

Xiaoming LIU

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RESEARCH INTEREST	Computer Vision, Machine Learning, Deep Learning, Human Computer Interface, Medical Image Analysis, Pattern Recognition, Image and Video Processing, Multimedia Retrieval.	
PERSONAL	U.S. Permanent Resident	
EDUCATION	Carnegie Mellon University , Pittsburgh, PA. USA Ph.D., Electrical and Computer Engineering <ul style="list-style-type: none">• Dissertation Title: "Pose Robust Video-Based Face Recognition"• Advisors: Prof. Tsuhan Chen and Prof. B.V.K. Vijaya Kumar• Thesis committee: Tsuhan Chen (chair), B.V.K. Vijaya Kumar, Jie Yang, Zhengyou Zhang (Microsoft Research) October, 2004	
	Zhejiang University , Hangzhou, Zhejiang, P.R. China M.S., Computer Science and Engineering <ul style="list-style-type: none">• Dissertation Title: "Study on Video based Human Animation Techniques"• Advisor: Prof. Yueting Zhuang March, 2000	
	Beijing Information Technology Institute , Beijing, P.R.China B.A., Computer Science and Engineering July, 1997	
EXPERIENCE	Aug 2012- Tenure-track Assistant Professor, Department of Computer Science and Engineering, Michigan State University, East Lansing, MI Jan 2011- Consultant, National Institute of Justices, Department of Justice, Washington, DC Nov 2004-Aug 2012 Computer Scientist, Visualization & Computer Vision Lab, GE Global Research, Niskayuna, NY <ul style="list-style-type: none">• Led and performed research in government-sponsored programs on face-relevant topics, including face capture at a distance, face alignment, head and eye gaze estimation, face super-resolution, face deblurring, face recognition/verification, 3D-to-2D face recognition, face classifier adaption, spontaneous facial action units recognition, unsupervised and semi-supervised face congealing, thermal face processing, multi-model biometrics fusion, biometrics sample quality, etc.• Led and performed research in government-sponsored video surveillance programs on topics including multi-camera person detection, person tracking, body alignment, body segmentation via matting, online boosting for person tracking, person counting, pan-tilt-zoom (PTZ) camera control, individual-level behavior and gait analysis, and group-level activity recognition, etc.• Led and performed research in business-sponsored projects on topics such as affective analysis, user experience modeling, facial expression recognition, facial behavior (pain, stoke, delirium) analysis for elder, facial demographics recognition, gaze estimation for football players, interactive advertisement, medical image analysis, activity recognition for hospital rooms, etc.• Invented and developed a suite of advanced image alignment algorithms, which have been applied to a wide range of applications within GE.	

- Developed a classification and testing framework for automatic defect recognition (ADR) in industrial inspection applications.
- Delivered an array of technologies to GE businesses, including Viewers' emotion analysis for NBCU, gaze estimation of football players for NBCU, Biometrics ID kiosk for GE Security, Ultra-sound fetal head scan plane identification for GE Healthcare, etc.

Jan 2000-Oct 2004 Research Assistant, Advanced Multimedia Processing Lab, Carnegie Mellon University, Pittsburgh, PA

- Developed novel video-based face recognition technologies which include: using face mosaicing to integrate human face tracking, modeling, and pose-robust recognition from video sequences, and using adaptive HMMs to model/utilize temporal information in face videos.
- Designed and implemented a camera array system (both hardware & software) for capturing face videos from six cameras simultaneously, which captured then the largest publicly available face video database.
- Developed an online subspace learning algorithm where an eigenspace can be updated with decaying memory. Applied the updating theory on various applications, including face recognition, detection of signal change, video coding and object tracking.
- Developed expression invariant face recognition algorithm (eigenflow) which uses motion information for recognition. Proposed Individual Principal Component Analysis (IPCA) for face authentication task.

Sep 1998-Dec 1999 Research Assistant, Intelligence CAD Lab, Zhejiang University, P.R.China

- Developed video-based human animation algorithms and system which includes two components: tracking 2D human skeleton from video sequences, and reconstructing 3D skeleton from the 2D skeleton sequence.
- Developed a Web-Oriented image/video information retrieval system where a Semantic Template is proposed to perform multimedia retrieval on the semantic level and a novel video similarity model is applied to video query by example clips.

GRANTS & PROJECTS Total funding during GE employment is **\$2,950K**. Total funding during MSU employment is **\$10,180K**, where my portion is **\$3,800K**.

- **Principal Investigator**, "Accurate 3D Object Classification in Open World," Office of Naval Research, \$300K, 6/17-5/20.
- **Principal Investigator**, "Gait-based Rider Authentication for Autonomous Carsharing," Ford-MSU Innovation Alliance, \$70K, 1/17-12/17.
- **Co-Principal Investigator**, "Presentation Attack Detection: Solutions for Fingerprints, Face and Iris Systems," IARPA, PI Dr. Arun Ross, \$6,206K, 1/17-12/20.
Develop algorithms and systems to detect various presentation attacks in three biometrics modalities.
- **Principal Investigator**, "Computer vision research," Bosch Research and Technology Center North America, Research Gift, \$55K, 1/17-12/17.
- **Principal Investigator**, "Computer vision research," NEC Laboratories America, Inc. Research Gift, \$30K, 12/16-11/17.
- **Co-Principal Investigator**, "Perception software development with 3D Lidar," Changan US R&D Center Inc., PI Dr. Daniel Morris, \$100K, 09/2016-09/17.
- **Co-Principal Investigator**, "Speaker Recognition from Degraded Audio Samples (SR-DAS)," FBI-BOE, PI Dr. Arun Ross, \$500,000, 05/16-12/17.
Develop algorithms to recognize individuals in surveillance videos using both audio and video signals
- **Co-Principal Investigator**, "Quantitative Molecular and Cellular MRI of Hepatocyte Transplantation," NIH R01, PI Dr. Erik Shapiro, \$2,097,162, 09/15-09/19.

Develop computer vision and machine learning algorithms to quantify cell transplantation in MRI

