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# Sen-ching Samson Cheung

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## Education

- Ph.D.**            **Electrical Engineering and Computer Sciences,  
University of California, Berkeley, CA            December 2002**  
Dissertation Title:     *Efficient Video Similarity Measurement and Search*  
Research Adviser:     Avideh Zakhor  
Thesis Committee:     Avideh Zakhor, Larry Rowe, Ray Larson, and Alistair Sinclair
- B.S.**            **Computer Engineering (summa cum laude)  
University of Washington, Seattle, WA            July, 1992**
- HKCEE**        **Equivalent to high school diploma in U.S.  
La Salle Secondary School, Hong Kong            July 1988**

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## Professional Experiences

- 5/2009 – present**            **University of Michigan-Shanghai Jiao Tong University Joint Institute**  
*Guest Professor*
- 7/2004 – present**            **Center for Visualization & Virtual Environments and Department of Electrical  
& Computer Engineering, University of Kentucky**  
*Assistant Professor*
- 10/2002 –6/2004**            **Center for Applied Scientific Computing, Lawrence Livermore National  
Laboratory**  
*Postdoctoral Researcher*
- 1/1998 – 9/2002**            **Video and Image Processing Laboratory, Department of Electrical  
Engineering and Computer Sciences, UC Berkeley**  
*Graduate Student Researcher*
- 1/1995 –12/1997**            **Research Group, VTEL Inc. (Formerly Compression Labs Inc.)**  
*Research Engineer*
- 8/1992 – 12/1994**            **Video and Image Processing Laboratory, Department of Electrical  
Engineering and Computer Sciences, UC Berkeley**  
*Graduate Student Researcher*
- 7/1991- 7/1992**            **Department of Computer Sciences, University of Washington**  
*Undergraduate Student Researcher*

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**Awards and Newsworthy**

- Senior Member of IEEE (2007)
- Research work featured in Research Channel documentary titled "Surveillance Privacy Protection" (2006) [<http://www.researchchannel.org/prog/displayevent.aspx?rID=5036&fID=1865>]
- Work in Scientific Data Mining at Lawrence Livermore National Lab won R&D 100 Award (2006) [[https://computation.llnl.gov/casc/awards/sapphire\\_rd100.html](https://computation.llnl.gov/casc/awards/sapphire_rd100.html)]
- Research work featured in a news article from Quadrangle, magazine of the University of Kentucky College of Engineering, titled "Privacy: the other side of security" (2006) [<http://www.engr.uky.edu/comm/documents/winter2006quad.pdf>]
- Grant from Department of Homeland Security featured in University of Kentucky news [[http://news.uky.edu/news/display\\_article.php?artid=478](http://news.uky.edu/news/display_article.php?artid=478)]
- Dissertation Work featured in a news article from Red Herring Magazine titled "Video Search's Buried Treasure" (2006) [<http://www.redherring.com/Home/15224>]
- Finalist of DARPA Microsystems Technology Office (MTO) Young Faculty Award (2006)
- Ralph E. Powe Junior Faculty Enhancement Award from Oak Ridge Associated Universities (2005) [<http://www.oraui.org/news/releases/2005/fy05-37.htm>]
- Best Poster Award in British Machine Vision Conference BMVC (2005)
- UC Berkeley Candidate for Microsoft Research Fellowship and Intel Research Fellowship (2000)
- Public Release of Matching Pursuit Video Codec with more than 5000 downloads (1999-2001)
- Recipient of National Science Foundation Fellowship (1992-1994)
- Cray Research Scholarship (1990-1992)
- Sophomore Medalist (first in sophomore class of University of Washington) (1989)
- Alcoa Foundation Scholarship (1989-1990)
- Member of Tau Beta Pi National Engineer Honor Society (1989-present)
- Member of Golden Key National Honor Society (1989-1992)

