

Qingzhong Liu

Associate Professor

Department of Computer Science
Sam Houston State University

Degrees Earned

Ph.D. in Computer Science, New Mexico Institute of Mining and Technology, 2007

M.E. in Computer Science and Engineering, Sichuan University (China) 1997

B.E. in Material Science and Engineering, Northwestern Polytechnic University (China), 1993

Peer-Review Publications and Artistic Performances/Exhibitions

Journal Papers

J43. Byrd B, Zhou B and Liu Q (2017), Android System Partition to Traffic Data? International Journal of Knowledge Engineering, vol. 3, number 2, pp 37-42.

J42. Liu Q (2017). An approach to detecting JPEG down-recompression and seam carving forgery under recompression anti-forensics, Pattern Recognition, vol. 65, page 33-46, available online at <http://dx.doi.org/10.1016/j.patcog.2016.12.010>

J41. Chen Z, Ng HK, Li J, Liu Q, Huang H (2017), Detecting associated single-nucleotide polymorphisms on the X chromosome in case control genome-wide association studies, Statistical Methods in Medical Research, vol. 26, issue 2, pp 567-582.

J40. Olson E, Carter L and Liu Q (2017), A Comparison Study using StegExpose for Steganalysis. International Journal of Knowledge Engineering, vol. 3, no. 1, pp. 8-12, 2017.

J39. Koirala S, Sung AH, Wang H, Bibeiro B and Liu Q* (2016), RtpExtSteg: a practical VoIP network steganography exploiting RTP extension header, IEEE MMTC E-Letter, the special issue on the key themes of "Multimedia Communications in 5G Networks", IEEE COMSOC MMTC Communications - Frontiers, Vol.11, No.2, March 2016, pages 62-66. (*corresponding author)

J38. Zhang J, Zhi M, Su Y and Liu Q (2015), Mobile watermarking against geometrical distortions. EAI Endorsed Transactions on Security and Safety, 15(5): e2. <http://dx.doi.org/10.4108/icst.mobimedia.2015.259142>.

J37. Liu Q, Sung A, Chen L, Chen Z, Yang M, Zhang J and Liu Y (2015), A Shift-Recompression-based Approach to AAC Audio Forgery Detection. EAI Endorsed Transactions on Security and Safety, 15(6): e1. <http://dx.doi.org/10.4108/icst.mobimedia.2015.259141>.

J36. Liu Q and Chen Z (2014), Improved Approaches with Calibrated Neighboring Joint Density to Steganalysis and Seam-carved Forgery Detection in JPEG Images. ACM Transactions on Intelligent Systems and Technology, 5(4): Article 63 (December, 2014), 30 pages.

J35. Chen Z, Yang W, Liu Q, Yang JY, Li J and Yang MQ(2014), A new statistical approach to combining p-values using gamma distribution and its application to genome-wide association study. BMC Bioinformatics, 2014, 15(Suppl 17):S3

J34. Chen Z, Huang H and Liu Q (2014), Detecting differentially methylated loci for multiple treatments based on high-throughput methylation data. BMC Bioinformatics, 15: 142. doi:10.1186/1471-2105-15-142.