- **Principal Investigator**, “Intelligent vehicle,” General Motors Company, \$297K, 08/15-08/17.
This project explores one specific scenario of autonomous driving - automatic trailer back up
- **Principal Investigator**, “Sports Video Analysis,” TechSmith Inc. Research Gift, \$52K, 08/15-08/16.
Develop algorithms to analyze the motion in a diverse type of sports videos
- **Principal Investigator**, “Learning to Fuse Information with Missing Modalities”, Department of Defense, \$450K, 05/15-05/18.
- **Principal Investigator**, “A System for Online Exam Proctoring - Development and Evaluation,” MSU Targeted Support Grants for Technology Development (TSGTD) program, \$52K, 03/15-03/16.
Evaluate and further developing a computer vision system to detect cheating behavior while students taking examination for online courses.
- **Principal Investigator**, “Sports Video Analysis,” TechSmith Inc. Research Gift, \$50K, 08/14-08/15.
Develop algorithms to analyze the motion in a diverse type of sports videos
- **Principal Investigator**, “Imaging Technologies for Enhancing Agricultural Productivity, Cercospora Leaf Spot Rating as a Case Study,” Project GREEN, \$30K, 05/14-06/15.
Enhance the automatic rating system for the Cercospora leaf spot disease of sugar beet using the cross-year data.
- **Principal Investigator**, “Object (fish) Segmentation & Counting,” Herrick foundation, \$20K, 04/14-06/14.
Develop a computer vision system to perform automatic fish segmentation and counting from videos.
- **Principal Investigator**, “A System for Online Exam Proctoring,” MSU Targeted Support Grants for Technology Development (TSGTD) program, \$55K, 07/13-08/14.
Develop a computer vision system to detect cheating behavior while students taking examination for online courses.
- **Principal Investigator**, “Sports Video Analysis,” TechSmith Inc. Research Gift, \$47K, 06/13-08/14.
Study algorithms to analyze the motion in a diverse type of sports videos
- **Principal Investigator**, “Research on Computer Vision and Machine Learning Technology for a Safe Driving Experience,” State Key Laboratory of Automotive Simulation and Control, Jilin University, China, ¥150K, Wende Zhang (Co-PI), 01/13-12/15.
Employ visual sensors, both facing in and outside of the car, to monitor the driver’s status and external road conditions.
- **Co-Principal Investigator**, “Image acquisition and processing for enhanced scoring of Cercospora leaf spot nursery,” Michigan Sugar Company Competitive Grant, #MSC-13-08, \$5K, Mitch McGrath (PI), 01/13-12/13.
Develop an automatic rating system for the Cercospora leaf spot disease of sugar beet by using the video captured from a small UAV flying over the field.
- **Co-Principal Investigator**, “Rapid Biometric System for Physical Access Control,” US Army Research Laboratory, Awarded May 2012, \$750K, Daniel Gray (PI), 10/12-09/13.
Develop a smart lens system coupled with advanced image analysis that provides the DoD/ARL with an automated system for rapid verification for physical access.
- **Principal Investigator**, “Advanced Behavior Recognition in Crowded Environments - Continuation,” National Institute of Justice (NIJ) award #2011-IJ-CX-K004, \$250K, 10/11-09/12.
Continue the development of the behavior recognition system and deploy it in a real-world law enforcement site.
- **Principal Investigator**, “Advanced Behavior Recognition in Crowded Environments,” National Institute of Justice (NIJ) award #2009-SQ-B9-K013, \$350K, 03/11-12/11.
Developed a video surveillance system that performs multi-camera multi-person tracking in crowd environments

and recognizes individual-level and group-level activity, such as loitering, chasing, franking, contraband hand-off, etc.

- **Project Leader**, “Recognize Facial Action Units (AUs) from Face Video Sequences,” Department of Homeland Security (DHS), \$100K, 01/10-11/10.
Developed a system to automatically recognize a set of spontaneous facial action units that are highly indicative of deception.
- **Principal Investigator**, “Site-Adaptive Face Recognition at a Distance,” National Institute of Justice (NIJ) award #2007-DE-BXK191, \$500K, 10/07-12/09.
Developed a face recognition system that optimizes over the existing subspace-based approaches, and adapts to the site-specific imaging conditions.
- **Project Leader**, “Biometrics ID Kiosk,” Israel-U.S. Binational Industrial Research and Development (BIRD) foundation, \$500K, 6/07-12/08.
Developed a face verification system for an ID kiosk that matches the ID photo scanned from an identity document (e.g., driver’s license, passport) with the face image captured from the camera.
- **Project Leader**, “Active 3D Face Capture,” National Institute of Justice (NIJ) award #2006-IJ-CX-K045, \$500K, 10/06-3/08.
Developed a face capture a distance system including PTZ control, face alignment, and facial super-resolution, which serves as the front-end component of a recognition at a distance system.

HONORS AND AWARDS

Invited participant, Microsoft Research Faculty Summit 2017.

The Second Place of the CSE Poster Competition at 2017 MSU College of Engineering Student Research Symposium for my students’ work of “Towards Large-Pose Face Frontalization”.

Honorable Mention of the CSE Poster Competition at 2017 MSU College of Engineering Student Research Symposium for my students’ work of “Illuminating Pedestrians via Simultaneous Detection and Segmentation”.

The Second Place of the CSE Poster Competition at 2016 MSU College of Engineering Student Research Symposium for my students’ work of “Multi-Task Convolutional Neural Network for Face Recognition in Constrained Environment”.

Honorable Mention of the CSE Poster Competition at 2016 MSU College of Engineering Student Research Symposium for my students’ work of “Intelligent and Automatic Quantification of in vivo Cells in MRI”.

Best Poster Award as a co-author at the 26th British Machine Vision Conference (BMVC) 2015.

Honorable Mentions of the CSE Poster Competition at 2014 MSU College of Engineering Student Research Symposium for my students’ work of “Automatic In Vivo Cell Detection in MRI” and “Attribute Preserved Face De-Identification”.

One co-authored paper selected as **the top 10% of accepted papers** at the International Conference of Image Processing (ICIP) 2014.

Best Industry Related Paper Award (BIRPA) runner-up as a co-author at the International Conference on Pattern Recognition (ICPR) 2014.

Best Paper Award Runner-up as a co-author at ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN) 2014.

Best Student Paper Award as a co-author at IEEE Winter Conference on Applications of Computer Vision (WACV) 2014.

Fellow of the Academy for Global Engagement, Michigan State University, 2014.

Best Demo Award as a co-author at IEEE Sixth International Conference on Biometrics: Theory, Applications and Systems (BTAS 2013).

Best Student Paper Award as a co-author at IEEE Workshop on Applications of Computer Vision (WACV) 2012.

Publications Milestone Award, GE Global Research, 2011

Global Winner of Hack Week 2011, GE Healthcare, 2011

Who’s Who in America 2011

Best Paper Honorable Mention Award as a co-author at IEEE Computer Society Workshop on Biometrics, 2009

One of the two finalists of the **Imagination at Work** award in Imaging Organization for “inventions in 2008 that fortify GE’s reputation as a high-tech, innovative company”, GE Global Research, 2009

Inventor Award, GE Global Research, 2008

Publications Award, GE Global Research, 2008

Several **Management Awards**, GE Global Research
Redington Team Award, GE Global Research, 2006
Inventor Award, GE Global Research, 2005
Graduate Research Assistantship, Carnegie Mellon University, 2000-2004
Rockwell University Fellowship, Zhejiang University, 1998-1999
Several **Excellent Student Fellowships**, Beijing Information Technology Institute, 1993-1997
Second Prizes, Advanced Mathematics Contest, Beijing Information Technology Institute, 1994

TEACHING

MSU CSE 471 Media Processing and Multimedia, Spring 2014, Spring 2015, Spring 2016, Spring 2017.
MSU CSE 891-006 Computer Vision Seminar, Spring 2013.
MSU CSE 803 Computer Vision, Fall 2012, Fall 2013, Fall 2014, Fall 2015, Fall 2016.
Teaching Assistant for Signal and Systems: Gave recitations, directed labs, prepared homework solutions, prepared recitation notes, and graded homework and exams. **Carnegie Mellon University**, Pittsburgh, PA. Fall 2002 & Fall 2003.
Guest lecture titled "Facial Analysis via Boosting" for Pattern Recognition (ECSE 6610) course. Rensselaer Polytechnic Institute, Troy NY. Apr 26, 2011.