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**Invited Talks**

- Zhejiang University (Host: Professor Zhigeng Pan, June 2009)
- HP Labs, Palo Alto CA (Host: Dr. Wai-Tian Tan, March 2008)
- FX Palo Alto Laboratory, Inc. (Host: Dr. Larry Rowe, March 2008)
- University of California, Merced (Host: Professor Shawn Newsam, March 2008)
- Lawrence Livermore National Laboratory (Host: Dr. Chandrika Kamath, March 2008)
- Dong Hwa University (Host: Professor Mei-Juan Chen, Dec. 2007)
- Osaka University (Host: Professor Noboru Babaguchi, Dec. 2007)
- HP Labs Japan (Host: Dr. Gene Cheung, Dec. 2007)
- National Taiwan University (Host: Professor Shiao-Yi Chien, Dec. 2007)
- National Tsing Hwa University (Host: Professor Chia-Wan Lin, Dec. 2007)
- Hong Kong Chinese University (Host: Professor Ming-Hwa Chen, Dec. 2007)
- Hong Kong University of Sciences and Technologies (Host: Professor Oscar Au, Dec. 2007)
- University of Washington (Host: Professor Ming-Ting Sun, Sept. 2007)
- DARPA Young Faculty Award Workshop (Nov. 2006)
- Privacy Research in Vision Workshop of IEEE CVPR (Host: Professor Terrance Bolt, June. 2006)
- University of Washington (Host: Professor Ming-Ting Sun, Sept. 2005)
- National Taiwan University (Host: Professor Jia-Ling Wu, Jan. 2005)
- Hong Kong Polytechnic University (Host: Professor Wan-Chi Siu, October 2004)
- Institute for Infocomm Research, National University of Singapore (Host: Professor Qi Tian, October 2004)
- Thomson Electronics Lab, New Jersey (Host: Dr. Yin Peng, October 2004)
- Multimedia Workshop at Columbia University (Host: Professor Shih-Fu Chang, June 2004)

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***Sponsored Research Projects (sorted by end-date)*****Privacy Protecting Video Surveillance**

Principal Investigator: **Sen-ching S. Cheung**  
Co-P.I.: Ruigang Yang and Michael Hail  
Funding Agency: Department of Homeland Security  
Funding Amount: \$694,613 (January 2006 – December 2009)

**Large Rapidly Deployable Immersive Visualization for Training and Simulation in Urban Terrains**

Principal Investigator: Bruce Walcott  
Co-P.I.: Ruigang Yang and **Sen-ching S. Cheung**  
Funding Agency: United States Army  
Funding Amount: \$910,332 (May 2006 – May 2010)

**Anti-Sniper Infrared Targeting Systems (ASITS) Phase III**

Principal Investigator: Daniel Lau  
Co-P.I.: J. Heath, Laurence Hassebrook, William Dieter and **Sen-ching S. Cheung**  
Funding Agency: M2 Technologies Inc.  
Funding Amount: \$922,000 (January 2007 – July 2008)

**Immersive and Interactive Spaces – NSF EPSCoR**

Principal Investigator: Kevin Donohue  
Senior Personnel: **Sen-ching S. Cheung** and others  
Funding Agency: National Science Foundation  
Funding Amount: \$2,700,000 (June 2005 – May 2008)

**REU Site: Electrical & Computer Engineering at the University of Kentucky**

Principal Investigator: Ingrid St. Omar  
Co-P.I.: Daniel Lau and Jane Jensen  
Senior Personnel: **Sen-ching S. Cheung** and others  
Funding Agency: National Science Foundation  
Funding Amount: \$259,365 (March 2006 – February 2008)

**Privacy Protecting Video Surveillance**

Principal Investigator: **Sen-ching S. Cheung**  
Funding Agency: Oak Ridge Associated Universities (ORAU)  
Funding Amount: \$5,000 (October 2005 – October 2006)

**University of Kentucky Startup Fund**

Principal Investigator: **Sen-ching S. Cheung**  
Funding Agency: College of Engineering, University of Kentucky  
Funding Amount: \$140,000 (August 2004 – August 2006)

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***Grant Proposals under review*****Simulated Mirror Play: Enhanced Video Self Modeling Intervention for Autistic Children**

Principal Investigator: **Sen-ching S. Cheung**  
Co-P.I.: Donald Stenhoff (Special Education, UK) and Neelkamal Soares (Pediatrics, UK)  
Funding Agency: Autism Speaks  
Requested Funding: \$60,000 (January 2010 - December 2012)  
Date Submitted: April 30, 2009 (White paper accepted) and June 24, 2009 (Full Proposal)

**Privacy Protected Video Surveillance System**

Principal Investigator: Xiaoyi Yu (Peking University)  
Co-P.I.: Noboru Babaguchi (Osaka University), **Sen-ching S. Cheung**  
Funding Agency: National Natural Science Foundation of China  
Requested Funding: ~\$70,000 (January 2010 – December 2012)  
Date Submitted: March 10, 2009

