

CURRICULUM VITAE

WENJUN (KEVIN) ZENG

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Professional Interests

Mobile-cloud media computing, computer vision, social network/media analysis, multimedia communications & networking, and content/network security

Education

- Ph.D., Electrical Engineering, Princeton University (1997).
- Master of Science, Electrical Engineering, University of Notre Dame (1993).
- Bachelor of Engineering, Electronic Engineering, Tsinghua University, Beijing, China (1990)

Work Experiences

- Principal Research Manager, Microsoft Research Asia, Beijing, China (Aug. 2014 – present)
- Full Professor, Dept. of Computer Science, Univ. of Missouri, Columbia (Sept. 2011 – Aug. 2016, currently adjunct Full Professor)
- Adjunct Professor, Dept. of Electrical & Computer Engineering, Univ. of Missouri, Columbia (Dec. 2008 --present)
- Guest Professor, Xi'an Jiaotong University, China; Director, Joint MSRA-XJTU Lab on Intelligent Information Processing (2015 – present)
- Guest Professor, Tianjin University, China. (2013 – present)
- Chief Scientist, StreamOcean (part time, 2011 – Aug. 2014)
- Visiting Professor, Huawei Media Lab, New Jersey, Jan. - July 2013.
- Associate Professor, Dept. of Computer Science, Univ. of Missouri, Columbia (Aug. 2003 – Aug. 2011, tenured Sept. 2007)
- Visiting Professor, Microsoft Research Asia, Beijing, Jan. - June 2011.
- Visiting Professor, Tsinghua University, Beijing, Jan. - June 2011.
- Director, Center for Cyber Security Research, Dept. of Computer Science, Univ. of Missouri, Columbia (2007 -- 2011)
- Director, Mobile Networking and Multimedia Communications Lab, Dept. of Computer Science, Univ. of Missouri, Columbia (Sept. 2003 --present)
- Part-time consultant, Huawei Technologies (2008 - 2011)
- Academic Advisor, Calidus, Inc (now StreamOcean, Inc.) (Aug. 2007 – Oct. 2008).
- Visiting Professor, Microsoft Research Asia, Beijing, June 2006.
- Senior Member Technical Staff (CTO Staff), PacketVideo Corporation, San Diego, CA. (Dec. 2000-Aug. 2003)
- Member of Technical Staff, Sharp Labs of America, Camas, WA (June 1997-December 2000)
- Multimedia Communication Lab, Lucent Technologies, Bell Labs, Murray Hill (1996 summer)

- Matsushita Information Technology Lab, Panasonic Tech. Inc., Princeton (1995 summer)

Awards and Honors

- IEEE ComSoc MMTC **2015 Best Journal Paper Award**, for the following paper
 - S. Deb Roy, T. Mei, W. Zeng and S. Li, "Towards Cross Domain Learning for Social Video Popularity Prediction," *IEEE Transactions on Multimedia, Special Issue on Social Media as Sensors*, vol. 15, no. 6, Oct. 2013.
- **Highest Performing Faculty Member** (top 15%) by Univ. of Missouri with a mid-year raise, Feb. 2014.
- **Best Paper Award**, the 2012 *ACM Inter. Conf. on Multimedia Computing and Service*, Sept. 2012
- **IEEE Fellow**, January 2012
- **Distinguished Service Award**, IEEE ComSoc MMTC, 2010
- **Tan Chin Tuan Exchange Fellowship**, Nanyang Technological University, Singapore, July–Aug., 2009
- **Big12 Faculty Fellowship**, 2006-2007
- **Graduate Fellowship**, Princeton University, 1993-1994.
- **Graduate Fellowship**, Center for Applied Mathematics, University of Notre Dame (1992-1993)
- **Most Outstanding Student Award**, Tsinghua University (1987-1990)

Research Activities

- **Recent funding support**
 - ✓ "Acquisition of Instrument for Data-intensive Applications with Hybrid Cloud Computing Needs," NSF, \$1M, 2014-2017, Senior Personnel.
 - ✓ "REU Site: Research in Consumer Networking Technologies," NSF, \$360K, March 1, 2014 – Feb. 28, 2017. Co-PI.
 - ✓ "Depth Assisted Image Quality Enhancement," Futurewei Technologies, \$100K, Jan. 2014 – Dec. 2015. PI.
 - ✓ "Developing sports themed immersive games on mobile devices," Galoob and Funfare, \$30K, July 2013 – June 2014. PI.
 - ✓ "Multimodal sensing and reconstruction of dynamic 3D scenes," National Natural Science Foundation of China, 200K Chinese Yuan, Jan. 2013 – Dec. 2014. PI.
 - ✓ "Encrypted domain signal processing," Futurewei Technologies, \$80K, Jan. 2012 – Dec. 2012. PI.
 - ✓ "STEM Fellows: ShowMe Nature from Elements to Ecosystems," NSF, \$1,006,355, June 2011 – May 2014. (Senior Personnel).
 - ✓ "Building a Relevance-based Search Engine for Quality Online Media," MU Mizzou Advantage Program, \$50,000. March 2011 – Feb. 2013. PI.
 - ✓ "High Dimensional Joint Sparse Representation and Coding for Multiview Video," National Natural Science Foundation of China, 420K Chinese Yuan, Jan. 2011 – Dec. 2013. Co-PI (collaborator)
 - ✓ "Building Recognition," Futurewei Technologies, \$20K, Jan. 2011-June 2011. PI
 - ✓ "Target Localization and Tracking with Networked Smartphones," Leonard Wood Institute/ Army Research Labs, \$390,666, Nov. 2010 – Dec. 2011. Co-PI.
 - ✓ "GAANN (Graduate Assistance for Areas of National Need)", Department of Education, \$400,000, Sept. 2010 – Aug. 2013. Co-PI
 - ✓ "REU Site: Research in Home and Consumer Networking Technologies," NSF, \$340K, March 1, 2010-Feb. 28, 2013. PI.
 - ✓ "Mobile multimedia services and standards," Futurewei Technologies, \$200K, 2008-2010. PI
 - ✓ Center for Cyber Security Research, Gilliom Gift Fund, \$150,000 (managing as Center Director), 2007-2010.
 - ✓ "Scalable resource adaptation for IPTV," Futurewei Technologies, \$30K, Sept. 2008-March 2009. PI.
 - ✓ "REU Site: Research in Home Networking Technologies," NSF, \$300K, Jan. 2007-Dec. 2009, PI.
 - ✓ "Video Streaming in Infrastructure Wireless Mesh Networks", Thomson Lab, Princeton, through the support of one student Intern (about \$80K), June 2006- Aug. 2008.

- ✓ "SIRG: Collaborative Research: DeerNet-Wireless Sensor Networking for Wildlife Behavior Analysis and Interaction Modeling", NSF, \$515,535, Sept. 2005-Aug. 2008, Co-PI.
- ✓ "Enhancing reliability by supporting path-diversity overlay retransmission", Microsoft Research (ConferenceXP Award), \$53,000, April 2005-March 2007, PI.
- ✓ "Wireless sensor networks: middleware and applications," NSF (CNS-0423386), \$450,000 (including \$150,000 matching fund from MU), Sep. 2004-Aug 2008, Co-PI.
- ✓ "Big 12 Faculty Fellowship," \$2,957, July – Dec. 2006.
- ✓ "Quality multimedia delivery in mobile home networks", MU Research Board, \$26,800, June 1, 2004 to Nov 30, 2005, PI.

Note:

Citations for some of my papers are provided based on the [Google Scholar](http://scholar.google.com/) (<http://scholar.google.com/>) search results as of Dec. 2015. For more up-to-date information, see http://scholar.google.com/scholar?q=Wenjun+Zeng&hl=en&btnG=Search&as_sdt=400000001&as_sdt_p=on

• **Publications**

Summary: 48 journal papers, 100+ conference papers, a large number of standards contributions and invited talks, two books and four book chapters, 4 tutorials. **A number of papers have been widely cited.**
Total # of citations: 5335. h-index: 35

Journal Papers:

- 1 Z. Xiong, Y. Zhang, F. Wu, and W. Zeng, "Computational Depth Sensing: Toward High Performance Commodity Depth Cameras," *IEEE Signal Processing Magazine*, in review.
- 2 L. Wang, Z. Xiong, G. Shi, F. Wu, and W. Zeng, "Adaptive Nonlocal Sparse Representation for Dual-Camera Compressive Hyperspectral Imaging," in *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Oct. 2016.
- 3 L. Wang, Z. Xiong, G. Shi, W. Zeng, and F. Wu, "Simultaneous Depth and Spectral Imaging with A Cross-Modal Stereo System," in *IEEE Trans. on Cir. and Sys. for Video Technology*, 2016 (online).
- 4 H. Wu, X. Sun, J. Yang, W. Zeng, and F. Wu, "Lossless Compression of JPEG Coded Photo Collections," *IEEE Trans. on Image Processing*, vol. 25, no. 6, June 2016.
- 5 D. He, C. Luo, C. Lan, F. Wu, and W. Zeng, "Structure-Preserving Hybrid Digital-Analog Video Delivery in Wireless Networks," *IEEE Trans. on Multimedia*, Sept. 2015.
- 6 X. Ma, L. T. Yang, Y. Xiang, W. Zeng and H. Jin, "Fully Reversible Privacy Region Protection for Cloud Video Surveillance," *IEEE Transactions on Cloud Computing, Special Issue on Cloud Security Engineering*, Aug. 2015.
- 7 X. Ma, W. Zeng, L. T. Yang, D. Zou, and H. Jin, "Lossless ROI Privacy Protection of H.264/AVC Compressed Surveillance Videos," *IEEE Transactions on Emerging Topics in Computing*, Aug. 2015.
- 8 S. Deb Roy, G. Lotan and W. Zeng, "The Attention Automaton: Sensing Collective User Interests in Network Communities," *IEEE Transactions on Network Science and Engineering*, Jan.- March 2015.
- 9 X. Nie, J. Liu, Q. Wang, W. Zeng, "Graph-based Video Fingerprinting Using Double Optimal Projection," *Journal of Visual Communication and Image Representation*, 2015, 32(10): 120-129.
- 10 L. Qin and W. Zeng, "Context-adaptive modeling for wavelet domain distributed video coding" in *IEEE Multimedia Magazine, Fast Track Program for ICME2014 papers*, Oct.- Dec. 2014.
- 11 W. Zeng, Z. Liu, E. Steinbach, "Forging a Close Relationship with Multimedia Communities," *IEEE Multimedia*, 2014, 21(4): 14-15.
- 12 X. Nie, W. Zeng, H. Yan, J. Sun, Z. Liu, and Q. Wang, "Structural Similarity-based Video Fingerprinting for Video Copy Detection," *IET Image Processing*, vol. 8, no. 11, pp. 655-661, 2014.
- 13 Q. Wang, W. Zeng, and J. Tian, "A Compressive Sensing based Secure Watermark Detection and Privacy Preserving Storage Framework" *IEEE Transactions on Image Processing*, vol. 23, no. 3, March 2014 ([top 5 most frequently downloaded documents](#) for TIP in the month of Feb. 2014).
- 14 S. Deb Roy and W. Zeng, "Cognitive Canonicalization of Natural Language Queries using Semantic Strata," *ACM Transactions on Speech and Language Processing*, Dec. 2013.
- 15 S. Deb Roy, T. Mei, W. Zeng and S. Li, "Towards Cross Domain Learning for Social Video Popularity Prediction," *IEEE Transactions on Multimedia, Special Issue on Social Media as Sensors*, vol. 15, no. 6,

Oct. 2013. **(IEEE ComSoc MMTC 2015 Best Journal Paper Award)**

- 16 S. Deb Roy, G. Lotan, and W. Zeng, "Social Multimedia Signals: Sense, Process and Put Them to Work", *IEEE Multimedia Magazine*, Jan. – March, 2013. **(2013 IEEE Multimedia Magazine most downloaded paper)**
- 17 Q. Wang, W. Zeng, and A. G. Lobzhanidze, "Mobile media in action: remote target localization and tracking," *IEEE Multimedia Magazine*, vol. 19, no. 3, July-Sept, 2012.
- 18 R. Sun and W. Zeng, "Secure and robust image hashing via compressive sensing," *Multimedia Tools and Applications*, Aug. 2012.
- 19 Y. Xu, C. Zhu, W. Zeng, and X. Li, "Multiple Description Coded Video Streaming in Peer-to-Peer Networks," *EURASIP Signal Processing: Image Communication, Special Issue on Advances in Video Streaming for P2P Networks*, vol. 27, no. 5, May 2012, pp. 412-429.
- 20 S. Deb Roy and W. Zeng, "A Game-theoretic Interpretation of P2P Swarm Equilibrium for Incentive Optimization," *IEEE ComSoc MMTC E-Letter, Special issue on Decision and Game Theory for Security*, vol. 6, no. 5, May 2011.
- 21 Wei Liu, Lina Dong and W. Zeng, "Motion Refinement Based Progressive Side-Information Estimation for Wyner-Ziv Video Coding," *IEEE Trans. on Cir. and Sys. for Video Technology*, Dec. 2010. (17 citations)
- 22 W. Liu, W. Zeng, L. Dong, and Q. Yao, "Efficient Compression of Encrypted Grayscale Images," *IEEE Trans. on Image Proc.*, April 2010. (156 citations)
- 23 X. Kang, J. Huang and W. Zeng, "Efficient General Print-Scanning Resilient Data Hiding Based on Uniform Log-polar Mapping," *IEEE Transactions on Information Forensics and Security*, vol. 5, no. 1, pp. 1-12, March 2010. (49 citations)
- 24 W. Zeng, Y. Zhu, H. Lu, and X. Zhuang, "Path-diversity P2P Overlay Retransmission for Reliable IP-multicast," *IEEE Trans. on Multimedia*, vol. 11, no. 5, pp. 960-971, Aug. 2009. (11 citations, conference version has 5 citations)
- 25 X. Kang, J. Huang and W. Zeng, "Improving Robustness of Quantization-Based Image Watermarking via Adaptive Receiver," *IEEE Trans. on Multimedia*, vol. 10, no. 6, Oct. 2008. (30 citations)
- 26 X. Kang, W. Zeng, J. Huang, "A Multi-band Wavelet Watermarking Scheme," *International Journal on Network Security*, vol.6, no.2, pp.116–121, Mar. 2008. (43 citations)
- 27 C.W. Chen, W. Zeng, and R. Steinmetz, "Scanning the Issue - Special Issue on Recent Advances in Distributed Multimedia Communications," *the Proceedings of the IEEE, Special Issue on Recent Advances in Distributed Multimedia Communications*, vol. 96, no. 1, January 2008.
- 28 W. Liu, L. Dong and W. Zeng, "Optimum Detection for Spread-Spectrum Watermarking that Employs Self-masking", *IEEE Transactions on Information Forensics and Security*, vol. 2, no. 4, pp. 645-654, Dec. 2007. (45 citations)
- 29 P. Zhu, W. Zeng, and C. Li, "Cross-layer Design of Source Rate Control and QoS-Aware Congestion Control for Wireless Video Streaming," in *Journal of Advances in Multimedia, special issue on Cross-layer Optimized Wireless Multimedia Communications*, 2007.
- 30 P. Zhu, W. Zeng, and C. Li, "Joint design of source rate control and QoS-aware congestion control for video streaming over the Internet," *IEEE Trans. Multimedia*, vol. 9, no. 2, pp. 366-376, Feb. 2007. (48 citations)
- 31 B. Xie and W. Zeng, "Fast bitstream switching algorithms for real-time adaptive video multicasting," *IEEE Trans. Multimedia*, vol. 9, no. 1, pp. 169-175, Jan. 2007. (9 citations, conference version has 12 citations)
- 32 W. Zeng, J. Lan and X. Zhuang, "Security for multimedia adaptation: architectures and solutions", *IEEE MultiMedia Magazine*, pp. 68-76, April-June 2006. (7 citations, conference version has 13 citations)
- 33 B. Xie and W. Zeng, "A sequence based rate control framework for consistent quality real-time video," *IEEE Trans. on Circuits & Systems for Video Technology*, vol. 16, no. 1, Jan. 2006. (51 citations, conference version has 40 citations)
- 34 J. Lan, W. Zeng, and X. Zhuang, "Operational distortion-quantization curve based bit allocation for smooth video quality," *Special Issue on Visual Communications in Ubiquitous Era, Journal on Visual Communications and Image Representation*, vol. 16, issues 4-5, pp. 527-543, August-October, 2005.
- 35 W. Zeng, "Adaptive spatial-temporal error concealment with embedded side information," in the *Special Issue on Visual Communications in Ubiquitous Era, Journal on Visual Communications and Image Representation*, vol. 16, issues 4-5, pp. 499-511, August-October, 2005.
- 36 Z. He, W. Zeng, and C. Chen, "Lowpass filtering of rate-distortion functions for quality smoothing in real-time video communication," *IEEE Trans. on Circuits & Systems for Video Technology*, vol. 15, no. 8, pp. 973-981, Aug. 2005. (27 citations)

- 37 J. Wei, M. Pickering, M. Frater, J. Arnold, J. Boman, and W. Zeng, "Tile boundary artifact reduction using odd tile size and the low-pass first convention," *IEEE Trans. Image Proc.*, 14(8): 1033-1042, Aug. 2005. [\(5 citations, conference version has 9 citations\)](#)
- 38 M. Ji, S. Shen, W. Zeng, et al, "MPEG-4 IPMP extension – for interoperable protection of multimedia content," *EURASIP Journal on Applied Signal Processing, Special Issue on Multimedia Security and Rights Management*, 2004:14, pp. 2201-2213, 2004. [\(13 citations\)](#)
- 39 W. Zeng, K. Nahrstedt, P. A. Chou, A. Ortega, P. Frossard, and H. H. Yu, "Introduction to the Special Issue on Streaming Media," Guest Editorial, *IEEE Trans on Multimedia, Special Issue on Streaming Media*, vol. 6, no. 2, April 2004.
- 40 W. Zeng and S. Lei, "Efficient frequency domain selective scrambling of video", in *IEEE Tran. Multimedia*, March 2003. [\(362 citations\)](#)
- 41 W. Zeng and J. Wen, "3G wireless multimedia: technologies and practical issues," invited paper, *Journal of Wireless Communications and Mobile Computing, Special Issue on Multimedia over Mobile IP*, vol. 2, issue 6, pp. 563-572, Sept. 2002. [\(11 citations\)](#)
- 42 J. Wen, M. Severa, W. Zeng, M. Luttrell and W. Jin, "A format compliant configurable encryption framework for access control of video", *IEEE Tran. Circuits & Systems for Video Technology, Special Issue on Wireless Video*, pp. 545-557, June 2002. [\(230 citations\)](#)
- 43 W. Zeng, S. Daly and S. Lei, "An overview of the visual optimization tools in JPEG 2000," invited paper, in *Special Issue on JPEG-2000 of Signal Processing: Image Communication*, vol. 17, no. 1, pp. 85-104, Jan. 2002. [\(96 citations\)](#)
- 44 W. Zeng and H. Yu, "Informing clientele through networked multimedia information systems," editorial introduction to the special issue on Multimedia Technologies and Informing Systems, *The International Journal of Informing Science*, vol. 2, no. 4, 1999.
- 45 W. Zeng and B. Liu, "A statistical watermark detection technique without using original images for resolving rightful ownerships of digital images," in *IEEE Trans. Image Processing*, vol. 8, no. 11, pp. 1534-1548, Nov. 1999. [\(249 citations\)](#)
- 46 W. Zeng and B. Liu, "Geometric-structure-based error concealment with novel applications in block-based low bit rate coding," *IEEE Trans. on Circuit and System for Video Technology*, vol. 9, no. 4, pp. 648-665, June 1999. [\(142 citations\)](#)
- 47 C. Podilchuk and W. Zeng, "Image-Adaptive watermarking using visual models," invited paper, *IEEE Journal on Selected Areas in Communications*, vol. 16, No. 4, *Special Issue on Copyright and Privacy Protection*, pp. 525-539, May 1998. [\(1235 citations\)](#)
- 48 W. Zeng and Y. Huang, "Boundary matching detection for recovering erroneously received VQ indices over noisy channels", *IEEE Trans. on Cir. and Sys. for Video Technology*, vol. 6, no. 1, pp. 108-113, Feb. 1996. [\(18 citations\)](#)
- 49 W. Zeng, Y. Huang, and S. Huang, "Two greedy tree growing algorithms for designing variable rate vector quantizers", *IEEE Trans. Cir. and Sys. for Video Technology*, vol. 5, no. 3, pp. 236-242, June 1995.