PUBLICATIONS

I have >**3000** citations according to [Google Scholar](#), and my **h-index** is **31**.

Journal Articles

1. Xi Yin, **Xiaoming Liu**, Jin Chen, David Kramer, "Jointly Multi-Leaf Segmentation, Alignment, and Tracking from Fluorescence Plant Videos," IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), doi:10.1109/TPAMI.2017.2728065, July 2017. [arXiv](#)
2. Alsallakh Bilal, Amin Jourabloo, Mao Ye, **Xiaoming Liu**, Liu Ren, "Do Convolutional Neural Networks Learn Class Hierarchy?" IEEE Transactions on Visualization and Computer Graphics (TVCG) (in press) = Proc. of IEEE Conference on Visual Analytics Science and Technology (VAST), Oct. 1-6, 2017, in Phoenix, Arizona.
3. Amin Jourabloo, **Xiaoming Liu**, "Pose-Invariant Face Alignment via CNN-based Dense 3D Model Fitting," International Journal of Computer Vision (IJCV), doi:10.1007/s11263-017-1012-z, Apr 2017. [PDF](#)
4. Joseph Roth, Yiyang Tong, **Xiaoming Liu**, "Adaptive 3D Face Reconstruction from Unconstrained Photo Collections," IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), 10.1109/TPAMI.2016.2636829, December 2016. [PDF](#)
5. Muhammad Jamal Afridi, Arun Ross, **Xiaoming Liu**, Margaret F. Bennewitz, Dorela Doris Shuboni, Erik Shapiro, Intelligent and Automatic In Vivo quantification of transplanted cells in MRI, Magnetic Resonance in Medicine, 10.1002/mrm.26571, Dec 2016. [PDF](#) [Supplementary](#)
6. Yu Wang, Rui Tan, Guoliang Xing, Jianxun Wang, Xiaobo Tan, and **Xiaoming Liu**, "Energy-Efficient Aquatic Environment Monitoring Using Smartphone-Based Robots," ACM Transactions on Sensor Networks, Volume 12 Issue 3, August 2016. [PDF](#)
7. Yousef Atoum, Liping Chen, Alex Liu, Stephen Hsu, **Xiaoming Liu**, "Automated Online Exam Proctoring", IEEE Transaction on Multimedia, Volume 19, Issue 7, pp. 1609-1624, July 2017. [PDF](#)
8. Yousef Atoum, Muhammad Jamal Afridi, **Xiaoming Liu**, J. Mitchell McGrath, Linda E. Hanson, "On Developing and Enhancing Plant-Level Disease Rating Systems in Real Fields," Pattern Recognition, Volume 53, Pages 287-299, May 2016. [PDF](#)
9. Hanno Scharf, Massimo Minervini, Andrew P. French, Christian Klukas, David M. Kramer, **Xiaoming Liu**, Imanol Luengo Muntion, Jean-Michel Pape, Gerrit Polder, Danijela Vukadinovic, Xi Yin, Sotirios A. Tsaftaris, "Leaf segmentation in plant phenotyping: A collation study," Machine Vision and Applications, Volume 27, Issue 4, pp. 585-606, May 2016. [PDF](#)
10. Xi Yin*, Jeffrey A. Cruz*, **Xiaoming Liu**, Saif M. Imran, Daniel D. Morris, David M. Kramer, Jin Chen, "Multi-modality Imagery Database for Plant Phenotyping," Machine Vision and Applications, Volume 27, Issue 5, pp.735 - 749, July 2016. (* denotes equal contribution by the authors) [PDF](#)
11. Yu Wang, Rui Tan, Guoliang Xing, Jianxun Wang, Xiaobo Tan, **Xiaoming Liu**, and Xiangmao Chang, "Monitoring Aquatic Debris Using Smartphone-Based Robots," IEEE Transactions on Mobile Computing, Vol.15, No.6, pp.1412-1426, June 2016. [PDF](#)

12. Yousef Atoum, Steven Srivastava, **Xiaoming Liu**, “Automatic Feeding Control for Dense Aquaculture Fish Tanks,” *IEEE Signal Processing Letters*, Vol. 22, No. 8, pp.1089-1093, Aug. 2015. [PDF](#)
13. Joseph Roth, **Xiaoming Liu**, Arun Ross, and Dimitris Metaxas, “Investigating the Discriminative Power of Keystroke Sound,” *IEEE Transactions on Information Forensics And Security*, Vol.10, No.2, pp.333-345, Feb. 2015. [PDF](#)
14. Hu Han, Charles Otto, **Xiaoming Liu**, and Anil K. Jain, “Demographic Estimation from Face Images: Human vs. Machine Performance,” *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, Vol.37, No.6, pp.1148-1161, June 2015. [PDF](#)
15. Joseph Roth, **Xiaoming Liu**, and Dimitris Metaxas, “On Continuous User Authentication via Typing Behavior,” *IEEE Transactions on Image Processing*, Vol.23, No.10, pp.4611-4624, Oct. 2014. [PDF](#)
16. Jixu Chen, **Xiaoming Liu**, “Transfer Learning with One-Class Data,” *Pattern Recognition Letter*, Vol. 37, pp.32-40, February 2014. [PDF](#)
17. Jixu Chen, **Xiaoming Liu**, Peter Tu and Amy Aragones, “Learning Person-specific Models for Expression and Action Unit Recognition,” *Pattern Recognition Letter*, Vol.34, No.15, pp.1964-1970, November 2013. [PDF](#)
18. Yan Tong, **Xiaoming Liu**, Frederick W. Wheeler, and Peter Tu, “Semi-supervised Facial Landmark Annotation,” *Computer Vision and Image Understanding*, Vol.116, No.8, pp.922-935, August 2012. [PDF](#)
19. **Xiaoming Liu**, “Video-based Face Model Fitting using Adaptive Active Appearance Model,” *Image and Vision Computing*, Volume 28, Issue 7, pp.1162-1172, July 2010. [PDF](#)
20. **Xiaoming Liu**, “Discriminative Face Alignment,” *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, Vol.31, No.11, pp.1941-1954, November 2009. [PDF](#)
21. **Xiaoming Liu**, Tsuhan Chen, and Susan M. Thornton, “Eigenspace Updating for Non-Stationary Process and Its Application to Face Recognition,” *Pattern Recognition*, special issue on Kernel and Subspace Methods for Computer Vision, Vol.36, No.9, pp.1945-1959, September 2003. [PDF](#)
22. **Xiaoming Liu**, Tsuhan Chen, and B.V.K. Vijaya Kumar, “Face Authentication for Multiple Subjects Using Eigenflow,” *Pattern Recognition*, special issue on Biometrics, Vol.36, No.2, pp.313-328, February 2003. [PDF](#)
23. Yueting Zhuang, **Xiaoming Liu**, and Yunhe Pan, “A Video-based Human Skeleton Extraction Technique For Animation,” *Journal of Computer Research & Development*, Vol.37, No.4, pp.498-506, April 2000. (in Chinese)
24. Yueting Zhuang, **Xiaoming Liu**, Yi Wu, and Yunhe Pan, “A New Approach to Retrieve Video by Example Video Clip,” *The Chinese Journal of Computers*, Vol.23, No.3, pp.300-305, March 2000. (in Chinese)
25. Yueting Zhuang, **Xiaoming Liu**, Yunhe Pan, and Jun Yang, “3D Human Skeleton Reconstruction from Motion Image Sequence,” *Journal of Computer-aided Design & Computer Graphics*, Vol.12, No.4, pp.245-250, April 2000. (in Chinese)
26. Yunhe Pan, Yueting Zhuang, and **Xiaoming Liu**, “Video Motion Capture in VBA–Video-based Animation,” *Journal of Zhejiang University, SCIENCE*, Vol.1, No.1, pp.1-7, January 2000.
27. **Xiaoming Liu**, Yueting Zhuang, and Yunhe Pan, “Model-Based Human Motion Tracking,” *Journal of Computer Research & Development*, Vol.36, No.10, pp.1268-1273, October 1999. (in Chinese)
28. Yueting Zhuang, **Xiaoming Liu**, Chun Chen, Chenyu Zhang, and Weilin Lu, “GDP: The Design and Implementation of Object Oriented and Software Components Techniques,” *Computer Science*, Vol.27, No.1, pp.40-43, January 2000. (in Chinese)

