

S. Kevin Zhou

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Research Interests

- Statistical signal, image, and video processing, computer vision and image understanding, theoretic and applied machine learning, and their applications to biomedical image analysis (especially contextual biomedical image learning), biometrics and surveillance (especially face and gait recognition), etc.

Academic Education

- **University of Maryland**, College Park, Maryland USA
Ph.D., Electrical Engineering August 2004
Dissertation: “Unconstrained Face Recognition”
Advisor: Prof. Rama Chellappa
- **National University of Singapore**, Singapore
M.E., Computer Engineering July 2000
Dissertation: “Wavelet-Based Texture Retrieval and Modeling Visual Texture Perception”
Advisor: Prof. Y. V. Venkatesh
- **University of Science and Technology of China**, Hefei China
B.E., Electronic Engineering July 1994

Research Experience

- **Rutgers, The State University of New Jersey**, Piscataway, New Jersey USA
Visiting Assistant Professor, Department of Computer Science December 2006 - present
Visiting Assistant Professor, Department of Biomedical Engineering December 2006 - present
Collaborating with Prof. Dimitris Metaxas on biomedical image analysis, human face and body modeling, etc.
- **Siemens Corporate Research Inc.**, Princeton, New Jersey USA
Project Manager, Integrated Data Systems Department October 2006 - present
Research Scientist, Integrated Data Systems Department August 2004 - September 2006
Conducted research and development on biomedical image context learning, *i.e.*, leveraging the contextual information in biomedical images/sequences/volumes from a machine learning perspective to facilitate biomedical image analysis.
 - Research contributions include
 - * image-based boosting (IBB) procedures for binary and multiclass classification, ranking and retrieval, and regression;
 - * shape regression machine (SRM) for deformable shape detection and segmentation;
 - * conditional density learning (CONDENSING) via regression for deformable shape segmentation;

- * context ranking machine (CRaM) for object localization;
 - * probabilistic boosting network (PBN) for real-time object detection and pose estimation;
 - * probabilistic, hierarchical, and discriminant (PHD) object detection framework for deformable structures;
 - * discriminative similarity function for matching images with structured appearance variations (BoostMotion and BoostRegistration); and
 - * pairwise active appearance model (PAAM) for jointly modeling of shape, appearance and motion.
- Development contributions include
- * developed a fully automatic prototype that detects and tracks endocardial and epicardial walls and measures ejection fraction and wall motion score;
 - * developed a prototype that automatically extracts the left ventricle and aorta measurements from B-Mode and M-mode echocardiogram;
 - * developed a prototype that automatically extracts over 100 clinically relevant measurements from Doppler echocardiogram;
 - * led the project of automatic classification of echocardiographic view and automatic placement of Doppler gate and color pan box;
 - * led the project of detecting multiple standard cardiac planes in real time from a 3D echocardiographic volume; and
 - * led the project of fast, automatic and accurate liver segmentation from 3D CT volume.
- **University of Maryland**, College Park, Maryland USA
Research Assistant, Center for Automation Research August 2000 - August 2004
 Conducted dissertation research on unconstrained face recognition.
- Research contributions include
- * video-based face recognition via simultaneous tracking and recognition;
 - * appearance-adaptive models for visual tracking;
 - * image-based face recognition under illumination/pose variations;
 - * ensemble similarity and probabilistic distances in reproducing kernel Hilbert space; and
 - * probabilistic kernel principal component analysis.
- **Microsoft Corporation**, Redmond, Washington USA
Summer Intern, Core Media Group June 2003 - August 2003
 Implemented the prototype algorithm of anisotropic video denoising integrated into Windows Media Player.
- **Mitsubishi Electric Research Laboratories**, Cambridge, Massachusetts USA
Summer Intern June 2002 - August 2002
 Conducted research on visual tracking and recognition using appearance adaptive models in particle filters that led to a journal paper.

- **National University of Singapore**, Singapore
Research Scholar January 1999 - July 2000
 - **Indian Institute of Science**, Bangalore, India
Visiting Research Scholar November 1999 - April 2000
- Conducted research on texture retrieval and visual texture perception.