- J33. Basnet RB, Sung AH and Liu Q (2014), Learning to detect phishing URLs, IJRET: International Journal of Research in Engineering and Technology, 3(6):11-24.
- J32. Wilbert BM and Liu Q (2013), "Meta Cloud Discovery" Model: An Approach to Integrity Monitoring for Cloud-Based Disaster Recovery Planning. International Journal of Information & Education Technology, 3(5): 516-521.
- J31. Suryakumar D, Sung AH and Liu Q (2013), Influence of Machine Learning vs. Ranking Algorithm on the Critical Dimension, International Journal of Future Computer and Communication, 2(3): 215-219.
- J30. Xu J, Su Y and Liu Q (2013), Detection of Double MPEG Compression Based on Distributions of DCT Coefficients. International Journal of Pattern Recognition and Artificial Intelligence, doi: 10.1142/S0218001413540013.
- J29. Liu Q, Cooper PA, Chen L, Cho H, Chen Z, Qiao M, Su Y, Wei M and Sung AH (2013), Detection of JPEG Double Compression and Identification of Smartphone-Image Source and Post-capture Manipulation. Applied Intelligence, 39(4):705-726.
- J28. Hu B, Jiang G, Pang C, Wang S, Liu Q, Chen Z, Vanderburg CR, Rogers JT, Deng Y and Huang X (2013). Assessment of Gene Order Computing Methods for Alzheimer's Disease, BMC Medical Genomics, 6(Suppl 1):S8. doi:10.1186/1755-8794-6-S1-S8
- J27. Qiao M, Sung AH and Liu Q (2013), MP3 Audio Steganalysis. Information Sciences, vol. 231, pages 123-134.
- J26. Chen Z, Liu Q and Nadarajah S (2012). A New Statistical Approach to Detecting Differentially Methylated Loci for Case Control Illumina Array Methylation Data, Bioinformatics, 28(8): 1109-1113. doi: 10.1093/bioinformatics/bts093.
- J25. Pang C, Jiang G, Wang S, Hu B, Liu Q, Deng Y, and Huang X (2012). Gene order computation using Alzheimer's DNA microarray gene expression data and the ant colony optimization algorithm, International Journal of Data Mining and Bioinformatics, 6(6):617-632.
- J24. Liu Q, Sung AH, Chen Z, Liu J, Chen L, Qiao M, Huang X, and Deng Y (2011), Gene Selection and Classification for Cancer Microarray Data Based on Machine Learning and Similarity Measures, BMC Genomics, 12(suppl 5):S1.
- J23. Chen Z, Liu Q, McGee M, Kong M, Huang X, Deng Y, and Scheuermann RH (2011), A Gene Selection Method for GeneChip Array Data with Small Sample Sizes, BMC Genomics, 12(Supple 5):S7.
- J22. Chen Z and Liu Q (2011), A New Approach to Account for the Correlations among SNPs in Genome-Wide Association Studies. Human Heredity, 72(1):1-9.
- J21. Liu Q, Sung AH, and Qiao M (2011), Derivative-based Audio Steganalysis, ACM Transactions on Multimedia Computing, Communications and Applications, 7(3), article 18 (August 2011).
- J20. Liu Q, Sung AH, and Qiao M (2011), Neighboring Joint Density-based JPEG Steganalysis, ACM Transactions on Intelligent Systems and Technology 2(2), Article 16 (February 2011).
- J19. Chen Z, McGee M, Liu Q, Kong Y, Huang X, Yang J and Scheuermann RH (2010), Identifying Differentially Expressed Genes Based on Probe Level Data for GeneChip Arrays. International Journal of Computational Biology and Drug Design, 3(3):237-257.
- J18. Su Y, Xu J, Dong B, Zhang J, and Liu Q (2010), A Novel Source MPEG-2 Video Identification Algorithm, International Journal of Pattern Recognition and Artificial Intelligence 24(8):1311-1328.