Book Chapters

29. Frederick Wheeler, **Xiaoming Liu**, and Peter Tu, “Face Recognition at a Distance,” in *Handbook of Face Recognition*, 2nd edition, Stan Z. Li and Anil K. Jain, Eds, Springer-Verlag, 2011.
30. P.H. Tu, G.W. Brooksby, G. Doretto, D.W. Hamilton, N. Krahnstoeber, J.B. Laflan, **X. Liu**, K.A. Patwardhan, T. Sebastian, Y. Tong, J. Tu, F.W. Wheeler, C. M. Wynnyk, Y. Yao, and T. Yu, “Video Analytics for Force Protection,” In *Distributed Video Sensor Networks*, 1st edition, B. Bhanu, C.V. Ravishankar, A.K. Roy-Chowdhury, H. Aghajan, and D. Terzopoulos, Eds, Springer, February 2011.

Highly Selective Conference Papers

Papers with acceptance rates similar to major journals are highlighted. The top conference papers in computer vision and machine learning are considered as major publications. The top conferences are highly selective, e.g., CVPR has acceptance rates around 25%, and oral presentations have a 4% acceptance rate. [Source](#) CVPR is the top publication venue in the field of computer vision and pattern recognition, according to the h5-index, a citation measure for the recent five years. PAMI and ICCV rank second and third, respectively. CVPR also ranks 6th in the category of Engineering & Computer Science, and it is the highest-ranked venue in Computer Science. [Source](#)

31. Garrick Brazil, Xi Yin, **Xiaoming Liu**, “Illuminating Pedestrians via Simultaneous Detection and Segmentation,” In Proceeding of International Conference on Computer Vision (ICCV 2017), Venice, Italy, Oct. 2017. [arXiv](#)
32. Amin Jourabloo, **Xiaoming Liu**, Mao Ye, Liu Ren, “Pose-Invariant Face Alignment with a Single CNN,” In Proceeding of International Conference on Computer Vision (ICCV 2017), Venice, Italy, Oct. 2017.
33. Ying Tai, Jian Yang, **Xiaoming Liu**, Chunyan Xu, “Image Restoration using Persistent Memory Network,” In Proceeding of International Conference on Computer Vision (ICCV 2017), Venice, Italy, Oct. 2017.
34. Yousef Atoum, Joseph Roth, Michael Bliss, Wende Zhang, **Xiaoming Liu**, “Monocular Video-based Trailer Coupler Detection using Multiplexer Convolutional Neural Network,” In Proceeding of International Conference on Computer Vision (ICCV 2017), Venice, Italy, Oct. 2017.
35. Xi Yin, Xiang Yu, Kihyuk Sohn, **Xiaoming Liu**, Manmohan Chandraker, “Towards Large-Pose Face Frontalization,” In Proceeding of International Conference on Computer Vision (ICCV 2017), Venice, Italy, Oct. 2017. [arXiv](#)
36. Luan Tran, Xi Yin, **Xiaoming Liu**, “Disentangled Representation Learning GAN for Pose-Invariant Face Recognition,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2017)*, Honolulu, Hawaii, July 2017. **(Oral, Acceptance rate $\frac{71}{2680} = 2.6\%$)** [PDF](#)
37. Luan Tran, **Xiaoming Liu**, Jiayu Zhou, and Rong Jin, “Learning with Missing Modalities via Cascaded Residual Autoencoder,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2017)*, Honolulu, Hawaii, July 2017. **(Acceptance rate $\frac{783}{2680} = 29\%$)** [PDF](#)
38. Ying Tai, Jian Yang, **Xiaoming Liu**, “Image Super-Resolution via Deep Recursive Residual Network,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2017)*, Honolulu, Hawaii, July 2017. **(Acceptance rate $\frac{783}{2680} = 29\%$)** [PDF](#)
39. Seyed Morteza Safdarnejad, **Xiaoming Liu**, “Spatio-temporal Alignment of Non-overlapping Sequences from Independently Panning Cameras,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2017)*, Honolulu, Hawaii, July 2017. **(Acceptance rate $\frac{783}{2680} = 29\%$)** [PDF](#)
40. Seyed Morteza Safdarnejad, Yousef Atoum, **Xiaoming Liu**, “Temporally Robust Global Motion Compensation by Keypoint-based Congealing,” in *Proceeding of European Conference on Computer Vision (ECCV) 2016*, Amsterdam, The Netherlands, October 2016. **(Acceptance rate $\frac{415}{1561} = 26.6\%$)** [PDF](#)
41. Feng Liu, Dan Zeng, Qijun Zhao, **Xiaoming Liu**, “Joint Face Alignment and 3D Face Reconstruction,” in *Proceeding of European Conference on Computer Vision (ECCV) 2016*, Amsterdam, The Netherlands, October 2016. **(Spotlight, Acceptance rate $\frac{45}{1561} = 2.9\%$)** [PDF](#)
42. Amin Jourabloo, **Xiaoming Liu**, “Large-pose Face Alignment via CNN-based Dense 3D Model Fitting,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2016)*, Las Vegas NV, June 2016. **(Acceptance rate $\frac{643}{1865} = 29.9\%$)** [PDF](#)
43. Joseph Roth, Yiyang Tong, **Xiaoming Liu**, “Adaptive 3D Face Reconstruction from Unconstrained Photo Collections,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2016)*, Las Vegas NV, June 2016. **(Acceptance rate $\frac{643}{1865} = 29.9\%$)** [PDF](#)
44. Xiangyu Zhu, Zhen Lei, **Xiaoming Liu**, Hailin Shi, Stan Li, “Face Alignment Across Large Poses: A 3D Solution,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2016)*, Las Vegas NV, June 2016. **(Oral, Acceptance rate $\frac{83}{1865} = 3.9\%$)** [PDF](#)
45. Amin Jourabloo, **Xiaoming Liu**, “Pose-Invariant 3D Face Alignment,” in *Proceeding of International Conference on Computer Vision (ICCV 2015)*, Santiago, Chile, December 2015. **(Acceptance rate $\frac{525}{1698} = 30.3\%$)** [PDF](#)