Book and Book Chapters:

1. S. Deb Roy and W. Zeng, *Social Multimedia Signals: A Signal Processing Approach to Social Network Phenomena*, ISBN: 978-3-319-09116-7, Springer, Aug. 2014.
2. S. Deb Roy, T. Mei, and W. Zeng, "Bridging social media content across web domains," book chapter in *Human-Centered Social Media Analytics* edited by Y. Fu, 2013, Springer.
3. W. Zeng and L. Dong, "End-to-end security for multimedia adaptation," book chapter in *Encyclopedia of Multimedia* (second edition), edited by Borko Furht, ISBN-10: 0387747249, Springer, November 26.
4. W. Zeng, H. Yu and C. Lin (Eds), *Multimedia Security Technologies for Digital Rights Management*, ISBN: 0123694760, Elsevier, July 2006. (the first book designed to provide an in-depth and comprehensive coverage on the state-of-the-art multimedia security technologies for the DRM applications) [\(115 citations\)](#)
5. W. Zeng, "Format compliant content protection," book chapter in *Multimedia Security Technologies for Digital Rights Management*, W. Zeng, H. Yu and C. Lin (Eds), ISBN: 0123694760, Elsevier, July 2006.
6. W. Zeng and J. Lan, "Real-time Multimedia," book chapter in *Encyclopedia of Multimedia*, edited by Borko Furht, ISBN: 038724395X, Springer, Dec. 2005.

Conference Papers:

1. L. Zhao, J. Wang, X. Li, Z. Tu, and W. Zeng, "On the Connection of Deep Fusion to Ensembling," arXiv:1611.07718, Nov. 2016.

2. S. Song, C. Lan, J. Xing, W. Zeng, and J. Liu, "An End-to-End Spatio-Temporal Attention Model for Human Action Recognition from Skeleton Data", to appear in 2016 AAAI Conference on Artificial Intelligence.
3. J. Wang, Z. Wei, T. Zhang, and W. Zeng, "Deeply-Fused Nets," arXiv:1605.07716v1, May 2016.
4. L. Wang, Z. Xiong, G. Shi, F. Wu, and W. Zeng, "Compressive Hyperspectral Imaging with Complementary RGB Measurements," in *Visual Communications and Image Processing*, Nov. 2016.
5. Y. Li, C. Lan, J. Xing, W. Zeng, C. Yuan, and J. Liu, "Online Human Action Detection using Joint Classification-Regression Recurrent Neural Networks," in *ECCV 2016*, Amsterdam, Oct. 2016.
6. D. Liu, L. Wang, L. Li, Z. Xiong, F. Wu, and W. Zeng, "Pseudo-sequence-based Light Field Image Compression," in *IEEE Inter. Conf. on Multimedia & Expo, Grand Challenge on Light-Field Image Compression*, July 2016. **(Winner of the Challenge)**
7. X. Lan, Z. Xiong, W. Zhang, S. Li, H. Chang, and W. Zeng, "A Super-Fast Online Face Tracking System for Video Surveillance," in 2016 *IEEE Int'l Symposium on Circuits & Systems*.
8. W. Zhu, C. Lan, J. Xing, W. Zeng, Y. Li, L. Shen, X. Xie, "Feature Learning for Skeleton Based Action Recognition Using Regularized Deep LSTM," 2016 AAAI Conference on Artificial Intelligence.
9. C. Lan, D. He, C. Luo, F. Wu, and W. Zeng, "Progressive Pseudo-Analog Transmission for Mobile Video Live Streaming," 2015 *Visual Communications and Image Processing*.
10. D. He, C. Luo, F. Wu, and W. Zeng, "Swift: A Hybrid Digital-Analog Scheme for Low-Delay Transmission of Mobile Stereo Video," FULL PAPER in *ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM)*, Cancun, Mexico, November 2-6, 2015.
11. L. Wang, Z. Xiong, D. Gao, G. Shi, W. Zeng and F. Wu, "High-speed Hyperspectral Video Acquisition with a Dual-camera Architecture," 2015 *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*.
12. C. Lan, J. Xu, W. Zeng, and F. Wu, "Compound image compression using lossless and lossy using LZMA in HEVC," 2015 *IEEE Inter. Conf. on Multimedia and Expo*, main conference (oral presentation) (15% acceptance rate).
13. S. Shruti, S. Deb Roy, and W. Zeng, "Influence of social media on performance of movies," *Workshop on Cross-media Analysis for Social Multimedia*, 2014 *IEEE Inter. Conf. on Multimedia & Expo*.
14. L. Qing and W. Zeng, "Improving distributed video coding by exploiting context-adaptive modeling," 2014 *IEEE Inter. Conf. on Multimedia and Expo*, main conference (oral presentation) (15% acceptance rate).
15. Q. Wang, W. Zeng, and J. Tian, "Compressive sensing based secure multiparty privacy preserving framework for collaborative data-mining and signal processing," 2014 *IEEE Inter. Conf. on Multimedia and Expo*, main conference (oral presentation) (15% acceptance rate).
16. J. Tian and W. Zeng, "Delta interpolation for up-sampling imaging solutions," 2014 *IEEE Inter. Conf. on Multimedia and Expo*, main conference (poster presentation) (30% acceptance rate).
17. Q. Wang, W. Zeng, and J. Tian, "Integrated secure watermark detection and privacy preserving storage in the compressive sensing domain," regular paper (35% acceptance rate), in *IEEE Inter. Workshop on Information Forensics and Security*, Guangzhou, China, Nov. 2013.
18. S. D. Roy and W. Zeng, "The Hidden Potential of Movie Genome Communities: Analyzing fine-grained Semantic Information in Motion Pictures," regular paper (30% acceptance rate), *IEEE International Conference on Semantic Computing*, Irvine, CA, Sept. 2013.
19. X. Li, W. Zeng, and Y. Duan, "Geometry based airborne LiDAR data compression" *IEEE Inter. Conf. on Multimedia and Expo* main conference oral presentation (12.7% acceptance rate), July 2013.
20. A. Lobzhanidze and W. Zeng, "Proactive Caching of Online Video by Mining Mainstream Media," *IEEE Inter. Conf. on Multimedia and Expo* main conference oral presentation (12.7% acceptance rate), July 2013. **(Best paper award candidate)**
21. X. Li, W. Zeng, and Y. Duan, "A hybrid approach for tree classification in airborne LiDAR data," *IEEE Inter. Conf. on Acoustic, Speech, and Signal Processing*, May 2013.
22. A. Lobzhanidze, W. Zeng, P. Gentry, and A. Taylor, "Mainstream Media vs. Social Media for Trending Topic Prediction – An Experimental Study," work-in-progress, *IEEE Consumer Communications & Networking Conf.* Jan. 2013.
23. S. D. Roy and W. Zeng, "A Computational Cognitive Model for Semantic Sub-network Extraction from Natural Language Queries" the 24th *International Conference on Computational Linguistics (COLING)*, Dec. 2012 (long paper, **19% acceptance rate**).
24. S. D. Roy, T. Mei, W. Zeng, and S. Li, "SocialTransfer: Cross-Domain Transfer Learning from Social Streams for Media Applications," *ACM Multimedia* (long paper, **20% acceptance rate**), Oct. 2012. (43 citations)