- J17. Su Y, Zhang J, Han Y, Chen J, and Liu Q (2010), Exposing Digital Video Logo-Removal Forgery by Inconsistency of Blur, *International Journal of Pattern Recognition and Artificial Intelligence*, 24(7):1027-1046.
- J16. Liu Q, Sung AH and Qiao M (2010), Detection of Double MP3 Compression, *Cognitive Computation* 2(4):291-296. doi: 10.1007/s12559-010-9045-4.
- J15. Liu Q, Sung AH, Qiao M, Chen Z and Ribeiro B (2010), An Improved Approach to Steganalysis of JPEG Images, *Information Sciences*, 180(9):1643-1655.
- J14. Liu Q, Sung AH, Chen Z, Liu J, Huang X, and Deng Y (2009), Feature Selection and Classification of MAQC-II Breast Cancer and Multiple Myeloma Microarray Gene Expression Data, *PLoS One* 4(12),e8250: 1-24.
- J13. Liu Q, Sung AH and Qiao M (2009), Temporal Derivative Based Spectrum and Mel-Cepstrum Audio Steganalysis, *IEEE Transactions on Information Forensics and Security*, 4(3): 359-368.
- J12. Liu Q, Sung AH, Qiao M, Chen Z, Yang J, Yang M, Huang X, Deng Y (2009), Comparison of Feature Selection and Classification of MALDI-MS Data, *BMC Genomics*,10(Suppl 1):S3.
- J11. Chen Z, McGee M, Liu Q, Kong M, Deng Y, Scheuermann RH (2009), A Distribution-Free Convolution Model for Background Correction of Oligonucleotide Microarray Data, *BMC Genomics*,10(Suppl 1):S19.
- J10. Liu Q, Qiao M and Sung AH (2009), Distance Metric Learning and Support Vector Machines for Classification of Mass Spectrometry Proteomics Data, *International Journal of Knowledge Engineering and Soft Data Paradigms*, 1(3):216-226.
- J9. Kong W, Mou X, Liu Q, Chen Z, Vanderburg C, Rogers J, and Huang X (2009), Independent Component Analysis of Alzheimer's DNA Microarray Gene Expression Data, *Molecular Neurodegeneration*, 4:5.
- J8. Liu Q, Yang J, Chen Z, Yang M, Sung AH, Huang X (2008), Supervised-Learning based TagSNPs for Genome-wide Disease Classification, *BMC Genomics* 9(Suppl 1):S6.
- J7. Liu Q, Sung AH, Chen Z, Xu J (2008), Feature Mining and Pattern Classification for Steganalysis of LSB Matching Steganography in Grayscale Images, *Pattern Recognition*, 41 (1): 56-66.
- J6. Liu Q, Sung AH, Ribeiro B, Wei M, Chen Z, Xu J (2008), Image Complexity and Feature Mining for Steganalysis of Least Significant Bit Matching Steganography, *Information Sciences*, 178(1): 21-36.
- J5. Chen Z, McGee M, Liu Q, and Scheuermann RH (2007), A Distribution Free Summarization Method for Affymetrix GeneChip Arrays, *Bioinformatics*, 23(3):321-327.
- J4. Xu J, Sung AH, Mukkamala S, Liu Q (2007), Obfuscated Malicious Executable Scanner, *Journal of Research and Practice in Information Technology*, 39(3): 181-197.
- J3. Xu J, Sung AH, Liu Q (2007), Behavior Mining for Fraud Detection, *Journal of Research and Practice in Information Technology*, 39(1): 3-18.
- J2. Wei M, Bai B, Sung AH, Liu Q, Wang J, Cather M (2007), Predicting Injection Profiles Using ANFIS, *Information Sciences*, 177 (20): 4445-4461.
- J1. Mukkamala S, Liu Q, Veeraghattam R, Sung AH (2005), Computational Intelligent Techniques for Tumor Classification (Using Microarray Gene Expression Data), *International Journal of Lateral Computing*, 2(1): 38-45.

Book Chapters

B4. Liu Q, Sung AH, Chen Z and Chen L (2015), Exposing Image Tampering with the Same Quantization Matrix, in the book *Multimedia Data Mining and Analytics - Disruptive Innovation*, (editors: Baughman AK, Gao J, Pan J-Y and Petrushin V), pages 327-343.

B3. Chen L, Varol C, Liu Q, and Zhou B (2013), Security in Wireless Metropolitan Area Networks: WiMAX and LTE, in the book *Security, Privacy, Trust, and Resource Management in Mobile and Wireless Communications*, October, 2013 (editors: Danda B. Rawat, Bhed B. Bista, and Gongjun Yan, copyright 2014).

B2. Chen L, Cooper PA and Liu Q (2013), Security in Bluetooth Networks and Communications, in the book *Wireless Network Security: Theories and Applications*, by High Education Press and Springer, pages 77-94. ISBN: 978-3-642-36510-2.