46. Muhammad Jamal Afridi, **Xiaoming Liu**, Erik M. Shapiro, Arun Ross, “Automatic in vivo Cell Detection in MRI,” in *Proceeding of the 18th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2015)*, Munich, Germany, October 2015. (Acceptance rate $\frac{263}{810} = 32.5\%$) [PDF](#)
47. Joseph Roth, Yiying Tong, **Xiaoming Liu**, “Unconstrained 3D Face Reconstruction,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2015)*, Boston MA, June 2015. (Acceptance rate $\frac{602}{2123} = 28.4\%$) [PDF](#)
48. Yu Wang, Rui Tan, Guoliang Xing, Jianxun Wang, Xiaobo Tan, and **Xiaoming Liu**, “Samba: A Smartphone-Based Robot System for Energy-Efficient Aquatic Environment Monitoring,” in *Proceedings of the 14th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN) 2015*, Seattle, WA, April 13-17, 2015. (Acceptance rate $\frac{27}{111} = 24.3\%$) [PDF](#)
49. Joseph Roth, **Xiaoming Liu**, “On Hair Recognition in the Wild by Machine,” in *Proceeding of the Twenty-Eighth AAAI Conference on Artificial Intelligence (AAAI) 2014*, Quebec City, Canada, July 27-31, 2014. (Acceptance rate $\frac{398}{1406} = 28\%$) [PDF](#)
50. Yu Wang, Rui Tan, Guoliang Xing, Jianxun Wang, Xiaobo Tan, **Xiaoming Liu**, and Xiangmao Chang, “Aquatic Debris Monitoring Using Smartphone-Based Robotic Sensors,” in *Proceedings of the 13th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN) 2014*, Berlin, Germany, April 15-17, 2014. (Acceptance rate $\frac{23}{111} = 20.7\%$, **Best Paper Award Runner-up**) [PDF](#)
51. Yimeng Zhang, **Xiaoming Liu**, Ming-Ching Chang, Weina Ge, and Tsuhan Chen, “Spatio-Temporal Phrases for Activity Recognition,” in *Proceeding of European Conference on Computer Vision (ECCV) 2012*, Firenze, Italy, October 7-13, 2012. (Acceptance rate 27%) [PDF](#)
52. **Xiaoming Liu**, Yan Tong, Frederick W. Wheeler, and Peter Tu, “Facial Contour Labeling via Congealing,” in *Proceeding of European Conference on Computer Vision (ECCV) 2010*, Hersonissos, Heraklion, Crete, Greece, September 5-11, 2010. (Acceptance rate 27%) [PDF](#)
53. **Xiaoming Liu**, Yan Tong, and Frederick W. Wheeler, “Simultaneous Alignment and Clustering for an Image Ensemble,” in *Proceeding of International Conference on Computer Vision (ICCV) 2009*, Kyoto, Japan, September 27-October 5, 2009. (Acceptance rate 23%) [PDF](#)
54. Jilin Tu, **Xiaoming Liu**, and Peter Tu, “On Optimizing Subspaces for Face Recognition,” in *Proceeding of International Conference on Computer Vision (ICCV) 2009*, Kyoto, Japan, September 27-October 5, 2009. (Acceptance rate 23%) [PDF](#)
55. Yan Tong, **Xiaoming Liu**, Frederick W. Wheeler, and Peter Tu, “Automatic Facial Landmark Labeling with Minimal Supervision,” in *Proceeding of IEEE International Conference on Computer Vision and Pattern Recognition (CVPR) 2009*, Miami Beach, Florida, June 20-26, 2009. (Acceptance rate 26%) [PDF](#)
56. Hao Wu, **Xiaoming Liu**, and Gianfranco Doretto, “Face Alignment via Boosted Ranking Models,” in *Proceeding of IEEE International Conference on Computer Vision and Pattern Recognition (CVPR) 2008*, Anchorage, Alaska, June 24-26, 2008. (Oral presentation, acceptance rate 4%) [PDF](#)
57. **Xiaoming Liu**, Ting Yu, Thomas Sebastian, and Peter Tu, “Boosted Deformable Model for Human Body Alignment,” in *Proceeding of IEEE International Conference on Computer Vision and Pattern Recognition (CVPR) 2008*, Anchorage, Alaska, June 24-26, 2008. (Acceptance rate 32%) [PDF](#)
58. **Xiaoming Liu** and Ting Yu, “Gradient Feature Selection for Online Boosting,” in *Proceeding of International Conference on Computer Vision (ICCV) 2007*, Rio de Janeiro, Brazil, October 14-20, 2007. (Acceptance rate 24%) [PDF](#)
59. **Xiaoming Liu**, “Generic Face Alignment using Boosted Appearance Model,” in *Proceeding of IEEE International Conference on Computer Vision and Pattern Recognition (CVPR) 2007*, Minneapolis, Minnesota, June 18-23, 2007. (Oral presentation, acceptance rate 5%) [PDF](#)
60. Peter Tu, Rebecca Book, **Xiaoming Liu**, Nils Krahnstoeber, Carl Adrian, and Phil Williams, “Automatic Face Recognition from Skeletal Remains,” in *Proceeding of IEEE International Conference on Computer Vision and Pattern Recognition (CVPR) 2007*, Minneapolis, Minnesota, June 18-23, 2007. (Acceptance rate 28%) [PDF](#)
61. **Xiaoming Liu**, Tsuhan Chen, and Jens Rittscher, “Optimal Pose for Face Recognition,” in *Proceeding of IEEE International Conference on Computer Vision and Pattern Recognition (CVPR) 2006*, Vol.2, pp.1439-1446, New York, NY, June 17-22, 2006. (Acceptance rate 28%) [PDF](#)

62. **Xiaoming Liu** and Tsuhan Chen, "Pose-Robust Face Recognition Using Geometry Assisted Probabilistic Modeling," in *Proceeding of the IEEE International Conference on Computer Vision and Pattern Recognition (CVPR) 2005*, Vol.1, pp.502-509, San Diego, CA, June 20-25, 2005. **(Acceptance rate 28%)** [PDF](#)
63. **Xiaoming Liu** and Tsuhan Chen, "Video-Based Face Recognition Using Adaptive Hidden Markov Models," in *Proceeding of the IEEE International Conference on Computer Vision and Pattern Recognition (CVPR) 2003*, Vol.1, pp.340-345, Madison, Wisconsin, June 16-22, 2003. **(Acceptance rate 23%)** [PDF](#)
64. **Xiaoming Liu**, Yueting Zhuang, and Yunhe Pan, "Video Based Human Animation Technique," in *Proceeding of The 7th ACM International Multimedia Conference (Multimedia 1999)*, Orlando, Florida, October 30-November 5, 1999. **(Oral presentation, acceptance rate 18%)** [PDF](#)