Teaching Experience

- Tutorial speaker
 - *Surveillance Biometrics*, IEEE International Conference on Image Processing (ICIP), Atlanta, Georgia, October 2006. (Jointly with Prof. Rama Chellappa)
- Guest lecturer
 - *Medical image processing and understanding* (Spring 2004), *Statistical and neural pattern recognition* (Fall 2003), *Image Understanding* (Spring 2003).
- Teaching assistant and course project designer
 - *Statistical and neural pattern recognition* (Fall 2003)
- Webmaster and course coordinator
 - *Statistical and neural pattern recognition* (Fall 2003), *Graduate seminar on statistical learning* (Fall 2003), *Image understanding* (Spring 2001, Spring 2003), *Graduate seminar on sequential Monte Carlo* (Fall 2002).

Awards, Honors and Media Coverage

- Siemens Junior Top Talent, 2006.
- Cover story of *Continuum*¹, “CMPS Team Advances Breakthroughs in Pattern and Facial Recognition,” Spring, 2004.
- Invention of the Year 2003 Finalist (top three), Information Science Category, University of Maryland, College Park.
- Graduate Research Assistantship, University of Maryland, College Park 2000-2004.
- Research Scholarship, National University of Singapore, 1999-2000.
- Visiting Research Scholarship, Indian Institute of Science, Bangalore, India, 1999-2000.

Academic Activities and Services

- Chair of the Third IEEE International Workshop of Analysis and Modeling of Faces and Gestures (AMFG), 2007 (in conjunction with ICCV 2007).

¹A quarterly magazine of the College of Computer, Mathematical and Physical Sciences, University of Maryland.

- Program committee
 - IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR) (2006-2008), IEEE International Conference on Computer Vision (ICCV) (2007), European Conference on Computer Vision (ICCV) (2008), Third International Workshop on Computer Vision meets Databases (CVDB), 2007 (in conjunction with ACM SIGMOD/PODS 2007).
- Reviewer
 - Computer Vision and Image Understanding (2005-2006), ETRI Journal (2005), IEEE Transactions on Pattern Analysis and Machine Intelligence (2002-2007), IEEE Transactions on Multimedia (2005), IEEE Transactions on Image Processing (2005-2006), IEEE Transactions on Information Forensics and Security (2005-2007), IEICE Transactions (2002-2003), Image and Vision Computing (2004), Information Fusion (2006), Journal of the Optical Society of America, A (2004-2005), Optical Engineering (2005), Pattern Analysis and Applications (2004-2006), Pattern Recognition Letters (2006), Proceedings of the IEEE (2006), Signal Processing (2006), Signal Processing Letters (2004), Statistics and Computing (2004).
 - IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR) (2005-2007), IEEE International Conference on Computer Vision (ICCV) (2005,2007), International Conference on Audio- and Video-Based Biometric Person Authentication (AVBPA) (2005), International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI) (2006-2007).
- Thesis committee
 - Jian Li, Ph.D., University of Maryland, College Park. (Defended in July 2006. Jian joined Goldman Sachs Group, Inc. in Summer 2006)
 - Jie Shao, Ph.D. candidate, University of Maryland, College Park. (Jie joined Google Inc. in Fall 2006)
 - Jingdan Zhang, Ph.D. candidate, University of North Carolina, Chapel Hill.
- Student supervision
 - Jin-Hyeong Park, Ph.D., Pennsylvania State University, University Park. (Intern, 2005. Jin-Hyeong joined Siemens Corporate Research Inc. in Fall 2005)
 - Jie Shao, Ph.D. candidate, University of Maryland, College Park. (Intern, 2005. Jie joined Google Inc. in Fall 2006)
 - Jingdan Zhang, Ph.D. candidate, University of North Carolina, Chapel Hill. (Intern, 2006 & 2007. Jingdan received the best summer student from SCR in 2006)
 - Jinghao Zhou, Ph.D. candidate, Rutgers, The State University of New Jersey. (Intern, 2006)
 - Feng Guo, Ph.D., University of Maryland, College Park (Intern, 2007)
 - Birkan Tunc, Ph.D. candidate, Istanbul Technology University (Intern, 2007)
 - Yuchi Huang, Ph.D. candidate, Rutgers, The State University of New Jersey. (Intern, 2007)
- IEEE member

