zhu, C., Du, J., Cheng, Q., Sheng, W., & Chen, H. (2012). Robot semantic mapping through wearable sensor-based human activity recognition. In *Proceedings - IEEE International Conference on Robotics and Automation* (pp. 5228-5233). doi:[10.1109/ICRA.2012.6225305](https://doi.org/10.1109/ICRA.2012.6225305)

Sun, L., Chen, C., & Cheng, Q. (2012). Feature extraction and pattern identification for anemometer condition diagnosis. *International Journal of Prognostics and Health Management*, 3(1).

Li, G., Cheng, Q., & Sheng, W. (2011). Sequential hybrid map learning through human-robot interaction. In *Proceedings of the ISCA 24th International Conference on Computer Applications in Industry and*

Engineering, CAINE 2011 (pp. 141-146).

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