Other Conference Papers (peer reviewed)

65. Yousef Atoum*, Amin Jourabloo*, Yaojie Liu*, **Xiaoming Liu**, "Face Anti-Spoofing Using Patch and Depth-Based CNNs," in *Proceedings of the International Joint Conference on Biometrics (IJCB 2017)*, Denver, Colorado, Oct 1-4, 2017. (* denotes equal contribution by the authors)
66. Songyang Zhang, **Xiaoming Liu**, Jun Xiao, "On Geometric Features for Skeleton-Based Action Recognition using Multilayer LSTM Networks," in *Proceedings of the IEEE Winter Conference on Applications of Computer Vision (WACV) 2017*, Santa Rosa, CA, March 27-29, 2017. [PDF](#)
67. Seyed Morteza Safdarnejad, **Xiaoming Liu**, Lalita Udpa, "Robust Global Motion Compensation in Presence of Predominant Foreground," in *Proceedings of British Machine Vision Conference (BMVC 2015)*, Swansea, UK, September 2015. **(Acceptance rate $\frac{185}{553} = 33\%$, Best Poster Award, one out of 145 papers)** [PDF](#)
68. Joseph Roth, Andrew Carriveau, **Xiaoming Liu**, Anil Jain, "Learning-based Ballistic Breech Face Impression Image Matching," in *Proceedings of the IEEE Seventh International Conference on Biometrics: Theory, Applications and Systems (BTAS 2015)*, Arlington, Virginia, September 2015. **(Oral presentation)** [PDF](#)
69. Amin Jourabloo*, Xi Yin*, **Xiaoming Liu**, "Attribute-preserved Face De-identification," in *Proceedings of the 8th IAPR International Conference on Biometrics (ICB) 2015*, Phuket, Thailand, May 19-22, 2015. (* denotes equal contribution by the authors) [PDF](#)
70. Seyed Morteza Safdarnejad, **Xiaoming Liu**, Lalita Udpa, Brooks Andrus, John Wood, Dean Craven, "Sports Videos in the Wild (SVW): A Video Dataset for Sports Analysis," in *Proceedings of the 11th IEEE International Conference on Automatic Face and Gesture Recognition (FG) 2015*, Ljubljana, Slovenia, May 4-8, 2015. **(Acceptance rate $\frac{84}{221} = 38\%$)** [PDF](#)
71. Joseph Roth, **Xiaoming Liu**, "On the Exploration of Joint Attribute Learning for Person Re-identification," in *Proceedings of the 12th Asian Conference on Computer Vision (ACCV) 2014*, Singapore, Nov 1-5, 2014. **(Acceptance rate 27%)** [PDF](#)
72. Xi Yin, **Xiaoming Liu**, Jin Chen, David Kramer, "Multi-leaf Tracking from Fluorescence Plant Videos," in *Proceedings of the IEEE International Conference on Image Processing (ICIP) 2014*, Paris, France, Oct 27-30, 2014. **(The top 10% of accepted papers)** [PDF](#)
73. Seyed Morteza Safdarnejad, **Xiaoming Liu**, Lalita Udpa, "Genre Categorization of Amateur Sports Videos in the Wild," in *Proceedings of the IEEE International Conference on Image Processing (ICIP) 2014*, Paris, France, Oct 27-30, 2014. [PDF](#)
74. Muhammad Jamal Afridi, **Xiaoming Liu**, J. Mitchell McGrath, "An Automated System for Plant-level Disease Rating in Real Fields," in *Proceedings of the 22nd International Conference on Pattern Recognition (ICPR) 2014*, Stockholm, Sweden, August 24-28, 2014. **(Oral presentation, acceptance rate $\frac{198}{1409} = 14\%$, Best Industry Related Paper Award (BIRPA) runner-up, 4 out of 792 papers)** [PDF](#)
75. Xi Yin, **Xiaoming Liu**, Jin Chen, David Kramer, "Multi-leaf Alignment from Fluorescence Plant Images," in *Proceedings of the IEEE Winter Conference on Applications of Computer Vision (WACV) 2014*, Steamboat Springs, CO, March 24-26, 2014. **(Best Student Paper Award, 3 out of 152 papers)** [PDF](#)
76. Muhammad Jamal Afridi, Chun Liu, Christina Chan, Seungik Baek, **Xiaoming Liu**, "Image Segmentation of Mesenchymal Stem Cells in Diverse Culturing Conditions," in *Proceedings of the IEEE Winter Conference on Applications of Computer Vision (WACV) 2014*, Steamboat Springs, CO, March 24-26, 2014. [PDF](#)
77. Joseph Roth, **Xiaoming Liu**, Arun Ross, and Dimitris Metaxas, "Biometric Authentication via Keystroke Sound," in *Proceedings of the 6th IAPR International Conference on Biometrics (ICB) 2013*, Madrid, Spain, June 4-7, 2013. **(Oral presentation, Acceptance rate $\frac{24}{212} = 11\%$)** [PDF](#)