**Optimal Planning and Control for Large Scale Camera Networks**

Principal Investigator: **Sen-ching S. Cheung**  
 Funding Agency: Kentucky Science and Engineering Foundation  
 Requested Funding: \$100,000 (August 2009 - July 2011)  
 Date Submitted: January 21, 2009

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***Students Supervised***

<u>Graduate Students</u>	<u>Degree (Year)</u>	<u>Thesis Title</u>
Nan Hu	M.S. (2007)	Secure Image Processing
Jayashri Chaudhari	M.S. (2007)	Privacy Protection for Life-log System
Viswajith Karapoondi Nott	M.S. (2009)	Joint RFID and Visual Tracking
Vijay Venkatesh Mahalingam	Ph.D. (Expected 2009)	Video and Image Inpainting
Cheng Hao Chang	M.S. (Expected 2009)	Audio Privacy Protection with Voice Conversion
Jian Zhao	Ph.D. (Expected 2010)	Optimal Design and Evaluations of Camera Networks
Jithendra Parachuri	Ph.D. (Expected 2011)	Rate-Distortion Optimized Data-Hiding
Ying Lou	Ph.D. (Expected 2010)	Image Processing in Encrypted Domain
<u>Undergraduate Students</u>	<u>Degree (Year)</u>	<u>Project</u>
Van Yadeck	B.S. EE (2006)	Blind Source Separation in Microphone Array
James Senders	B.S. EE (Tennessee State)	Audio Segmentation in Life-log System
Mamode Olubusay Ufomata	B.S. EE (2005)	Image Segmentation for Laser Detection in Welding
Greg Schardein	B.S. EE (Expected 2008)	Calibration of RFID Tracking System
Felix Setyawan	B.S. EE (Expected 2008)	Multi-camera Visual Tracking System

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***Teaching Experience****Instructor In-charge***Computer and Switching Networks (Undergraduate/Graduate) - Fall 2008**

- This course is an introductory survey of the design and implementation of computer networks. We will focus on the concepts and fundamental design principles that have contributed to the global Internet's scalability and robustness and will survey the underlying technologies that have led to the Internet's phenomenal success.
- Course website: <http://www.vis.uky.edu/~cheung/courses/ee586/fa08.html>

**Probabilistic Graphical Model (Graduate) - Fall 2005, Spring 2006, Spring 2008**

- This is a graduate-level course that covers the fundamentals and the latest research in Probabilistic Graphical Models. Major topics include various types of graphical models, junction tree algorithm, belief propagation, model selections, and non-parametric techniques.
- Course website: <http://www.vis.uky.edu/~cheung/courses/ee639/sp06.html>

**Multimedia Information System (Graduate) - Fall 2004**

- This graduate-level course introduces important technologies and standards in building Multimedia Information Systems (MIS). The emphasis is on using signal processing and pattern recognition techniques for representing, coding, searching, visualizing and protecting multimedia information.
- Course website: [http://www.vis.uky.edu/~cheung/courses/ee639\\_fall04/fall04.html](http://www.vis.uky.edu/~cheung/courses/ee639_fall04/fall04.html)

**Signals and Systems II (Undergraduate) - Spring 2005, Fall 2005, Spring 2006, Fall 2006, Spring 2007**

- This undergraduate-level course is a continuation of the analysis of signals and linear systems with an emphasis on feedback and discrete-time systems. Topics include the Laplace and Z-transforms, state-variable, discrete-time signal and system, analysis and design of digital filters, discrete and fast Fourier Transform.
- Course website: <http://www.vis.uky.edu/~cheung/courses/ee422G/sp07.html>

**Signals and Systems I (Undergraduate) - Fall 2007**

- This undergraduate-level core course provides an introduction to some of the essential modeling and analysis tools used by practicing engineers. The concepts covered include discrete and continuous LTI systems, convolution, Fourier series and transforms, Laplace transforms, modulation and bandwidth concepts.
- Course website: <http://www.vis.uky.edu/~cheung/courses/ee421G/fa07.html>