25. X. Xu, T. Mei, W. Zeng, R. Yu, and J. Luo, "AMIGO: Accurate Mobile Image Geotagging," the fourth *International Conference on Multimedia Computing and Service*, Sept. 2012. (**Best paper award winner**)
26. S.D. Roy, T. Mei, W. Zeng, and S. Li, "Empowering Cross-domain Internet Media with Real-time Topic Learning from Social Streams," *IEEE Inter. Conf. on Multimedia and Expo* main conference oral presentation (**15% acceptance rate**), July 2012, Melbourne, Australia.
27. Q. Wang, A. Lobzhanidze, H.I. Jang, W. Zeng, and Y. Shang, "Video based Real-world Remote Target Tracking on Smartphones," *IEEE Inter. Conf. on Multimedia and Expo* main conference (30% acceptance rate), July 2012, Melbourne, Australia.
28. J. Fu, S. Wang, Y. Lu, S. Li, and W. Zeng, "Kinect-Like Depth Denoising," *IEEE Inter. Sym. Circuits and Systems*, May 2012, Seoul, Korea.
29. Q. Wang, A. Lobzhanidze, H. Jang, W. Zeng, Y. Shang, J. Yang, "Image and video-based remote target localization and tracking on smartphones," *SPIE Geospatial InfoFusion conference, SPIE Defense, Security, and Sensing Symposium*, April 2012, Baltimore, MD.
30. X. Kang, X. Xu, A. Peng, and W. Zeng, "Scalable Lossy Compression for Pixel-Value Encrypted Images," *Data Compression Conference*, April 2012, Snowbird, Utah, USA.
31. Y. Shang, W. Zeng, D. Ho, et al, "Nest: NETworked Smartphones for Target localization, in *Proc. IEEE Consumer Communications and Networking Conference*, Jan. 2012, Las Vegas.
32. Q. Wang, A. Lobzhanidze, S. Roy, W. Zeng and Y. Shang, "PositionIt – An Image-based Remote Target Localization System on Smartphones", (demo paper), in *ACM Multimedia Conference*, Nov. 2011.
33. J. Kim, S. Won, W. Zeng, and S. Park, "Copyright protection of vector map using digital watermarking in the spatial domain," the 7th *International Conference on Digital Content, Multimedia Technology and its Applications*, Aug. 16-18, 2011, Busan, Republic of Korea.
34. Y. Zhu, H. Liu, Y. Guo, and W. Zeng, "Network assisted media streaming in multi-hop wireless networks," in *IEEE Inter. Conf. on Computer Communication Networks*, Maui, Aug. 2011.
35. S. D. Roy, J. Tian, H. Yu, and W. Zeng, "A multi-layer key stream based approach to achieve joint encryption and compression for h.264 video," *IEEE ICME 2011, Workshop on Content Protection & Forensics*.
36. X. Li, Y. Duan, W. Zeng, N. Maerz, J. Otoo, "Integrating Optical Image with LIDAR for 3D Fracture Orientation Analysis", 2011 *IEEE Inter. Geoscience and Remote Sensing Symposium*, July 2011.
37. D. Karpman, D. Ashbrook, X. Li, Y. Duan, and W. Zeng, "LIDAR depth image compression using jpeg2000 with re-indexing", *Proc. of SPIE Defense, Security, and Sensing, Conference on Laser Radar Technology and Applications XVI*, vol. 8037, April 2011.
38. R. Sun, X. Yan, and W. Zeng, "Geometric invariant robust image hashing via zernike moment," in *Inter. Conf. on Networks Security, Wireless Communications and Trusted Computing*, April 2011.
39. W. Zeng, J. Lu, Q. Wang, and S. Bock, "Overview of the OMA Secure Content Identification Mechanism," *Workshop on Visual Content Identification and Search (VCIDS'10), IEEE International Conference on Multimedia and Expo*, July 2010.
40. S. Bock, S. Newsome, Q. Wang, and W. Zeng, X. Lin, J. Lu, "iImage---An iPhone Image Based Information Retrieval Application," *Proc. IEEE Consumer Communications and Networking Conf.*, Las Vegas, Jan. 2010.
41. S. D. Roy, T. Kneriem, S. Churchman, and W. Zeng, "Design Issues of the prTorrent File Sharing Protocol," *Proc. IEEE Consumer Communications and Networking Conference*, January 2010, Las Vegas.
42. T. Alexenko, M. Jenne, S. D. Roy, and W. Zeng, "Cross-Site Request Forgery: Attack and Defense," *Proc. IEEE Consumer Communications and Networking Conf.*, Las Vegas, Jan. 2010.
43. X. Liu and W. Zeng, "Throughput and Delay Analysis of the IEEE 802.15.3 CSMA/CA Mechanism," The 2nd *IEEE International Workshop on Wireless Network Algorithm and Theory*, co-located with *IEEE International Conference on Mobile Ad-hoc and Sensor Systems*, Macau SAR, P.R.C., October 12, 2009.
44. S. D. Roy and W. Zeng, "prTorrent: On Establishment of Piece Rarity in the BitTorrent Unchoking Algorithm," full paper (**20% acceptance rate**) in the *Ninth International Conference on Peer-to-Peer Computing (P2P2009)*, Sept. 2009, Seattle, WA. (7 citations)
45. Y. Zhu, H. Liu, Y. Guo, and W. Zeng, "Challenges and Opportunities in Supporting Video Streaming over Infrastructure Wireless Mesh Networks," invited paper, *Workshop on Emerging Technologies in Multimedia Communications & Networking, IEEE International Conference on Multimedia and Expo*, June 2009.
46. C. Dartigue, H. Jang, and W. Zeng, "A New Data-Mining Based Approach for Network Intrusion Detection," in the *7th Annual Conf. Commu. Networks and Services Research*, Mocton, Canada, May 2009. (27 citations)

47. Q. Yao, W. Zeng, and W. Liu, "Multi-Resolution Based Hybrid Spatiotemporal Compression of Encrypted Videos," in *Proc. IEEE Int. Conf. Acous., Speech and Sig. Process.*, April 2009.
48. W. Liu, L. Dong, and W. Zeng, "Estimating Side-Information For Wyner-ziv Video Coding Using Resolution-Progressive Decoding and Extensive Motion Exploration," in *Proc. IEEE Int. Conf. Acous., Speech and Sig. Process.*, April 2009.
49. Y. Zhu, W. Liu, L. Dong, W. Zeng, and H. Yu, "High Performance Adaptive Video Services based on Bitstream Switching for IPTV System," *IEEE Consumer Communications and Networking Conf.*, Las Vegas, Jan. 2009.
50. W. Liu, W. Zeng, L. Dong, Q. Yao, "Resolution-progressive Compression of Encrypted Grayscale Images," *IEEE International Conference on Image Processing*, Oct. 2008.
51. X. Kang, X. Zhong, J. Huang, W. Zeng, "An Efficient Print-scanning Resilient Data Hiding Scheme Based on a Novel LPM," *IEEE International Conference on Image Processing*, Oct. 2008.
52. Y. Zhu, W. Zeng, H. Liu, Y. Guo, and S. Mathur, "Supporting Video Streaming Services in Infrastructure Wireless Mesh Networks: Architecture and Protocols," *IEEE Inter. Confer. Communications*, May 2008. (15 citations)
53. W. Liu, L. Dong and W. Zeng, "Power-Efficient Rate Allocation for Slepian-Wolf Coding over Wireless Sensor Networks," *IEEE Int. Conf. Acous., Speech and Sig. Process.*, April 2008.
54. W. Liu, L. Dong and W. Zeng, "Wyner-Ziv Video Coding with Multi-resolution Motion Refinement: Theoretical Analysis and Practical Significance," in *Visual Communications and Image Processing (VCIP)*, San Jose, Jan. 2008.
55. W. Liu, L. Dong and W. Zeng, "Optimum Detection for Spread-Spectrum Watermarking that Employs Self-masking," in *IEEE International Conference on Image Processing*, Sept. 2007.
56. Y. Zhu, W. Zeng and H. Lu, "Exploiting Overlay Path-diversity for Scalable Reliable Multicast," in *IEEE International Conference on Multimedia and Expo*, July 2007.
57. X. Kang, C. Liu, W. Zeng, C. Liu, and J. Huang, "Fast and automatic watermark resynchronization based on Zernike moments," in *Conference on Security, Steganography, and Watermarking of Multimedia Contents, IS&T/SPIE Symposium on Electronic Imaging*, January 2007.
58. W. Liu, L. Dong, and W. Zeng, "Optimum detection of image-adaptive watermarking in DCT domain," *IEEE Inter. Confer. Image Processing*, Oct. 2006.
59. Z. He and W. Zeng, "Rate-distortion optimized transmission power adaptation for video streaming over wireless channels," *IEEE Inter. Confer. Image Processing*, Oct. 2006.
60. W. Zeng, Y. Zhu, H. Lu, and H. Jiang, "A novel path-diversity overlay retransmission architecture for reliable multicast," *IEEE Inter. Confer. Multimedia and Expo*, July 2006.
61. P. Zhu, W. Zeng, and C. Li, "Cross-layer design of source rate control and QoS-aware congestion control for wireless video streaming," *IEEE Inter. Confer. Multimedia and Expo*, July 2006.
62. W. Zeng, "On security architecture and functionality of distributed multimedia," in 40th Annual *Conference on Information Sciences and Systems*, Princeton, NJ, March 2006.
63. P. Zhu, W. Zeng, and C. Li, "A novel source rate control algorithm for video streaming over the Internet," in *Visual Communications and Image Processing (VCIP)*, Jan. 2006.
64. W. Liu and W. Zeng, "Non-binary distributed source coding using gray codes," in *IEEE Inter. Workshop on Multimedia Signal Processing*, Shanghai, China, Oct. 2005.
65. P. Zhu, W. Zeng, and C. Li, "Joint design of source rate control and QoS-aware congestion control for streaming video over the Internet," in *IEEE Inter. Workshop on Multimedia Signal Processing*, Shanghai, China, Oct. 2005. (14 citations)
66. X. Kang, Y. Q. Shi, J. Huang, and W. Zeng, "Multi-band wavelet based digital watermarking using principal component analysis," in *International Workshop on Digital Watermarking*, pp. 139-146, Sept. 2005, Siena, Italy.
67. B. Xie and W. Zeng, "On the rate-distortion performance of dynamic bitstream switching mechanisms," *IEEE Inter. Confer. Multimedia and Expo*, July 2005. (4 citations)
68. X. Kang, W. Zeng, J. Huang, X. Zhuang, "Digital watermarking based on multi-band wavelet and principal component analysis," in *Visual Communications and Image Processing (VCIP) 2005*, July 12-15, 2005, Beijing, China.
69. M. Sullivan and W. Zeng, "A protocol for simultaneous real time playback and full quality storage of streaming media," *IEEE Inter. Confer. Communications*, Seoul, Korea, May 2005.
70. W. Zeng, J. Lan, and X. Zhuang, "Security architectures and analysis for content adaptation," in *Conference on Security, Steganography, and Watermarking of Multimedia Contents VII, IS&T/SPIE Symposium on Electronic Imaging*, January 2005.
71. W. Zeng, X. Zhuang, and J. Lan, "Network friendly media security: rationales, solutions, and open issues," *Proc. IEEE Inter. Conf. Image Proc.*, Singapore, Oct. 2004. (20 citations)
72. B. Xie and W. Zeng, "An improved rate-quantization model for rate control in real-time video encoding," *Proc. IEEE Inter. Conf. Image Proc.*, Singapore, Oct. 2004.
73. B. Xie and W. Zeng, "Rate-distortion optimized dynamic bitstream switching for scalable video streaming," in *IEEE Inter. Confer. Multimedia and Expo*, Taipei, Taiwan, June 2004. (29 citations)