Invited Talks and Oral Presentations

1. "Contextual biomedical image learning," *Department of Computer Science, Princeton University*, Princeton, New Jersey, November 26, 2007.
2. "Contextual biomedical image learning," *Department of Electrical and Computer Engineering, Johns Hopkins University*, Baltimore, Maryland, November 8, 2007.
3. "Contextual biomedical image learning," *Center for Automation Research, University of Maryland*, College Park, Maryland, November 7, 2007.
4. "Biomedical image context learning," *Department of Computer Science, University of North Carolina*, Chapel Hill, North Carolina, October 3, 2007.
5. "Shape regression machine," *Information Processing in Medical Imaging (IPMI)*, Ruldoc Abbey, The Netherlands, July 2, 2007.
6. "Deformable contour tracking," *Department of Biomedical Engineering, Rutgers, The State University of New Jersey*, Piscataway, New Jersey, October 27, 2006.
7. "Surveillance biometrics: unconstrained face and gait recognition," *IEEE International Conference on Image Processing (ICIP)*, Atlanta, Georgia, October 8, 2006. (Tutorial talk)
8. "Pairwise active appearance model and its application to echocardiography tracking," *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Copenhagen, Denmark, October 3, 2006.
9. "Deformable contour tracking," *Department of Computer Science, University of Delaware*, Newark, Delaware, September 18, 2006.
10. "BoostMotion: Boosting a discriminant similarity function for motion estimation," *IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR)*, New York City, June 21, 2006.
11. "Learning to model shape, appearance and motion in echocardiographic images," *Center for Automation Research, University of Maryland*, College Park, Maryland, June 5, 2006.
12. "Face recognition from more than one image: What is more?" *Face Recognition Advanced Study Workshop*, Morgantown, West Virginia, November 11, 2005.
13. "Regression, tracking, and recognition: Techniques for biomedical imaging and biometrics," *Department of Electrical and Computer Engineering, University of Virginia*, Charlottesville, Virginia, May 5, 2005.
14. "Unconstrained face recognition and analysis," *Wireless & Optical Communications Conference (WOCC)*, Newark, New Jersey, April 23, 2005.
15. "Regression, tracking, and recognition: Techniques for biomedical imaging and biometrics," *Department of Biomedical Informatics, Ohio State University*, Columbus, Ohio, April 4, 2005.

16. "Statistical learning and analysis for unconstrained face recognition," *Microsoft Research*, Redmond, Washington, July 13, 2004.
17. "Statistical learning and analysis for unconstrained face recognition," *AT&T Research Labs*, Florham Park, New Jersey, June 21, 2004.
18. "Recognition of human faces under illumination/pose variations and from videos," *Siemens Corporate Research, Inc.*, Princeton, New Jersey, June 10, 2004.
19. "Recognition of human faces under illumination/pose variations and from videos," *Department of Electrical and Computer Engineering, Louisiana State University*, Baton Rouge, Louisiana, May 12, 2004.
20. "Face recognition under illumination variations," *Face Recognition Grand Challenge*, Arlington, Virginia, May 4, 2004.
21. "Recognition of human faces under illumination/pose variations and from videos," *Department of Computer Science and Engineering, State University of New York*, Buffalo, New York, March 4, 2004.
22. "Recognition of human faces under illumination/pose variations and from videos," *Department of Electrical and Computer Engineering, University of Maryland*, College Park, Maryland, February 6, 2004.
23. "Recognition of human faces under illumination/pose variations and from videos," *Department of Computer Science, Florida State University*, Tallahassee, Florida, January 30, 2004.
24. "Unconstrained face recognition," *Center for Automation Research, University of Maryland*, College Park, Maryland, January 16, 2004.
25. "Adaptive visual tracking and recognition," *Mitsubishi Electric Research Labs (MERL)*, Cambridge, Massachusetts, August 29, 2002
26. "Face recognition from video: A CONDENSATION approach," *International Conference on Automatic Face and Gesture Recognition (FG)*, Washington D.C., May 20, 2002