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**Professional Activities**

- Associate Editor of
  - EURASIP Journal on Advances in Signal Processing since August 2008
  - EURASIP Journal on Information Security
- Guest Editor of Special Issue on Enhancing Privacy Protection in Multimedia Systems in EURASIP Journal of Information Security (2009)
- Member of Multimedia Systems & Applications Technical Committee of IEEE Circuits and Systems Society
- Chair of
  - Program Area (Privacy Issues) IEEE 5<sup>th</sup> International Conference on Advanced Video and Signal Based Surveillance (AVSS 2008)
  - Special Session on Privacy Protection of Visual Information in IEEE International Conference on Image Processing (ICIP 2008)
  - Special Invited Session on Video Surveillance in IEEE International Conference on Circuits and Systems (ISCAS 2008)
  - Poster Session of Computer Vision for Interactive and Intelligent Environments (CV4IIE 2005).
  - Session on Watermarking and Multimedia Processing in ACM Multimedia 2004.
- Panel reviewer for the Directorate for Computer and Information Science and Engineering (CISE) of the National Science Foundation (2004)
- Technical Program Committee Member of
  - IEEE SP Society International Workshop on Multimedia Signal Processing (MMSP 2008)
  - IEEE International Conference on Circuits and Systems (ISCAS 2008-2009)
  - IEEE First International Workshop on Multimedia Analysis and Processing (IMAP 2007-2008)
  - IEEE International Conference on Advanced Information Networking and Applications (AINA-07)
  - IEEE International Conference on Multimedia & Expo 2005 (ICME 2005)
  - IADIS International conference WWW/Internet 2005
  - ACM Multimedia 2004
  - IEEE International Conference on Communications, Circuits and Systems (ICCCAS 2004)
- Representative of U.C. Berkeley in ISO Moving Picture Expert Group (MPEG) (1998)
- Company Representative in ITU (an international standard organization in telecommunication chartered by United Nation) Video Coding Expert Group (1995-1997)
- Reviewers for
  - IEEE International Conference on Image Processing (ICIP 2007)
  - IEEE International Conference on Image Processing (ICIP 2006)
  - IEEE International Conference on Computer Vision and Pattern Recognition 2006 (CVPR 2006)
  - IEEE International Conference on Advanced Video and Signal based Surveillance (AVSS 2006)
  - Advanced Concepts for Intelligent Vision Systems 2006 (ACVIS 2006)
- Regular reviewer for
  - EURASIP Journal on Applied Signal Processing
  - IEEE Transactions On Circuits and Systems for Video Technology
  - IEEE Transactions On Image Processing
  - IEEE Transactions On Multimedia
  - IEEE Transactions on Signal Processing
  - IEEE Signal Processing Letters
  - IEEE Transactions On Circuits and Systems II
  - ACM Transactions on Multimedia Computing, Communications, and Applications
  - Morgan Kaufmann Publishers
  - Senior member of IEEE and Member of ACM

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## ***Patents and Inventions***

1. Cheung, S.-C. and M. Chung. 2007. Efficient and Robust Identification of Partial Copies in Digital Video. University of Kentucky Intellectual Property 1479. United States Patent Application in preparation.
2. Cheung, S.-C. and J. Chaudhari. 2007. Audiovisual Privacy Protection for Portable Video Recording Devices. University of Kentucky Intellectual Property 1477. United States Patent Application in preparation.
3. Cheung, S.-C., J.K. Paruchuri and W. Zhang. 2007. Hiding Privacy Information in Surveillance Video. University of Kentucky Intellectual Property 1459. United States Patent Application in preparation.
4. Cheung, S.-C., N. Hu, and T. Nguyen. 2006. Secret Multi-Party Image Processing. University of Kentucky Intellectual Property 1418. United States Patent Pending.
5. Bagherjeiran, C. Harrison, E. Cantu-Paz, S.-C. Cheung, A. Gezahegne, N.-A. Tang, C. Kamath, C. Baldwin and I. Fodor. 2005. Sapphire-GAT Release version 1.0. Lawrence Livermore National Laboratory Invention IL# CP0108.
6. Cheung, S.-C. and C. Kamath. 2005. Detection of Moving Objects In A Video. Lawrence Livermore National Laboratory Invention IL#11330. United States Patent Pending.
7. Cheung, S.-C., D. Drizen, and P. Haskell. 2001. Video postfiltering with motion-compensated temporal filtering and/or spatial-adaptive filtering. United States Patent 6,178,205.
8. Neff, R., A. Zakhor, and S.-C. Cheung. 1998. *Matching-Pursuit Video Coding System*. Office of Technology Licensing, University of California, Berkeley. UCB Case No.: B96-009