74. J. Lan, X. Zhuang, and W. Zeng, "Single-pass frame-level constant distortion bit allocation for smooth video quality," in *IEEE Inter. Confer. Multimedia and Expo*, Taipei, Taiwan, June 2004.
75. B. Xie and W. Zeng, "Two fast bitstream switching algorithms for real-time adaptive multicasting of video," in *IEEE Inter. Confer. on Communications*, Paris, France, June 2004.
76. B. Xie and W. Zeng, "Source characteristics based fast bitstream switching," *Proc. IEEE International Conference on Multimedia and Expo*, 2003. (8 citations)
77. W. Zeng, "Spatial-temporal error concealment with side information for standard video codecs," *Proc. IEEE International Conference on Multimedia and Expo*, 2003. (11 citations)
78. W. Zeng and J. Wen, "3G wireless multimedia: technologies and practical issues," invited paper, *Proc. IEEE Inter. Conf. Image Proc., Special Session on Wireless Imaging*, Sept. 2002. (7 citations)
79. B. Xie and W. Zeng, "Sequence-based rate control for constant quality video," *Proc. IEEE Inter. Conf. Image Proc.*, Sept. 2002. (42 citations)
80. W. Zeng, J. Wen and M. Severa, "Fast self-synchronous content scrambling by spatially shuffling codewords of compressed bitstreams," *Proc. IEEE Inter. Conf. Image Proc.*, Sept. 2002. (32 citations)
81. W. Zeng, J. Wen, and M. Severa, "Format-compliant selective scrambling for multimedia access control," invited talk, *IEEE Inter. Conf. on Information Technology: Coding and Computing*, April 2002.
82. J. Wen, M. Severa, W. Zeng, M. Luttrell and W. Jin, "A format compliant configurable encryption framework for access control of multimedia," in *IEEE Workshop on Multimedia Signal Processing*, pp. 435-440, Oct. 2001. (64 citations)
83. S. Deshpande and W. Zeng, "Scalable streaming of JPEG2000 images using Hypertext Transfer Protocol," in *ACM Multimedia*, Oct. 2001. (full paper, **20% acceptance rate**). (59 citations)
84. J. Wei, M. Pickering, M. Frater, J. Boman, J. Arnold and W. Zeng, "Boundary artifact reduction using odd tile length and the low pass first convention (OTLPF)," *Proc. of SPIE Conf. on Applications of Digital Image Process.*, July 29 – Aug. 3, 2001. (9 citations)
85. S. Deshpande and W. Zeng, "HTTP streaming of JPEG2000 images," *Inter. Conf. on Information Technology: Coding and Computing*, pp. 15-19, April 2001. (15 citations)
86. W. Zeng and Weiping Li, "Preface to special session on media streaming," *IEEE Inter. Conf. on Information Technology: Coding and Computing*, pp. 1-1, April 2001.
87. W. Zeng, S. Daly and S. Lei, "Visual optimization tools in JPEG 2000," invited paper, special session on JPEG-2000, *ICIP'2000*, Sept. 2000, Vancouver, Canada. (14 citations)
88. W. Zeng, S. Daly and S. Lei, "Point-wise extended visual masking for JPEG2000 image compression," *ICIP'2000*, Sept. 2000, Vancouver, Canada. (52 citations)
89. W. Zeng, J. Li and S. Lei, "An efficient color re-indexing scheme for palette-based compression," *ICIP'2000*, Sept. 2000, Vancouver, Canada. (61 citations)
90. S. Daly, W. Zeng, J. Li and S. Lei, "Visual masking in wavelet compression for JPEG2000," in *IS&T/SPIE Symposium on Electronic Imageing: Image and Video Communications and Processing*, vol. 3974, San Jose, Jan. 2000. (41 citations)
91. W. Zeng, "Visual optimization in digital image watermarking," invited talk, *Workshop on Multimedia and Security at ACM Multimedia '99*, Orlando, Oct. 1999.
92. W. Zeng and S. Lei, "Digital watermarking in a perceptually normalized domain," in *Proc. 33rd Annual Asilomar Conf. on Signals, Systems, and Computers*, Oct. 1999.
93. W. Zeng and S. Lei, "Efficient Frequency Domain Digital Video Scrambling for Content Access Control," (full paper, **20% acceptance rate**) *ACM Multimedia'99*, Nov. 1999. (115 citations)
94. W. Zeng, B. Liu and S. Lei, "Extraction of multiresolution watermark images for resolving rightful ownership," in *IS&T/SPIE Symposium on Electronic Imageing: Science & Technology*, pp. 404-414, Jan. 1999. (13 citations)
95. W. Zeng, J. Li and S. Lei, "Adaptive wavelet transforms with spatially varying filters for scalable image coding," in *ICIP'98*, Chicago, Oct. 1998.
96. W. Zeng, "Digital watermarking and data hiding: technologies and applications," invited talk, *Proc. International Conference on Information Systems, Analysis and Synthesis*, pp. 223-229, 1998. (13 citations)
97. W. Zeng and B. Liu, "On resolving rightful ownerships of digital images by invisible watermarks," in *Proc. Inter. Conf. Image Processing*, vol. 1, pp. 552-555, 1997. (115 citations)
98. W. Zeng, B. Guo and B. Liu, "Feature-oriented rate shaping of pre-compressed image/video," in *Proc. Inter. Conf. Image Processing*, vol. 2, pp. 772-775, 1997.
99. C. Podilchuk and W. Zeng, "Watermarking of the JPEG Bitstream," *Proc. Inter. Confer. Imaging Science, Systems, and Technology*, pp. 253-260, June, 1997. (15 citations)
100. C. Podilchuk and W. Zeng, "Perceptual watermarking of still images," in *Proceeding, The First IEEE Signal Processing Society Workshop on Multimedia Signal Processing*, pp. 363-368, June 1997, Princeton, New Jersey. (114 citations)

101. C. Podilchuk and W. Zeng, "Digital image watermarking using visual models," Technical Memo, Multimedia Communication Lab, Lucent Technologies, Bell labs., Sept., 1996. Also in *SPIE/ISI&T Electronic Imaging'97*, Feb. 1997. (103 citations)
102. W. Zeng and B. Liu, "Rate shaping by block dropping for transmission of MPEG-precoded video over channels of dynamic bandwidth", (full paper, **20% acceptance rate**) in *Proc. ACM Multimedia '96*, pp. 385-393, Nov. 1996. (45 citations)
103. W. Zeng, Y. Tan, B. Liu and L. Yiin, "A novel approach to unequal error protection for image/video delivery with source detector," In *SPIE Photonics East '96: Voice, Video and Data Communication*, vol. 2915, Nov. 1996.
104. Y. Chang, W. Zeng, I. Kamel and R. Alonso, "Integrated image and speech analysis for content-based video indexing," *IEEE Inter. Conf. Multimedia Computing and Systems*, pp. 306-313, June 1996, Japan. (143 citations)
105. W. Zeng and B. Liu, "Directional spatial interpolation for DCT-based low bit rate coding", *Proc. IEEE Inter. Conf. Acoustic, Speech, and Signal Proc.*, Atlanta, May 1996.
106. W. Zeng and B. Liu, "Geometric-structure-based directional filtering for error concealment in image/video transmission", *SPIE Photonics East'95: Wireless Data Transmission*, vol. 2601, pp. 145-156, Oct. 1995. (40 citations)
107. W. Zeng and Y. Huang, "Boundary matching detection for progressive transmission of VQ indices over noisy channels", *Proc. IEEE Int. Symp. on Cir. and Systems*, vol. 3, pp. 249-252, May 1994.
108. W. Zeng, Y. Huang, and S. Huang, "Greedy tree growing algorithms for designing variable rate vector quantizers," *Proc. IEEE Int. Conf. Acous., Speech and Sig. Process.*, pp. 594-597, 1993.