S. Kevin Zhou's References

1. Prof. Rama Chellappa
Director, Center for Automation Research; Minta Martin Professor of Engineering
(301) 405-3656, rama@cfar.umd.edu, <http://www.cfar.umd.edu/~rama>
Center for Automation Research, University of Maryland, College Park, MD 20742
2. Prof. Larry S. Davis
Chair, Department of Computer Science
(301) 405-2662, lsd@umiacs.umd.edu, <http://www.cfar.umd.edu/~lsd>
Department of Computer Science, University of Maryland, College Park, MD 20742
3. Prof. Dimitris N. Metaxas
Director, Center for Computational Biomedicine Imaging and Modeling
(732) 445-2914, dnm@cs.rutgers.edu, <http://www.cs.rutgers.edu/~dnm>
BioMedical Building, Rutgers University, 617 Bowser Road, Piscataway, NJ 08854

S. Kevin Zhou's Publications [<http://www.cfar.umd.edu/~shaohua/publications.html>]

Research Monographs and Edited Books

1. **S. Zhou**, W. Zhao, X. Tang, and S. Gong (Eds.), *Analysis and Modeling of Faces and Gestures*, Lecture Notes in Computer Sciences 4778, Springer, 2007.
2. **S. Zhou**, R. Chellappa, and W. Zhao, *Unconstrained face recognition*, Springer, 2006. ISBN: 0-387-26407-8.
3. R. Chellappa, A. Roy-Chowdhury, and **S. Zhou**, *Recognition of humans and their activities using video*, Morgan & Claypool Publishers, 2005. ISBN: 1598290061.

Journal Papers and Book Chapters

[Published, Accepted and In Press]

1. **S. Zhou**, "Appearance Modeling for Visual Tracking," *USTC 50th Golden Anniversary Book: Computer Vision*, J. Luo and X. Tang (Eds.), USTC Press. (in press)
2. **S. Zhou**, J. Shao and D. Comaniciu, "Similarity learning for medical images," *Semantic Mining Technologies for Multimedia Database*, D. Tao, D. Xu, and X. Li (Eds.), IGI Publishing. (in press)
3. **S. Zhou**, G. Aggarwal, R. Chellappa, and D. Jacobs, "Appearance characterization of linear Lambertian object, generalized photometric stereo and illumination-invariant face recognition," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 29, No. 2, pp. 230-245, February 2007. (over 30 citations²)
4. R. Chellappa, A. Roy-Chowdhury, and **S. Zhou**, "Human identification using gait and face," *The Electrical Engineering Handbook, 3rd Edition*, M. Delores (Ed.), CRC Press. (in press)
5. V. Krueger, **S. Zhou**, and R. Chellappa, "Integrating video information over time. Example: Face recognition from video," *Cognitive Vision Systems: Sampling the Spectrum of Approaches*, H.I. Christensen, H. Nagel (Eds.), Springer Berlin/Heidelberg, 2006.
6. **S. Zhou** and R. Chellappa, "From sample similarity to ensemble distance: Probabilistic distance measures in reproducing kernel Hilbert space," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 28, No. 6, pp. 917-929, June 2006. (over 10 citations)
7. **S. Zhou** and R. Chellappa, "Beyond one still image: Face recognition using multiple still images or video sequence," *Face Processing: Advanced Modeling and Methods*, W. Zhao and R. Chellappa (Eds.), Academic Press, 2005.
8. **S. Zhou** and R. Chellappa, "Face recognition from still images and videos," *Handbook of Image and Video Processing, 2nd Edition*, A. Bovik (Ed.), Academic Press, 2005.

²Citation source: scholar.google.com. The reported number combines citations of both journal and conference papers on the same topic.