B1. Liu Q, Sung AH, Qiao M, Ribeiro B and Chen Z (2011), Feature Mining and Pattern Recognition in Multimedia Forensics, in the book *Pattern Recognition, Machine Intelligence and Biometrics*, edited by PSP Wang, in memory and honor of late Professor King-Sun Fu*, High Education Press and Springer, pages 561-604. ISBN 978-3-642-22406-5. (* Professor Fu was elected to the National Academy of Engineering in 1976)

Peer-reviewed Proceedings (partly selected)

C25. Guo X and Liu Q (2017). A Comparison Study to Identify Birds Species Based on Bird Song Signals. ITM Web of Conferences, Volume 12, Pages 02002, https://www.itm-conferences.org/articles/itmconf/pdf/2017/04/itmconf_ita2017_02002.pdf.

C24. Liu Q, Sung AH, Zhou B and Qiao M (2016). Exposing inpainting forgery in JPEG images under combination attacks, 15th IEEE International Conference on Machine Learning and Applications, Pages 164-169.

C23. Liu Q (2016). Exposing seam carving forgery under recompression attacks by hybrid large feature mining, Proceedings of 23rd International Conference on Pattern Recognition (ICPR). Cancun, Mexico, December 4-8, 2016, pages 1036-1041.

C22. Zhou B, Yao Y and Liu Q (2016). Utilizing DTRS for imbalanced text classification, Proc. 2016 International Joint Conference on Rough Sets, Lecture Notes in Computer Science, Volume 9920, pp 219-228. (Best Paper Award).

C21. Qiao M, Sung AH and Liu Q (2016). Merging permission and API features for android malware detection, Proceedings of 5th IIAI International Congress on Advanced Applied Informatics, pages 566-571. (Best Paper Award)

C20. Saladi S, Sung AH and Liu Q (2015), Exploring covert communication on Google Hangouts, Proc of the 2015 International Conference on Security and Management, pages 387-392. Las Vegas, USA, July 27-30.

C19. Chowdary D and Liu Q (2015), Exploring Covert Communication in Text Message on Android Smartphones, Proc. The 2015 International Conference on Security and Management, pages 411-416, Las Vegas, USA, July 27-30.

C18 Qiao M, Zhang S, Sung AH and Liu Q (2015). A novel touchscreen-based authentication scheme using static and dynamic hand biometrics. Proc 39th IEEE Annual Computer Software and Application Conference, vol 2, pages 494-503.

- C17 Liu Q, Sung AH, Ribeiro and Survyakumar D (2014). Mining the big data: the critical feature dimension problems. Proc of IIAI 3rd International Conference on Advanced Applied Informatics (IIAIAI), pages 499-504.
- C16. Liu Q (2011), Steganalysis of DCT-embedding based adaptive steganography and YASS, in Proc. ACM Workshop on Multimedia & Security, pp. 77-86. Buffalo, NY, September 29-30, 2011
- C15. Liu Q (2011), Detection of misaligned cropping and recompression with the same quantization matrix and relevant forgery, in Proc. 3rd ACM Multimedia Workshop on Multimedia Forensics and Intelligence, pp. 25-30. Scottsdale, Arizona, USA, November 29, 2011
- C14. Liu Q, Sung AH, Qiao M (2011), A Method to Detect JPEG-Based Double Compression. ISNN (2) 2011: 466-476.
- C13. Qiao M, Sung A, and Liu Q (2010), Revealing Real Quality of Double Compressed MP3 Audio, ACM Multimedia (ACM-MM) 2010, pp. 1011-1014.
- C12. Liu Q, Sung A, and Qiao M (2009) Improved Detection and Evaluation for JPEG Steganalysis, ACM Multimedia (ACM-MM) 2009 system track, pp. 873- 876.
- C11. Liu Q, Sung A, and Qiao M (2009), Novel Stream Mining for Audio Steganalysis, ACM Multimedia (ACM-MM) 2009 content track, pp. 95-104.
- C10. Liu Q and Sung A (2009), A New Approach for JPEG Resize and Image Splicing Detection, ACM Multimedia (ACM-MM) workshop Multimedia in Forensics 2009, pp. 43-47.
- C9. Qiao M, Sung A, and Liu Q (2009), Steganalysis of MP3stego, Proc. 22nd International Joint Conference on Neural Network (IJCNN), pp. 2566-2571.
- C8. Liu Q, Sung A, and Qiao M (2009), Spectrum Steganalysis of WAV Audio Streams. International Conference on Machine Learning and Data Mining 2009, LNAI vol. 5632, pp 582-593.
- C7. Liu Q, Sung A, Qiao M, and B Ribeiro (2009), Merging Expanded Markov Process and Joint Distribution Features for JPEG Steganalysis, Proc. International Conference on Agents and Artificial Intelligence 2009, pp. 226-231.
- C6. Liu Q, Sung A, and Qiao M (2008), Detecting Information-Hiding in WAV Audios. Proc. 19th International Conference on Pattern Recognition (ICPR), pp.1-4.
- C5. Liu Q, Sung A, Ribeiro B, Ferriera R (2008), Steganalysis of Multi-class JPEG Images based on Expanded Markov Features and Polynomial Fitting, Proc. 21st International Joint Conference on Neural Network (IJCNN), pp. 3351-3356.
- C4. Ferriera R, Ribeiro B, Silva C, Liu Q and Sung A (2008), Building Resilient Classifiers for LSB Matching Steganography, Proc. 21st International Joint Conference on Neural Network (IJCNN), pp. 1563-1568.
- C3. Liu Q, Sung A, and Qiao M (2008), Video Steganalysis Based on the Expanded Markov and Joint Distribution Features on the Transform Domains-Detecting MSU StegoVideo, Proc 7th International Conference on Machine Learning and Applications, pp. 671-674.
- C2. Liu Q and Sung A (2007), Feature Mining and Nuero-Fuzzy Inference System for Steganalysis of LSB Matching Steganography in Grayscale Images, Proc. of 20th International Joint Conference on Artificial Intelligence (IJCAI), pp. 2808-2813.