Other invited presentations (panel/expert talk):

- W. Zeng, "High Order Entropy Coding – From Conventional Video Coding to Distributed Video Coding," Expert Talk on Innovating the Future Leveraging the Past at "Time Machine" session of ICME 2012.
- W. Zeng (as a Panelist), "Scalable reliable multicast Panel presentation", Panel presentation, Panel on "Scalable Adaptive Multicast", *Workshop on Peer-to-Peer Multicasting, IEEE Consumer Communications and Networking Conference*, Las Vegas, Jan. 2007.
- W. Zeng (as a Panelist), "Reliable multicast streaming architecture", Panel presentation, Panel on "Distributed Multimedia Content Streaming over Collaborative Networks," *IEEE International Workshop on Multimedia Signal Processing*, Shanghai, China, Oct. 2005.
- W. Zeng, H. Lu, Y. Zhu, and H. Jiang, "Enhancing reliability by supporting path-diversity overlay retransmission," Microsoft Research Faculty Summit, Redmond, WA, July 2005.

Tutorials:

1. W. Zeng and S. D. Roy, "Social Multimedia Signals: when Social Networking meets Signal Processing," *2013 IEEE Inter. Conf. Multimedia & Expo*.
2. W. Zeng, "Distributed Video Coding: Theory, Practice, and New Promises," *IEEE Inter. Conf. Multimedia & Expo*, July 2010.
3. "Multimedia Security Technologies for Digital Rights Management", (with B. Zhu, H. Jin, Q. Sun, C.-Y. Lin and H. Yu), *International Conference on Multimedia and Expo*, July 2007
4. "Multimedia Security Technologies for Digital Rights Management", (with Ching-Yung Lin and Heather Yu), *IEEE International Conference on Consumer Electronics (ICCE)*, Las Vegas, Jan. 8, 2005.

Standards contributions and invited talks:

1. A large number of input contributions to Open Mobile Alliance and IETF (Internet Engineering Task Force). Many were adopted.
2. W. Zeng, et al., "SCIDM (Secure Content Identification Mechanism) WID for Approval," OMA-TP-2008-0077R02-INP_WID_0160_SCIDM_for_Approval.doc, Open Mobile Alliance, Beijing, Feb. 2008. (Approved)
3. W. Zeng, G. Wen, and M. Severa, "Editorial changes and extension of Annex C on selective decryption configuration message," *ISO/IEC JTC 1/SC 29/WG 11/IPMP M7989*, Jeju, March 2002.
4. G. Wen, W. Zeng, D. Kosiba and M. Severa, "Rationale for format-compliant configurable selective encryption in IPMP standardization," *ISO/IEC JTC 1/SC 29/WG 11/IPMP M7212*, Paris, June 2001.
5. G. Wen, W. Zeng, D. Kosiba and M. Severa, "A format-compliant configurable encryption framework for access control of multimedia," *ISO/IEC JTC 1/SC 29/WG 11/IPMP M7213*, Paris, June 2001. (adopted into MPEG4 IPMP extensions IS)
6. G. Wen, W. Zeng, M. Severa and D. Kosiba, "A configuration message format for selective encryption tools," *ISO/IEC JTC 1/SC 29/WG 11/IPMP M7216*, Paris, June 2001.

7. J. Wei, M. Pickering, M. Frater, J. Arnold, J. Boman and W. Zeng, "Report on core experiment – odd tile length low pass first convention," ISO/IEC JTC1/SC29/WG1 N2097, Singapore, March 2001. Adopted into JPEG2000 Part II. (**adopted into JPEG2000 Part II**.)
8. J. Wei, M. Pickering, M. Frater, J. Arnold, J. Boman and W. Zeng, "Further results on core experiment-Test odd length tiles," ISO/IEC JTC1/SC29/WG1 N1969, New Orleans, Dec. 2000.
9. W. Zeng, "Report on CE V1 (Evaluation of the distortion-adaptive progressive CSF weighting technique)" ISO/IEC JTC1/SC29/WG1 N1716, Arles, France, July, 2000.
10. W. Zeng and S. Lei, "Report on CE V1 (CSF weighting strategy for visual progressive coding)," ISO/IEC JTC1/SC29/WG1 N1584, Tokyo, March, 2000.
11. S. Lei, G. Borden and W. Zeng, "Support of color palette approach for Part 1 of JPEG-2000," ISO/IEC JTC1/SC29/WG1 N1601, Tokyo, March, 2000.
12. T. Chinen, M. Nadenau, J. Reichel, and W. Zeng, "Report on CE C03 (Optimizing color image compression)," ISO/IEC JTC1/SC29/WG1 N1587, Tokyo, March, 2000.
13. Wenjun Zeng, "Visual optimization strategies in digital image watermarking," invited talk, Digital Imaging Group Technical Forum on Copyright Protection at PMA (Photo Marketing Association) meeting, Las Vegas, Feb. 2, 2000.
14. W. Zeng, S. Daly and S. Lei, "Report on CE V1 (Improve visual quality by making use of both self-contrast masking and neighborhood masking)," ISO/IEC JTC1/SC29/WG1 N1452, Maui, Hawaii, Dec. 1999. (**adopted into JPEG2000 Part II**).
15. W. Zeng and S. Lei, "Option of JPEG2000 for coding palettized images-a proposal," ISO/IEC JTC1/SC29/WG1 N1453, Maui, Hawaii, Dec. 1999. (**adopted into JPEG2000 Part I**).
16. W. Zeng, S. Daly and S. Lei, "Report on CE V1 (exploitation of visual masking through control of individual block contributions)," ISO/IEC JTC1/SC29/WG1 N1303, Vancouver, Canada, July, 1999.
17. W. Zeng and S. Lei, "Transform domain perceptual watermarking with scalable visual detection- a proposal for JPEG2000," ISO/IEC JTC1/SC29/WG1 N759, Geneva, Switzerland, March, 1998.
18. J. Li, W. Zeng and S. Lei, "Sharp rate-distortion optimized embedded wavelet coding-an algorithm proposal for JPEG2000," ISO/IEC JTC1/SC29/WG1 N621, Oct., 1997.
19. Invited talks at various research labs and universities (Samsung Research America, Microsoft Research Asia, Thomson Lab, Bell Labs, IBM T.J. Watson Research Center, David Sarnoff Research Center, Panasonic Information & Networking Technology Lab, Texas Instrument R&D Center, Huawei Technologies, ZTE Corporation, Institute for Infocomm Research, Singapore, Univ. of California at Los Angeles, Australian Defense Force Academy (ADFA), Univ. of New South Wales, Univ. of Maryland, Univ. of California, Riverside, Chinese Univ. of Hong Kong, Tsinghua Univ., Shanghai Jiao Tong University, Beijing Jiaotong University, Fudan University, Sun Yat-Sen University, Nanyang Technological Univ., Tianjin University, University of Science & Technology of China, Harbin Institute of Technology, Xi'an University of Electronic Science and Technology of China, National University of Taiwan, Academia Sinica, Taiwan, Ryerson University, Canada, Shandong University, University of Electronic Science and Technology of China, Xiamen University, Tsinghua University Graduate School at Shenzhen, Peking University, Tongji University, Wuhan University, Huazhong Univ. of Science & Technology, UC Irvine, Xi'an Jiaotong Univ., etc)

- **Patents**

- ✓ Nineteen granted US patents, and a few more pending
 - For a list of granted and pending patents, please see <http://www.cs.missouri.edu/~zeng/patent.html>

Professional Services

- **Editorial board:**

- ✓ Guest Editor, *IEEE Communications Magazine Special Issue on Impact of Next-Generation Mobile Technologies on IoT-Cloud Convergence*, in progress.
- ✓ Guest Editor, *Special Issue on Video Computing in the Cloud: Mobile Computing*, *IEEE Trans. Circuit and Systems for Video Technology*, to be published in 2017.
- ✓ Lead Guest Editor (with Z. Liu and E. Steinbach), *IEEE Multimedia Magazine, Fast Track Program for ICME2014 papers*, Oct.- Dec. 2014.
- ✓ Steering Committee Member, *IEEE Transactions on Mobile Computing*. (2014 -).
- ✓ Steering Committee Member, *IEEE Transactions on Multimedia* (June 2009 – Dec. 2012)
- ✓ Associate Editor-in-Chief, *IEEE Multimedia Magazine*, since Jan. 2014. Associate Editor, 2006 – present.

- ✓ Associate Editor, *IEEE Transactions on Circuits & Systems for Video Technologies* (June 2010 - present)
- ✓ Associate Editor, *IEEE Transactions on Information Forensics & Security* (2009 - 2012)
- ✓ Associate Editor, *IEEE Transactions on Multimedia*, 2004 - 2008.
- ✓ Guest Editor (with L. Cao, G. Hua, Y. Kompatsiaris), *Special Issue on 2012 ACM Multimedia Best Papers*, *ACM Trans. on Multimedia Computing Communications and Applications*, 2013.
- ✓ Lead Guest Editor (with W. Lin), *Special Issue on QoE Modeling and Applications for Multimedia Systems*, *ZTE Communications*, March 2013.
- ✓ Guest Editor (with C. Chen and R. Steinmetz), *Special Issue on Recent Advances in Distributed Multimedia Communications*, the *Proceedings of the IEEE*, published in January 2008.
- ✓ Best Paper Award Committee Member, *IEEE Transactions on Multimedia* (2005, 2006)
- ✓ Editor, *ZTE Communications*, May 2012 – present.
- ✓ Editor, *Journal of Communications*, 2008- present.
- ✓ Lead Guest Editor (with K. Nahrstedt, P. A. Chou, A. Ortega, P. Frossard, and H. H. Yu), *IEEE Transactions on Multimedia's Special Issue on Streaming Media*, April 2004.
- ✓ Guest editor, *Special Issue on "Informing Clientele through Networked Multimedia Information Systems"*, *Journal of Informing Science* (vol. 2, no. 4, 1999 and vol.3, no.1, 2000).