9. **S. Zhou** and R. Chellappa, "Image-based face recognition under illumination and pose variations," *Journal of Optical Society of America A*, Vol. 22, No. 2, pp. 217-229, February 2005. (over 15 citations)
10. R. Chellappa and **S. Zhou**, "Face tracking and recognition from video," *Handbook of Face Recognition*, S. Li and A. K. Jain (Eds.), Springer, 2004.
11. **S. Zhou**, R. Chellappa, and B. Moghaddam, "Visual tracking and recognition using appearance-adaptive models in particle filters," *IEEE Transactions on Image Processing*, Vol. 13, No. 11, pp. 1491-1506, November 2004. (over 100 citations)
12. **S. Zhou**, V. Krueger, and R. Chellappa, "Probabilistic recognition of human faces from video," *Computer Vision and Image Understanding (special issue on Face Recognition)*, Vol. 91, pp. 214-245, July-August 2003. (over 170 citations)

[Revised and Submitted]

1. J. Li, **S. Zhou**, and R. Chellappa, "Appearance modeling using a geometric transform," *IEEE Transactions on Image Processing*. (revised submission)
2. **S. Zhou**, J. Shao and D. Comaniciu, "Discriminative similarity function for matching images with varying appearances," *IEEE Transactions on Pattern Analysis and Machine Intelligence*. (revised submission)
3. **S. Zhou** and D. Comaniciu, "Shape regression machine," *Medical Image Analysis*. (IPMI invited submission)

Peer-Reviewed Conference Papers

[Premier Computer Vision and Medical Imaging Conferences]

1. **S. Zhou**, F. Guo, J.H. Park, G. Carneiro, J. Jackson, C. Simopoulos, J. Otsuki, and D. Comaniciu, "A probabilistic, hierarchical, and discriminant (PHD) framework for rapid and accurate detection of deformable anatomic structure," *International Conference on Computer Vision (ICCV)*, Rio de Janeiro, October 2007. (23.5% acceptance rate)
2. J.H. Park, **S. Zhou**, C. Simopoulos, J. Otsuki, and D. Comaniciu, "Automatic cardiac view classification of echocardiogram," *International Conference on Computer Vision (ICCV)*, Rio de Janeiro, October 2007. (23.5% acceptance rate)
3. H. Wu, R. Chellappa, and A. Sankaranarayanan and **S. Zhou**, "Robust visual tracking using the time-reversibility constraint," *International Conference on Computer Vision (ICCV)*, Rio de Janeiro, October 2007. (23.5% acceptance rate)
4. **S. Zhou** and D. Comaniciu, "Shape regression machine," *Information Processing in Medical Imaging (IPMI)*, 2007. (oral, 14% acceptance rate)

5. **S. Zhou**, J. Zhou, and D. Comaniciu, "A boosting regression approach to medical anatomy detection," *IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR)*, 2007. (28% acceptance rate)
6. J. Zhang, **S. Zhou**, L. McMillan, and D. Comaniciu, "Joint real-time object detection and pose estimation using probabilistic boosting network," *IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR)*, 2007. (28% acceptance rate)
7. **S. Zhou**, J. Shao, B. Georgescu, and D. Comaniciu, "Pairwise active appearance model and its application to echocardiography tracking," *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, Copenhagen, Denmark, 2006. (oral, 6.75% acceptance rate)
8. **S. Zhou**, J. Shao, B. Georgescu, and D. Comaniciu, "BoostMotion: Boosting a discriminative similarity function for motion estimation," *IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR)*, New York City, 2006. (oral, 4.77% acceptance rate)
9. **S. Zhou**, J.H. Park, B. Georgescu, C. Simopoulos, J. Otsuki, and D. Comaniciu, "Image-based multiclass boosting and echocardiographic view classification," *IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR)*, New York City, 2006. (28.1% acceptance rate)
10. Y. Zheng, X. Zhou, B. Georgescu, **S. Zhou**, and D. Comaniciu, "Example based non-rigid shape detection," *European Conference on Computer Vision (ECCV)*, Graz, Austria, 2006. (23.7% acceptance rate)
11. **S. Zhou**, B. Georgescu, X. Sean Zhou, and D. Comaniciu, "Image based regression using boosting method," *IEEE International Conference on Computer Vision (ICCV)*, Beijing, China 2005. (19.8% acceptance rate)
12. J. Li, **S. Zhou**, and R. Chellappa, "Appearance modeling under geometric context," *IEEE International Conference on Computer Vision (ICCV)*, Beijing, China 2005. (19.8% acceptance rate)
13. **S. Zhou** and R. Chellappa, "Probabilistic identity characterization for face recognition," *IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR)*, Washington, D.C., 2004. (28% acceptance rate)
14. **S. Zhou** and R. Chellappa, "Characterization of human faces under illumination variations using rank, integrability, and symmetry constraints," *European Conference on Computer Vision (ECCV)*, Prague, Czech, 2004. (oral, 7.4% acceptance rate)
15. **S. Zhou** and R. Chellappa, "Probabilistic human recognition from video," *European Conference on Computer Vision (ECCV)*, Copenhagen, Denmark, 2002. (30% acceptance rate)
16. V. Krueger and **S. Zhou**, "Exemplar-based face recognition from video," *European Conference on Computer Vision (ECCV)*, Copenhagen, Denmark, 2002. (30% acceptance rate)