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## ***Publications***

### *Peer-reviewed Journal Articles (submitted or to-be submitted)*

1. S. Yee, Y. Lou, J. Zhao and S.-C. Cheung. 2009. Anonymous Biometric Access Control. Submitted to **EURASIP Journal on Information Security: special issue on privacy protection in multimedia systems** on March 1, 2009.
2. Parachuri, J., S.-C. Cheung and M. Hail. 2009. Video data-hiding for managing privacy information in surveillance systems. Submitted to **EURASIP Journal on Information Security: special issue on privacy protection in multimedia systems** on March 1, 2009.
3. Cheung, S.-C., J. Chaudhari, J. Zhao and V. Venkatesh M. 2009. Privacy Protected Audio-Visual Teleconferencing. Submitted to **EURASIP Journal on Information Security: special issue on privacy protection in multimedia systems** on March 1, 2009.

### *Peer-reviewed Journal Articles (accepted or appeared)*

4. M., V. Venkatesh, S.-C. Cheung and J. Zhao. 2008. Efficient Object-Based Video Inpainting. 2009. In **Pattern Recognition Letter, Special Issue on Video-based Object and Event Analysis**, Volume 30, Issue 2, January 2009, pp. 168-179. <http://dx.doi.org/10.1016/j.patrec.2008.03.011>
5. Nguyen, K., T. Nguyen and S.-C. Cheung. 2008. Video Streaming with Network Coding. Accepted to **Journal of Signal Processing Systems** on Sept. 1, 2008. <http://www.vis.uky.edu/~cheung/doc/jsps08.pdf>
6. Zhao, J., S.-C. Cheung and T. Nguyen. 2008. Optimal Camera Network Configurations for Visual Tagging. In **IEEE Journal on Selected Topics in Signal Processing: special issue on distributed processing in vision networks**, Volume 2, Number 4, August 2008, pp. 464-479. <http://www.vis.uky.edu/~cheung/doc/jstsp08v3.pdf>

7. Tullimas, S., T. Nguyen, R. Edgecomb, S.-C. Cheung. 2008. Multimedia Streaming Using Multiple TCP Connections. In **ACM Transactions on Multimedia Computing, Communications and Applications** Volume 4, Issue 2, May 2008, pp. 12:1-12:20. <http://www.vis.uky.edu/~cheung/doc/tomccap08.pdf>
8. Nguyen, T., K. Kolazhi, R. Kamath, S.-C. Cheung, D. Tran. 2008. Efficient Multimedia Distribution in Source Constraint Networks. In **IEEE Transactions on Multimedia**, Volume 10, Issue 3, April 2008, pp. 523-537. <http://www.vis.uky.edu/~cheung/doc/multimedia07.pdf>
9. Cheung, S.-C. and T. Nguyen. 2007. Secure Signal Processing between Distrusted Network Terminals. **EURASIP Journal on Information Security, special issue on signal processing in the Encrypted Domain**. Volume 2007 (2007), Article ID 51368. <http://www.hindawi.com/GetArticle.aspx?doi=10.1155/2007/51368>
10. Cheung, S.-C. and C. Kamath. 2005. Robust Background Subtraction With Foreground Validation for Urban Traffic Video. In **EURASIP Journal of Applied Signal Processing**, New York, NY: Hindawi Publishing Co., Volume 14, pp. 1-11, August 2005. <http://www.vis.uky.edu/~cheung/doc/eurasip05.pdf>
11. Cheung, S.-C. and A. Zakhor. 2005. Fast similarity search and clustering of video sequences on the world-wide-web. In **IEEE Transactions on Multimedia**. Piscataway, NJ:IEEE. 7(3):524-538. <http://www.vis.uky.edu/~cheung/doc/mm2004.pdf>
12. Cheung, S.-C. and A. Zakhor. 2003. Efficient video similarity measurement with video signature. In **IEEE Transactions on Circuits, and Systems for Video Technology**. Piscataway. NJ:IEEE. 13 (1):59-74. <http://www.vis.uky.edu/~cheung/doc/csvt03.pdf>