- **Technical Committee:**

- ✓ Area Chair, Elected member of *IEEE Signal Processing Society's Information Forensics and Security Technical Committee*, January 2011 – Dec. 2013.
- ✓ Vice Chair of *IEEE Communication Society's Multimedia Communications Technical Committee*, May 2008- May 2010. Member since 2003, currently advisory committee member.
- ✓ Elected member of *IEEE Signal Processing Society's Multimedia Signal Processing Technical Committee*, 2005-2009. Currently associated member.
- ✓ Elected member of *IEEE Circuits & Systems Society's Multimedia Systems and Applications Technical Committee*, 2007- present. Member of Technical Vision Subcommittee, Membership & Election Subcommittee, and TMM Ad Hoc Subcommittee.
- ✓ **General co-Chair**, 2018 *IEEE International Conference on Multimedia and Expo*, San Diego
- ✓ **TPC co-Chair**, 2017 *IEEE Inter. Conf. on Image Processing*, Beijing, China.
- ✓ **TPC co-Chair**, *IEEE ChinaSIP*, July 12-15, 2015, Chengdu, China.
- ✓ **Steering Committee member** (Multimedia Society and History Sub-committee), *IEEE International Conference on Multimedia and Expo* (Jan. 2014 – present)
- ✓ Track Chair, 2014 *IEEE International Conference on Multimedia and Expo*.
- ✓ Track/area Chair, 2014 *IEEE Int. Conf. Acous., Speech and Sig. Process.*
- ✓ **Technical Program co-Chair**, 2013 *IEEE Workshop on Information Forensics and Security*.
- ✓ Workshop co-Chair, *Inter. Workshop on Socio-Mobile Media Computing*, 2013 *IEEE International Conference on Multimedia and Expo*.
- ✓ Area Chair, *ACM Multimedia 2012*.
- ✓ Workshop co-Chair, *Inter. Workshop on Emerging Multimedia Systems and Applications*, 2012 *IEEE International Conference on Multimedia and Expo*.
- ✓ Workshop co-Chair, *Inter. Workshop on Visual Content Identification and Search*, 2011 *IEEE International Conference on Multimedia and Expo*.
- ✓ **Steering Committee Chair**, *IEEE International Conference on Multimedia and Expo* (Jan. 2010 – Dec. 2011).
- ✓ Interim Steering Committee member, *IEEE International Conference on Multimedia and Expo* (July. 2009 – Dec. 2009)
- ✓ **Steering committee member**, *IEEE Consumer Communications and Networking Conference*. (2008 – present)
- ✓ Co-organizer, Special Session on Quality of Experience in Emerging Multimedia Systems and Applications, *IEEE Inter. Conf. Image Processing*, 2010.
- ✓ Co-organizer, Special Session on Human-Centric Multimedia Communications, *IEEE International Conference on Multimedia and Expo*, 2010.
- ✓ Demo co-Chair, Packet Video Workshop, Hong Kong, 2010.
- ✓ **Technical Program Vice Chair**, *IEEE International Conference on Multimedia and Expo*, Cancun, Mexico, 2009.
- ✓ Conference Special Session co-Chair, *IEEE International Workshop on Multimedia Signal Processing*, 2008
- ✓ Organizing Committee Member (Publication Chair), *IEEE International Conference on Multimedia and Expo*, Beijing, 2007.

- ✓ **Technical Program Chair**, *IEEE Consumer Communications and Networking Conference*, Las Vegas, Jan. 2007.
 - ✓ Publication Chair, *IEEE International Conference on Multimedia and Expo*, Beijing, 2007.
 - ✓ **Technical program Vice-Chair**, *IEEE Consumer Communications and Networking Conference*, Las Vegas, Jan. 2006.
 - ✓ Conference Special Session and Tutorial Chair, *IEEE Workshop on Multimedia Signal Processing*, Shanghai, China, Oct. 2005.
 - ✓ **Technical program Co-Chair**, *Multimedia Communications and Networking Symposium, IEEE Inter. Conf. Communication*, Korea, May 2005.
 - ✓ Chair, *Workshop on Digital Rights Management Impact on Consumer Communications*, 2005 *IEEE Consumer Communications and Networking Conference/Consumer Electronic Show*, Las Vegas, Jan. 2005.
 - ✓ TPC Member, Packet Video Workshop, Seattle, 2009.
 - ✓ Session Chair (Security), *IEEE International Conference on Image Processing*, Oct. 2008.
 - ✓ Session Chair (Multimedia Applications), *IEEE International Conference on Acoustic, Speech, and Signal Proc*, April 2008.
 - ✓ TPC Member, *General Symposium, IEEE Global Communications Conference*, Washington, DC, Nov. 2007.
 - ✓ TPC Member, *IEEE Workshop on Multimedia Signal Processing*, Chania, Crete, Greece, Oct. 2007.
 - ✓ Session Chair (Security), *IEEE International Conference on Image Processing*, Sept. 2007.
 - ✓ TPC Member, *ACM Multimedia*, Santa Barbara, Oct., 2006.
 - ✓ TPC Member, *International Workshop on Multimedia Applications*, Hangzhou, China, Nov. 3, 2005.
 - ✓ TPC Member, *IEEE International Conference on Multimedia and Expo*, Taipei, Taiwan, June 2004.
 - ✓ TPC Member, *Multimedia Technologies and Services Symposium, the IEEE Inter. Conference on Communications (ICC 2004)*, Paris, France, June 20-24, 2004.
 - ✓ TPC Member, *Next Generation Networks and Internet Symposium, IEEE Global Communications Conference*, San Francisco, CA, USA, Dec. 2003.
 - ✓ TPC Member, *IEEE International Conference on Multimedia and Expo*, Baltimore, MD, July 2003. TPC Member, *Multimedia Symposium, the 2004 International Conference on Communications (ICC 2004)*, Paris, France, June 20-24, 2004.
 - ✓ TPC Member, *13th International Packetvideo Workshop*, Nantes, France, April 28-30, 2003.
 - ✓ TPC Member, *IEEE International Conference on Multimedia and Expo*, Lausanne, Switzerland, Aug. 2002. Co-organizer (with Phil Chou and Heather Yu) of *Special Session on "Rate-Distortion Optimized Delivery of Realtime and Streaming Media"*, and Co-organizer (with H. Yu) of the *Panel Session on "Defining the Next Generation Challenges in Media Composition, Compression, and Communication R&D"* (Panelists: Tsuhan Chen, Leonardo Chiariglione, Bernd Girod, Phil Chou, Ed. Delp, Dorée D. Seligmann)
 - ✓ TPC Member, *12th International Packetvideo Workshop*, Pittsburgh, PA, USA, April 2002.
 - ✓ TPC Member, *IEEE Inter. Conf. Information Technology: Coding and Computing*, April 2002.
 - ✓ Co-organizer (with Weiping Li), *Special Session on "Media Streaming"*, and TPC Member, *IEEE Inter. Conf. Information Technology: Coding and Computing*, April 2001.
 - ✓ Guest editor, Special Issue on "Informing Clientele through Networked Multimedia Information Systems", *Journal of Informing Science* (vol. 2, no. 4, 1999 and vol.3, no.1, 2000).
 - ✓ Reviewer for IEEE Tran. Multimedia, IEEE Transactions on Information Forensics & Security, IEEE Tran. Circuit and System for Video Technologies, IEEE Trans. Image Processing, IEEE Trans. Signal Processing, IEEE Tran. Mobile Computing, IEEE Tran. Communications, IEEE Journal on Selected Areas in Comm., ACM Tran. Information and System Security, Journal of Visual Communication and Image Representation, Pattern Recognition Letters, and numerous IEEE and ACM international conferences.
- **Proposal reviewer:**
 - ✓ Proposal reviewer for Nanyang Technological Univ., Academic Research Fund Tier 1, April 2016.
 - ✓ Proposal reviewer for the Austrian Science Fund, Feb. 2012.
 - ✓ Panelist, NSF CISE REU Cluster Review Panel, Nov. 2010.
 - ✓ Panelist, NSF Theoretical Foundation Cluster Review Panel, April 2005, June 2007.
 - ✓ Proposal reviewer for the Research Grants Council of Hong Kong, Dec. 2006.
 - ✓ Proposal reviewer for MU Research Board, Fall 2003, Winter 2004, Fall 2011.
 - ✓ Reviewer for the Innovation and Technology Commission, a funding agency for applied research of the Government of the Hong Kong Special Administrative Region.
 - **Standards Activities**

- ✓ Internet Engineering Task Force (IETF) (March 2010 – Dec. 2010)
- ✓ Committee member of Open Mobile Alliance (OMA) (Oct. 2007- 2010)
 - **Vice Chair**, Security Working Group, OMA (March 2008 – April 2009)
 - Work Item **Champion and Convenor**, WID0160, Secure Content Identification Mechanism (SCIDM), approved in Feb. 2008, enabler candidate release approved in March 2010. A large number of contributions were adopted.
 - Active contributor to the development of the “Mobile Spam Reporting” Work Item. (2009 – 2010). Many contributions were adopted.
 - Editor of “Application layer security common functions 1.1 technical specifications”, OMA.
 - Editor of “OMA SEC-CERT Management Objects (MO)”, OMA Security Working Group
- ✓ Committee member of [ISO/IEC JTC1/SC29/WG11](#) (MPEG video coding standard). Contributor to the MPEG-4/21 IPMP (intellectual property rights management and protection) standardization activities.
 - One proposal on “format compliant selective encryption framework” has been adopted as a normative annex (Annex A) in MPEG4 IPMP International Standard.
 - Four contributions to the MPEG IPMP meeting.
- ✓ Committee member of [ISO/IEC JTC1/SC29/WG1](#) (JPEG2000 image compression standard). Main contributor to the visual optimization work in JPEG2000.
 - One proposal (palette-based JPEG2000) has been adopted into JPEG2000 Part I.
 - One proposal (point-wise extended masking) has been adopted into JPEG 2000 Part II.
 - Another proposal (on a special wavelet filtering operation to reduce tile boundary artifacts) has been adopted into JPEG 2000 Part II.
 - Four technologies adopted into JPEG2000 verification model software.
 - Eleven contributions to the JPEG2000 meeting.
- ✓ Participant of ITU Video Coding Experts Group (VCEG)’s H.26L/JVT/MPEG AVC standardization activities.