78. Albert Montillo, Qi Song, **Xiaoming Liu**, and James Miller, "Parsing Radiographs by Integrating Landmark Set Detection and Multi-object Active Appearance Models," in *Proceedings of the SPIE Medical Imaging on Image Processing*, Orlando, Florida, February 10-12, 2013. **(Oral presentation)** [PDF](#)
79. Jixu Chen, **Xiaoming Liu**, and Siwei Lyu, "Boosting with Side Information," in *Proceeding of 11th Asian Conference on Computer Vision (ACCV) 2012*, Daejeon, Korea, November 5-9, 2012. [PDF](#) **(Acceptance rate $\frac{231}{869} = 26.6\%$)**
80. Yinfu Feng, Jun Xiao, Yueting Zhuang, and **Xiaoming Liu**, "Adaptive Unsupervised Multi-View Feature Selection for Visual Concept Recognition," in *Proceeding of 11th Asian Conference on Computer Vision (ACCV) 2012*, Daejeon, Korea, November 5-9, 2012. [PDF](#) **(Acceptance rate $\frac{231}{869} = 26.6\%$)**
81. Jixu Chen, **Xiaoming Liu**, Peter Tu, and Amy Aragonés, "Person-specific Expression Recognition with Transfer Learning," in *Proceeding of the IEEE International Conference on Image Processing (ICIP) 2012*, Orlando, Florida, September 30-October 3, 2012. [PDF](#)
82. **Xiaoming Liu**, Pavan Annangi, Mithun Gupta, Bing Yu, Dirk Padfield, Jyotirmoy Banerjee, and Kajoli Krishnan, "Learning-based Scan Plane Identification From Fetal Head Ultrasound Images," in *Proceedings of the SPIE Medical Imaging on Ultrasonic Imaging, Tomography, and Therapy*, San Diego, California, February 5-6, 2012. **(Oral presentation)** [PDF](#)
83. Yimeng Zhang, Weina Ge, Ming-Ching Chang, and **Xiaoming Liu**, "Group Context Learning for Event Recognition," in *Proceedings of the IEEE Workshop on Applications of Computer Vision 2012 (WACV 2012)*, Breckenridge, Colorado, Jan 9-11, 2012. **(Oral presentation, acceptance rate $\frac{12}{142} = 8\%$, Best Student Paper Award, 2 out of 63 papers)** [PDF](#)
84. Ya Xue and **Xiaoming Liu**, "Image Congealing Via Efficient Feature Selection," in *Proceedings of the IEEE Workshop on Applications of Computer Vision 2012 (WACV 2012)*, Breckenridge, Colorado, Jan 9-11, 2012. [PDF](#)
85. Ting Yu, **Xiaoming Liu**, Ser-Nam Lim, Nils Krahnstoeber, and Peter Tu, "Automatic Surveillance Video Matting Using a Shape Prior," in *Proceedings of the 11th IEEE Workshop on Visual Surveillance (conjunction with ICCV 2011)*, Barcelona, Spain, November 6-13, 2011. [PDF](#)
86. **Xiaoming Liu**, "Optimal Gradient Pursuit for Face Alignment," in *Proceedings of the International Conference on Automatic Face and Gesture Recognition 2011*, Santa Barbara, California, March 21-25, 2011. [PDF](#)
87. Jilin Tu, Brandon Laflen, **Xiaoming Liu**, Musodiq O Bello, Jens Rittscher, Peter Tu, "LPSM: Fitting Shape Model by Linear Programming," in *Proceedings of the International Conference on Automatic Face and Gesture Recognition 2011*, Santa Barbara, California, March 21-25, 2011. [PDF](#)
88. Jilin Tu, **Xiaoming Liu**, and Peter Tu, "Site-adaptive Face Recognition," in *IEEE Fourth International Conference on Biometrics: Theory, Applications and Systems (BTAS 10)*, Arlington, Virginia, September 27-29, 2010. [PDF](#)
89. Yan Tong, Frederick W. Wheeler, and **Xiaoming Liu**, "Improving Biometric Identification Through Quality-based Face and Fingerprint Biometric Fusion," in *Proceeding of IEEE Computer Society Workshop on Biometrics (conjunction with CVPR 2010)*, San Francisco, California, June 18, 2010. [PDF](#)
90. Necmiye Ozay, Yan Tong, Frederick W. Wheeler, and **Xiaoming Liu**, "Improving Face Recognition with a Quality-based Probabilistic Framework," in *Proceeding of IEEE Computer Society Workshop on Biometrics (conjunction with CVPR 2009)*, Miami Beach, Florida, June 26, 2009. **Best Paper Honorable Mention Award.** [PDF](#)
91. **Xiaoming Liu** and Tsuhan Chen, "Face Mosaicing for Pose Robust Video-Based Recognition," in *Proceeding of 8th Asian Conference on Computer Vision (ACCV) 2007*, Tokyo, Japan, November 18-22, 2007. **(Acceptance rate 32%)** [PDF](#)
92. Frederick Wheeler, **Xiaoming Liu**, and Peter Tu, "Multi-Frame Super-Resolution for Face Recognition," in *Proceeding of IEEE Conference on Biometrics: Theory, Applications and Systems (BTAS) 2007*, Washington D.C., September 27-29, 2007. [PDF](#)
93. **Xiaoming Liu**, Frederick Wheeler, and Peter Tu, "Improved Face Model Fitting on Video Sequences," in *Proceeding of British Machine Vision Conference (BMVC) 2007*, Warwick, UK, September 10-13, 2007. **(Acceptance rate 39%)** [PDF](#)
94. **Xiaoming Liu**, Nils Krahnstoeber, Ting Yu, and Peter Tu, "What are Customers Looking at?" in *Proceeding of IEEE International Conference on Advanced Video and Signal-Based Surveillance (AVSS) 2007*, London, UK, September 5-7, 2007. **(Oral presentation)** [PDF](#)

95. Frederick Wheeler, **Xiaoming Liu**, Peter Tu, and Ralph Hoctor, "Multi-Frame Image Restoration for Face Recognition," in *Proceeding of IEEE Signal Processing Society Workshop on Signal Processing Applications for Public Security and Forensics (SAFE) 2007*, Washington, D.C., 2007. [PDF](#)
96. **Xiaoming Liu**, Peter Tu, and Frederick Wheeler, "Face Model Fitting on Low Resolution Images," in *Proceeding of British Machine Vision Conference (BMVC) 2006*, Vol.3, pp.1079-1088, Edinburgh, UK, September 4-7, 2006. **(Acceptance rate 25%)** [PDF](#)
97. Rodney Goh, Lihao Liu, **Xiaoming Liu**, and Tsuhan Chen, "The CMU Face In Action (FIA) Database," in *Proceeding of IEEE International Workshop on Analysis and Modeling of Faces and Gestures, held in conjunction with ICCV 2005*, pp.255-263, Beijing, China, October 16, 2005. [PDF](#)
98. **Xiaoming Liu**, Peter Tu, Jens Rittscher, Amitha Perera, and Nils Krahnstoeber, "Detecting And Counting People In Surveillance Applications," in *Proceeding of IEEE International Conference on Advanced Video and Signal-Based Surveillance (AVSS) 2005*, Teatro Sociale, Como, Italy, September 15-16, 2005. [PDF](#)
99. **Xiaoming Liu** and Tsuhan Chen, "Geometry-assisted Statistical Modeling for Face Mosaicing," in *Proceeding of the IEEE International Conference on Image Processing (ICIP) 2003*, Vol.2, pp.883-886, Barcelona, Spain, 2003. [PDF](#)
100. **Xiaoming Liu** and Tsuhan Chen, "Shot Boundary Detection Using Temporal Statistics Modeling," in *Proceeding of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2002*, Vol.4, pp.3389-3392, Orlando, Florida, May 13-17, 2002. **(Oral presentation)** [PDF](#)
101. **Xiaoming Liu**, Tsuhan Chen, and B.V.K. Vijaya Kumar, "On Modeling Variations For Face Authentication," in *Proceedings of the International Conference on Automatic Face and Gesture Recognition 2002*, pp.384-389, Washington D.C., May 20-21, 2002. [PDF](#)
102. Tsuhan Chen, Yu-Feng Hsu, **Xiaoming Liu**, and Wende Zhang, "Principle Component Analysis and its Variants for Biometrics," in *Proceedings of the IEEE International Conference on Image Processing (ICIP) 2002*, Vol.1, pp.61-64, Rochester, NY, September 2002. [PDF](#)
103. Yueting Zhuang, **Xiaoming Liu**, and Yunhe Pan, "Apply Semantic Template to Support Content-based Image Retrieval," in *Proceedings of SPIE Vol.3972, Storage and Retrieval for Media Databases 2000*, San Jose, California, January 26-28, 2000.
104. **Xiaoming Liu**, Yueting Zhuang, and Yunhe Pan, "Webscope-CBVR: A Customized Content-based Search Engine for Video on WWW," in *Proceedings of SPIE Vol.3974, Image and Video Communications and Processing 2000*, San Jose, California, January 23-28, 2000.
105. **Xiaoming Liu**, Yueting Zhuang, and Yunhe Pan, "Semantic Template: A Robust Approach to Support Content-based Image Retrieval," in *Proceeding of The 6th International Conference on Computer-Aided Design and Computer Graphics (CAD/Graphics) 1999*, Shanghai, China, December 1-5, 1999.
106. Yueting Zhuang, **Xiaoming Liu**, and Yunhe Pan, "Query By Video Clip," in *Proceeding of The 6th International Conference on Computer-Aided Design and Computer Graphics (CAD/Graphics) 1999*, Shanghai, China, December 1-5, 1999.
107. **Xiaoming Liu**, Yueting Zhuang, and Yunhe Pan, "A New Approach to Retrieve Video by Example Video Clip," in *Proceeding of The 7th ACM International Multimedia Conference (Multimedia 1999)*, Orlando, Florida, October 30-November 5, 1999. [PDF](#)
108. Yueting Zhuang, **Xiaoming Liu**, and Yunhe Pan, "Video Motion Capture Using Feature Tracking and Skeleton Reconstruction," in *Proceeding of IEEE International Conference on Image Processing (ICIP) 1999*, Vol.4, pp.232-236, Kobe, Japan, October 25-28, 1999. [PDF](#)
109. **Xiaoming Liu**, Yueting Zhuang, Yi Wu, and Yunhe Pan, "Video Based Human Motion Capture," in *Proceeding of IEEE Workshop on Multimedia Signal Processing*, Copenhagen, Denmark, September 13-15, 1999.
110. **Xiaoming Liu**, Yueting Zhuang, and Yunhe Pan, "Content-based Video Retrieval by Example Clip on WWW," in *Proceeding of 5th Eurographics International Workshop on Multimedia (EG MULTIMEDIA 1999)*, Milan, Italy, September 7-8, 1999.