Peer-reviewed Book Chapter

13. Zhao, J., S.-C. Cheung and T. Nguyen. 2009. Camera Network Configuration and its application in Privacy-protected Video Surveillance. To appear in **Multi-Camera Networks: Concepts and Applications**, edited by H. Aghajan and A. Cavallaro, Elsevier Science and Technology Book Group, 2009. [http://www.vis.uky.edu/~cheung/doc/camera\\_network\\_chapter.pdf](http://www.vis.uky.edu/~cheung/doc/camera_network_chapter.pdf)
14. Venkatesh, M. V., S.-C. Cheung, J. Paruchuri, J. Zhao and T. Nguyen. 2009. Protecting and Managing Privacy Information In Video Surveillance Systems. To appear in **Protecting Privacy in Video Surveillance**, edited by Andrew Senior, Springer, 2009. [http://www.vis.uky.edu/~cheung/doc/privacy\\_chapter.pdf](http://www.vis.uky.edu/~cheung/doc/privacy_chapter.pdf)
15. Kamath, C., E. Cantu-Puz, S.-C. Cheung, I. K. Fodor, and N. A. Tang. 2005 Experiences in mining data from computer simulations. In **Next Generation of Data-Mining Applications**, edited by M. Kantardzic and J. Zurada, Wiley-IEEE Press pp. 211-233, March 2005. [http://www.vis.uky.edu/~cheung/doc/sbor\\_book.pdf](http://www.vis.uky.edu/~cheung/doc/sbor_book.pdf)
16. Cheung, S.-C. and A. Zakhor. 2003. Efficient video similarity measurement with video signature. Chapter 28 of **Handbook of Video Databases: Design and Applications**, edited by B. Furht and O. Marques. CRC Press.

Peer-reviewed Conference Proceeding Articles

17. S. Ye, Y. Luo and S.-C. Cheung. 2009. Privacy and Complexity tradeoff with k-Anonymous Quantization. To be submitted to the International Workshop on Signal Processing in the Encrypted Domain, Lausanne, Switzerland, September 2009.
18. Zhao, J. and S.-C. Cheung. 2009. Human Segmentation by Fusing Visible-light and Thermal Imaginary. To be submitted to **the Ninth IEEE International Workshop on Visual Surveillance (VS2009)**, held in conjunction with ICCV 2009, October 2009.

19. Luo, Y., S.-C. Cheung and S. Ye. 2009. Anonymous Biometric Access Control Based on Homomorphic Encryption. Accepted to **IEEE International Conference on Multimedia Expo (ICME 09)**, June 28- July 3, 2009. <http://www.vis.uky.edu/~cheung/icme09.pdf>
20. M., V. Venkatesh, J. Zhao, L. Profitt and S.-C. Cheung. 2009. Audio-visual Privacy Protection for Video Conference. Accepted to **IEEE International Conference on Multimedia Expo (ICME 09) – Workshop on Emerging Multimedia Circuits and System Technologies**, July 1, 2009. [http://www.vis.uky.edu/~cheung/icme09\\_workshop.pdf](http://www.vis.uky.edu/~cheung/icme09_workshop.pdf)
21. Zhao, J. and S.-C. Cheung. 2009. Optimal Visual Sensor Planning. Accepted to **IEEE International Symposium on Circuits and Systems (ISCAS 09)**, May 22-24, 2009. [http://www.vis.uky.edu/~cheung/iscas09\\_camera.pdf](http://www.vis.uky.edu/~cheung/iscas09_camera.pdf)
22. Paruchuri, J., S.-C. Cheung and T. Nguyen. 2008. Managing Privacy Data In Pervasive Camera Networks. Invited paper to **IEEE International Conference on Image Processing (ICIP 08)**, October 12-15, 2008, pp. 1676-1679. <http://www.vis.uky.edu/~cheung/doc/icip08.pdf>.
23. Paruchuri, J. and S.-C. Cheung. 2008. Joint Optimization of Data Hiding and Video Compression. In **IEEE International Symposium on Circuits and Systems (ISCAS 08)**, May 18-21, Seattle, WA, pp. 3021-3024. <http://www.vis.uky.edu/~cheung/doc/iscas08.pdf>
24. Zhao, J. and S.-C. Cheung. 2007. Multi-Camera Surveillance with Visual Tagging and Generic Camera Placement. In the **Proceedings of the ACM/IEEE International Conference on Distributed Smart Camera (ICDSC 07)**, Sept. 25-28, 2007, p. 259-266. <http://www.vis.uky.edu/~cheung/doc/icdsc07.pdf>.
25. Nguyen, T., K. Nguyen and S.-C. Cheung. 2007. Peer-to-Peer Streaming with Hierarchical Network Coding. In **IEEE International Conference on Multimedia Expo (ICME 07)**, July 2-5, pages 396-399. <http://www.vis.uky.edu/~cheung/doc/icme07.pdf>
26. Chaudhari, J., S.-C. Cheung and M. V. Venkatesh. 2007. Privacy Protection for Lifelog Video. In **IEEE Signal Processing Society SAFE 2007: Workshop on Signal Processing Applications for Public Security and Forensics (SAFE 2007)**, April 11-13, pages 1-5. <http://www.vis.uky.edu/~cheung/doc/safe07.pdf>
27. Nan, H. and S.-C. Cheung, and T. Nguyen. 2007. A New Security Model for Secure Thresholding. In **IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2007)**, April 15-20, Volume II, pages 273-276. <http://www.vis.uky.edu/~cheung/doc/icassp07.pdf>
28. Cheung, S.-C., J. Zhao and M. V. Venkatesh. 2006. Efficient Object-based Video Inpainting. In **IEEE International Conference on Image Processing (ICIP 2006)**, October 8-11, pages 705-708. <http://www.vis.uky.edu/~cheung/doc/icip06A.pdf>
29. Hu, Nan, S.-C. Cheung and T. Nguyen. 2006. Secure Image Filtering. In **IEEE International Conference on Image Processing ICIP 2006**, pages 1553-1556. <http://www.vis.uky.edu/~cheung/doc/icip06B.pdf>
30. M. V. Venkatesh and S.-C. Cheung. 2006. Symmetric Shape Completion Under Severe Occlusions. In **IEEE International Conference on Image Processing (ICIP 2006)**, October 8-11, pages 709-712. <http://www.vis.uky.edu/~cheung/doc/icip06C.pdf> (Invited Paper)
31. Nguyen, T., S.-C. Cheung and D. Tran. 2006. Efficient Video Dissemination in Structured P2P Networks. In **IEEE International Conference on Multimedia Expo, (ICME 2006)**, July 9-12, pages 1673-1676. <http://www.vis.uky.edu/~cheung/doc/icme06.pdf>
32. Nguyen T., D. Tran and S.-C. Cheung. 2005. Efficient P2P Data Dissemination in a Homogeneous Capacity Network Using Structured Mesh. In Proceedings of **International Conference on Multimedia Services Access Networks (MSAN 05)**, June 13-15 2005, Orlando Fl. Piscataway, NJ:IEEE: 73-77. Invited Paper. <http://www.vis.uky.edu/~cheung/doc/msan05.pdf> (Invited Paper)