Teaching Activities

- **Student supervision**

- **Ph.D. Students graduated**

1. Aleksandre Givi Lobzhanidze (graduated in May 2014, now with Amazon. Thesis title: Engaging Mainstream Media for Efficient Content Distribution and Creation)
2. Suman D. Roy (graduated in Dec 2013, now with Betawork, NYC).
Winner of 2013 College of Engineering Outstanding Graduate Student Award. Nominee for the MU 2013-2014 Distinguished Doctoral Dissertation Award.
3. Qia Wang (graduated in Dec 2013, now with Samsung Mobile Lab, Seattle, WA).
Winner of University of Missouri Student Innovation Award in 2010 (with a funding of \$25,000 to develop smartphone based location based services).
4. Eileen Li (graduated in Dec 2013, now with Washington Univ. in St. Louis)
5. Yingnan Zhu (graduated in May 2009, now with Samsung Research Lab, Irvine, CA)
6. Wei Liu (graduated in Dec. 2008, now with Alibaba, was with Shanda Interactive Entertainment, Beijing, China, and Sony Research Lab, San Jose, CA).
Winner of 2007 College of Engineering Outstanding Graduate Student Award.
7. Peng Zhu (Tsinghua Univ., as an external co-advisor), July 2006. Now with R&D institute of China Unicom, was with Hitachi R&D, Beijing, China.

- **Master’s Students graduated**

1. Abhishek U. Shah (graduated in Dec 2015, now with Microsoft)
2. Abhishek Mahnot (graduated in Aug. 2014)
3. Chen Liu (graduated in May 2014)
4. Dhawal Dilip Nikam (graduated in May 2014)
5. Fnu Shruti (graduated in May 2014, now with Dish Network)

6. Sreya Ravi (graduated in Dec. 2013, now in India)
 7. Leyla El-Naggar (graduated in July 2013, now in Chicago)
 8. Michael Sullivan (graduated in Dec. 2010, now with Boeing)
 9. Sz Chyuan Lin (graduated in Dec. 2010, now with MU)
 10. Yangyang Wu (graduated in July 2010)
 11. Shi-Min Lee (graduated in July 2010, now in Korea)
 12. Lina Dong (graduated in Dec, 2009, now with Google)
 13. Christine Dartigue (May 2008, now in Haiti)
 14. Hui Peng (May 2008)
 15. Aleksandre Givi Lobzhanidze (Dec. 2007. Now a Ph.D. student with MU)
 16. Hongbing Jiang (Dec, 2005, Jointly with Dr. Palaniappan. Now with Ameren, MO)
 17. Asim Samiuddin (May 2004)
- **Ph.D. Thesis Supervision**
 1. Rina Bao, current
 2. Yang Liu, current
 3. Kristofferson Culmer, current
 4. Aleksandre Givi Lobzhanidze (Thesis title: Engaging Mainstream Media for Efficient Content Distribution and Creation, May 2014)
 5. Eileen Li (Thesis title: LiDAR Data Classification and Compression, Dec. 2013)
 6. Qia Wang (Thesis title: Geo-tagging and Privacy-preservation in Mobile Cloud Computing, Dec. 2013)
 7. Suman D. Roy (Thesis title: On Cross-domain Social Semantic Learning, Dec. 2013)
 8. Yingnan Zhu (Thesis title: Streaming Video Using Cooperative Networking, May 2009)
 9. Wei Liu (Thesis title: Decoder Learning Based Distributed Source Coding for High-efficiency, Low-cost and Secure Multimedia Communications, Dec. 2008)
 10. Peng Zhu (Tsinghua Univ., as an external co-advisor, 2003-2006) (Thesis title: Source and Channel Rate Control for Streaming Multimedia)
 11. Zhiming Zhang (2007-2008) (visiting Ph.D. student from Tsinghua Univ., Beijing, China)
 - **Master's Thesis Supervision**
 1. Ashutosh Mishra (2011-)
 2. Abhishek U. Shah, *Classification of Twitter Trends using Feature Ranking and Feature Selection*, MS Thesis, Univ. of Missouri, Dec. 2015.
 3. Abhishek Mahnot, *3-D soccer for smart mobile devices using 3-D ball tracking*, MS project, Univ. of Missouri, Aug. 2014.
 4. Chen Liu, *Hierarchical Block based Compressive Sensing with Hadoop Implementation*, MS Thesis, Univ. of Missouri, May 2014.
 5. Dhawal Dilip Nikam, *Advertising and Location Recommendations (ADLOC)*, MS project, Univ. of Missouri, May 2014.
 6. Fnu Shruti, *Influence of Social Media on Performance of Movies*, MS Thesis, Univ. of Missouri, May 2014.
 7. Leyla El-Naggar, *A Semantic Ontology-based Approach for Document Ranking to Improve Query-Document Relevancy*, MS project, Univ. of Missouri, July 2013.
 8. Sz Chyuan Lin, *An adaptive non-polling HCCA mechanism for streaming video QoS in IEEE 802.11e network*, MS Thesis, Univ. of Missouri, Dec. 2010.
 9. Michael Sullivan, *A protocol for simultaneous real time playback and full quality storage of streaming media*, MS Thesis, Univ. of Missouri, Dec. 2010. Now with Boeing
 10. Sreya Ravi (Networking, now in India, was with Sprint)
 11. Yangyang Wu, *Design and Implementation of a Portable prTorrent Simulator System*, MS Thesis, Univ. of Missouri, July 2010.
 12. Shi Min Lee, *HIPAA and E-mobile Health Security Technologies*, MS project report, Univ. of

Missouri, July 2010.

13. Lina Dong, *Video Adaptation for IPTV Applications*, MS Thesis, Univ. of Missouri, Dec. 2009.
14. Christine Dartigue, *Network Intrusion Detection: A Data Analysis Approach*, MS project report, Univ. of Missouri, May 2008.
15. Hui Peng, *NORM based Reliable Multicast Performance Analysis of Classroom Presenter*, MS project report, Univ. of Missouri, May 2008.
16. Lobzhanidze, Aleksandre Givi, *Building Hybrid Multicast by Combining IP and Application Layers*, MS Thesis, Univ. of Missouri, Dec 2007.
17. Hongbing Jiang, *Multi-Path Video Streaming System*, MS project report, Univ. of Missouri, Dec. 2005.
18. Asim Samiuddin, *IPAM: A Web-Based IP/DNS Management System*, MS Thesis, Univ. of Missouri, July 2004.

○ **Postdocs/Visiting Scholars**

1. Dr. Xin Liu, Fudan University (2015-2016)
2. Fei Liu, China Telecom (2014-2015)
3. Dr. Shaohui Liu, Harbin Institute of Technology (2013-2014)
4. Dr. Xiushan Nie, Shandong University of Finance and Economics (July 2013 – Jan 2014)
5. Dr. Xiaojing Ma, Huazhong University of Science and Technology (April 2013 -)
6. Prof. Linbo Qing, Sichuan University (Nov. 2012 – Nov. 2013)
7. Prof. Rui Sun, Hefei University of Technology (2010 – 2011)
8. Dr. Jungyeop Kim (2009-2010)
9. Dr. Sung-Hoon Hong (2004-2005)

● **Courses taught**

- ✓ CS4850/7850 Computer Networks I, Univ. of Missouri-Columbia, Winter, Fall 2005 - 2014.
- ✓ CS8850 Computer Networks II, Univ. of Missouri-Columbia, Fall 2008 - 2013.
- ✓ CS8660 Multimedia Security, Univ. of Missouri-Columbia, Fall 2007, Winter 2008 – 2010, 2012, 2014.
- ✓ CS4650/7650 Digital Image Processing, Univ. of Missouri-Columbia, Winter 2007.
- ✓ CS3270 Introduction to Digital Logic, Univ. of Missouri-Columbia, Winter 2006.
- ✓ CS4001/7001 Multimedia Security and Digital Rights Management, Fall 2005, Fall 2006.
- ✓ CS4670/7670 Digital Image Compression, Univ. of Missouri-Columbia, Fall 2004.
- ✓ CS467 Multimedia Communications and Networking, Univ. of Missouri-Columbia, Winter 2004.
- ✓ CECS367 Digital Image Compression, Univ. of Missouri-Columbia, Fall 2003.