[Signal/Image Processing and Pattern Recognition Conferences and Workshops]

1. A. Tsymbal, M. Huber, S. Zillner, T. Hauer, and **S. Zhou**, “Visualizing patient similarity in clinical decision support”, International Workshop on Knowledge and Experience Management (FGWM), 2007.
2. X. Mei, **S. Zhou**, F. Porikli, “Probabilistic visual tracking via robust template matching and incremental subspace update,” *IEEE International Conference on Multimedia and Expo (ICME)*, Beijing, China, 2007. (oral, 13% acceptance rate)
3. X. Mei, **S. Zhou**, and H. Wu, “Integrated detection, tracking, and recognition for IR video-based vehicle classification,” *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Toulouse, France, 2006.
4. **S. Zhou**, “A binary decision tree implementation of a boosted strong classifier,” *IEEE International Workshop on Analysis and Modeling of Faces and Gestures (AMFG)*, October 2005.
5. J. Shao, **S. Zhou**, and R. Chellappa, “Tracking algorithm using background-foreground motion models and multiple cues,” *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Philadelphia, Pennsylvania, 2005. (oral, 13% acceptance rate)
6. M. Ramachandran, **S. Zhou**, D. Jhalani, and R. Chellappa, “A method for converting smiling face to a neutral face with applications to face recognition,” *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Philadelphia, Pennsylvania, 2005.
7. X. Mei, M. Ramachandran, and **S. Zhou**, “Video background retrieval using mosaic images,” *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Philadelphia, Pennsylvania, 2005.
8. **S. Zhou**, “Face recognition using more than one image: What is more?” *Sinobiometrics*, Guangzhou, China, 2004.
9. J. Shao, S. Zhou, and R. Chellappa, “Simultaneous background and foreground modeling for tracking in surveillance video,” *IEEE International Conference on Image Processing (ICIP)*, Singapore, 2004.
10. **S. Zhou** and R. Chellappa, “Multiple-exemplar discriminant analysis for face recognition,” *International Conference on Pattern Recognition (ICPR)*, Cambridge, United Kingdom, 2004.
11. J. Shao, **S. Zhou**, and Q. Zheng, “Robust appearance-based tracking of moving object from moving platform,” *International Conference on Pattern Recognition (ICPR)*, Cambridge, United Kingdom, 2004.
12. Z. Yue, **S. Zhou**, and R. Chellappa, “Robust two-camera visual tracking with homography,” *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Montreal, Canada, 2004. (oral, 13% acceptance rate)
13. J. Shao, **S. Zhou**, and R. Chellappa, “Appearance-based visual tracking and recognition with trilinear tensor,” *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Montreal, Canada, 2004.