33. Grossmann, E., A. Kale, C. Jaynes and S-C. Cheung, 2005. Offline generation of high-quality background subtraction data. **British Machine Vision Conference 2005. Best Poster Award.**  
<http://www.vis.uky.edu/~cheung/doc/Grossmannal05BMVC.pdf>
34. Zhang, W., S.-C. Cheung, and M. Chen. 2005. Hiding privacy information in video surveillance system. *In IEEE International Conference on Image Processing (ICIP 2005)*, September 11-14, Genova, Italy. Piscataway, NJ:IEEE: (3)868-871. <http://www.vis.uky.edu/~cheung/doc/icip05B.pdf>
35. Cheung, S.-C. and T. Nguyen. 2005. Mining arbitrary-length repeated patterns in television broadcast. *In IEEE International Conference on Image Processing (ICIP 2005)*, September 11-14, Genova, Italy. Piscataway, NJ:IEEE: (3) 181-184. <http://www.vis.uky.edu/~cheung/doc/icip05A.pdf>
36. Nguyen, T. and S.-C. Cheung. 2005. Multimedia Streaming Using Multiple TCP Connections. *In IEEE International Performance Computing and communications Conference (IPCCC 2005)*, April 2005. Piscataway, NJ:IEEE: 215-223. <http://www.vis.uky.edu/~cheung/doc/ipccc05.pdf>
37. Cheung, S.-C. and C. Kamath. 2004. Robust techniques for background subtraction in urban traffic video. **Proceedings of Electronic Imaging: Visual Communications and Image Processing 2004 (Part One)**, January 20-22 2004, San Jose, California. Bellingham, WA:SPIE. (5308):881-892.  
<http://www.llnl.gov/CASC/sapphire/pubs/UCRL-CONF-200706.pdf>
38. Cantú-Paz, E., S.-C. Cheung, and C. Kamath. 2004. Retrieval of similar objects in simulation data using machine learning techniques. **Proceedings of Electronic Imaging: Image Processing: Algorithms and Systems III**, January 19-21 2004, San Jose, California. Bellingham, WA:SPIE. (5298):251-258.  
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