C1. Liu Q, Sung A, Xu J, Ribeiro B (2006), Image Complexity and Feature Extraction for Steganalysis of LSB Matching Steganography, 18th International Conference on Pattern Recognition, ICPR (2): 267-270.

Research Monographs and Technical Reports

NA

Funded External Grants

PI, Development and Quantitative Evaluation of Steganalysis and Digital Forgery Detection Systems, \$331,056 (10/1/2010-8/31/2013, awarded from National Institute of Justice, Department of Justice), co-PIs: Andrew H. Sung & Peter A. Cooper.

PI, CIF: SMALL: RUI: Novel Detection Approaches with Comprehensive Hybrid Intelligent Systems for Multimedia Forensics, \$249,997 (1/1/2014-12/31/2016, awarded from National Science Foundation), co-PI: Zhongxue Chen.

Peer-Review Presentations/Posters

NA

Work or Professional Experiences

2016-present. Associate Professor, Department of Computer Science, Sam Houston State University

2010-2016. Assistant Professor, Department of Computer Science, Sam Houston State University

2007-2010. Senior Research Scientist, Institute for Complex Additive Systems Analysis, New Mexico Institute of Mining and Technology

2007-2010. Adjunct Professor, Department of Computer Science, New Mexico Institute of Mining and Technology

Honors and Awards

1. Excellence in Scholarly and Creative Accomplishments, Sam Houston State University, 2017
2. Faculty Research Excellence Award, the College of Science and Engineering Technology, Sam Houston State University, 2016
3. Greater Houston Fraud Impact Award Recipient, awarded by the Houston Chapter of the Association of Certified Fraud Examiners, 2015

Other Competencies

Patents (sole inventor)

1. STEGANALYSIS WITH NEIGHBORING JOINT DENSITY (granted: August 15, 2013
<http://www.faqs.org/patents/app/20130208941>)
2. RICH FEATURE MINING TO COMBAT ANTI-FORENSICS AND DETECT JPEG DOWN-
ECCOMPRESSION AND INPAINTING FORGERY ON THE SAME QUANTIZATION
(PATENT 6624-02701)
3. EXPOSING INPAINTING IMAGE FORGERY UNDER COMBINATION ATTACKS
WITHHYBRID LARGE FEATURE MINING (PATENT 6624-03300).

Panels:

National Science Foundation, 2017

National Institute of Justice, 2013 and 2014.