14. J. Li and **S. Zhou**, “Probabilistic face recognition with compressed imagery,” *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Montreal, Canada, 2004.
15. **S. Zhou** and R. Chellappa, “Illuminating light field: Image-based face recognition across illuminations and poses,” *International Conference on Automatic Face and Gesture Recognition (FG)*, Seoul, Korea, 2004.
16. **S. Zhou**, R. Chellappa, and B. Moghaddam, “Intra-personal kernel space for face recognition,” *International Conference on Automatic Face and Gesture Recognition (FG)*, Seoul, Korea, 2004.
17. **S. Zhou**, R. Chellappa and B. Moghaddam, “Appearance tracking using adaptive models in a particle filter,” *Asian Conference on Computer Vision (ACCV)*, Seoul, Korea, 2004. (oral, 13% acceptance rate)
18. **S. Zhou** and R. Chellappa, “Rank constrained recognition from unknown illuminations,” *IEEE International Workshop on Analysis and Modeling of Faces and Gestures (AMFG)*, Nice, France, 2003. (oral, 13% acceptance rate)
19. **S. Zhou**, R. Chellappa and B. Moghaddam, “Adaptive visual tracking and recognition using particle filters,” *IEEE International Conference on Multimedia and Expo (ICME)*, Baltimore, Maryland, 2003.
20. J. Li, **S. Zhou** and C. Shekhar, “A comparison of subspace analysis for face recognition,” *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Hongkong, 2003. (oral, 13% acceptance rate)
21. **S. Zhou** and R. Chellappa, “Simultaneous tracking and recognition of human faces from video,” *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Hongkong, 2003.
22. **S. Zhou**, Y. V. Venkatesh, and C. C. Ko, “Synthesis of visual textures and perceptual asymmetry of visual texture perception,” *International Conference on Control, Automation, Robotics and Vision (ICARCV)*, Singapore, 2002.
23. R. Chellappa, V. Krueger, and **S. Zhou**, “Probabilistic recognition of human faces from video,” *IEEE International Conference on Image Processing (ICIP)*, Rochester, New York, USA, 2002. (oral, 13% acceptance rate)
24. **S. Zhou** and R. Chellappa, “A robust algorithm for probabilistic human recognition from video,” *International Conference on Pattern Recognition (ICPR)*, Quebec, Canada, 2002.
25. R. Chellappa, **S. Zhou** and B. Li, “Bayesian methods for face recognition from video,” *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Orlando, Florida, 2002. (oral, 13% acceptance rate)
26. **S. Zhou**, V. Krueger, and R. Chellappa, “Face recognition from video: A CONDENSATION approach,” *International Conference on Automatic Face and Gesture Recognition (FG)*, Washington D.C., 2002. (oral, 15% acceptance rate)

27. **S. Zhou**, Y. V. Venkatesh, and C. C. Ko, "Texture retrieval using tree-structured wavelet transform," *International Conference on Computer Vision, Pattern Recognition, and Image Processing (CVPRIP)*, Atlantic City, New Jersey, 2000.

Dissertations, Technical Reports, Patents, and Invention Disclosures

1. **S. Zhou**, *Unconstrained face recognition*, Ph.D. Dissertation, University of Maryland, College Park, 2004.
2. **S. Zhou**, *Wavelet-based texture retrieval and modeling visual texture perception*, M.S. Dissertation, National University of Singapore, 2000.
3. **S. Zhou**, "Matrix-based kernel subspace methods," *Siemens Corporate Research Technical Report SCR-05-TR-773*, 2005.
4. **S. Zhou**, "Probabilistic analysis of kernel principal components: mixture modeling and classification," *CfAR Technical Report, CAR-TR-993*, 2003.
5. Patent 11/775538, Automatic Cardiac View Classification of Echocardiography.
6. Patent 11/767920, Scalable Semantic Image Search in Medicine.
7. Patent 10 2006 039 922, A Machine Learning Based Nonrigid Shape Detection Method.
8. Patent 2007-0098239, Method for performing image based regression using boosting.
9. Patent 60/726084, System and method for using a similarity function to perform appearance matching in image pairs.
10. Patent No. 60/712979, Method for characterizing shape, appearance and motion of an object being tracked.
11. Patent No. 60/712960, System and method for learning relative distance in a shape space using image based features.
12. Patent No. 60/712955, Medical diagnostic imaging based on anatomy recognition.
13. Patent No. 60/747024, Multi-planar reconstruction for ultrasound volume data.
14. Over 20 invention disclosures.