Conference Abstracts/Posters (peer reviewed)

111. Lisa M. Kopf, Simone Graetzer, Rahul Shrivastav, **Xiaoming Liu**, Jina Huh, "Using Videos to Promote Awareness and Behavior Change for Voice in Parkinsons Disease," in *American Speech Language Hearing Association (ASHA) Annual Convention*, Denver, Colorado, November 12-14, 2015.

112. Bara Aldasouqi, Amin Jourabloo, Joseph Roth, **Xiaoming Liu**, Seungik Baek, Toward automatic wall thickness measurements for abdominal aortic aneurysm images, in *Computer Methods in Biomechanics and Biomedical Engineering (CMBBE)*, Montreal, Canada, September 1-5, 2015.
113. Muhammed Jamal Afridi, Matt Latourette, Margaret F. Bennewitz, Arun Ross, **Xiaoming Liu**, and Erik M. Shapiro, "Machine Learning and Computer Vision based Quantification of Cell Number in MRI-based Cell Tracking," in *Proc. Intl. Soc. Magn. Reson. Med.*, 23:, Toronto, Canada, 2015.
114. **Xiaoming Liu** and Tsuhan Chen, "Online Modeling and Tracking of Pose-Varying Faces in Video," in *Video Proceedings of the Computer Vision and Pattern Recognition Conference (CVPR) 2005*, San Diego, CA, June 20-25, 2005.
115. **Xiaoming Liu** and Tsuhan Chen, "Pose Robust Face Recognition Based on Mosaicing –An Example Usage of Face In Action (FIA) Database," in *Demo session of the IEEE International Conference on Computer Vision and Pattern Recognition (CVPR) 2004*, Washington, D.C., June 27-July 2, 2004.

Invited Papers

116. Ke Ning, **Xiaoming Liu**, Fei Wu, Multi-stream CNNs for video action recognition, in the ActivityNet Large Scale Activity Recognition Challenge Workshop (in conjunction with CVPR 2016), Las Vegas, Nevada, July 1, 2016.
117. Peter Tu, Fred Wheeler, Nils Krahnstoeber, Thomas Sebastian, Jens Rittscher, **Xiaoming Liu**, Amitha Perera, and Gianfranco Doretto, "Surveillance Video Analytics for Large Camera Networks," in *SPIE Newsroom*, June 2007.
118. Peter Tu, Gianfranco Doretto, Nils Krahnstoeber, Amitha Perera, Frederick Wheeler, **Xiaoming Liu**, Jens Rittscher, Thomas Sebastian, Ting Yu, and Kevin Harding, "An Intelligent Video Framework for Homeland Protection," in *Proceedings of SPIE Defence and Security Symposium - Unattended Ground, Sea, and Air Sensor Technologies and Applications IX*, Orlando, Florida, April 9-13, 2007.
119. Yueting Zhuang, **Xiaoming Liu**, and Yunhe Pan, "Construct Semantic Net For Video Database," in *Proceeding of First International Workshop on Intelligent Multimedia Computing and Networking*, Taj Mahal, Atlantic City, New Jersey, February 27-March 3, 2000.

Theses

120. **Xiaoming Liu**, "Pose Robust Video-Based Face Recognition," Ph.D. Thesis, Carnegie Mellon University, Pittsburgh, PA, October 2004.
121. **Xiaoming Liu**, "Study on Video based Human Animation Techniques," Master Thesis, Zhejiang University, Hangzhou, P.R.China, January 2000.

Papers Under Review

122. Xiangyu Zhu, **Xiaoming Liu**, Zhen Lei, Stan Li, "Face Alignment Across Large Poses: A 3D Solution," under review in *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, October 2016. (Major revision)
123. Luan Tran, Xi Yin, **Xiaoming Liu**, "Representation Learning by Rotating Your Faces," under review in *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, May 2017. [arXiv](#)
124. Feng Liu, Dan Zeng, **Xiaoming Liu**, Qijun Zhao, "Joint Face Alignment and 3D Face Reconstruction with Application to Face Recognition," under review in *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, June 2017.
125. Xi Yin, **Xiaoming Liu**, "Multi-Task Convolutional Neural Network for Face Recognition," under review in *IEEE Transactions on Image Processing*, April 2017. (Major revision) [arXiv](#)
126. Songyang Zhang, **Xiaoming Liu**, Jun Xiao, "On Geometric Features for Skeleton-Based Action Recognition using Multilayer LSTM Networks," under review in *IEEE Transactions on Multimedia*, May 2017.

127. Gee-Sern Hsu, Yi-Tseng Cheng, Moi Hoon Yap, Choon Ching Ng, **Xiaoming Liu**, “Soft Boundary Regression with Generalized Biologically Inspired Features for Age Estimation,” under review in IEEE Transactions on Multimedia, August 2016.
128. Yaojie Liu, Amin Jourabloo, William Ren, **Xiaoming Liu**, “Dense Face Alignment,” under review in ICCV 2017 workshop, July 2017.

Patents

1. Erik Shapiro, Muhammad Jamal Afridi, Arun Ross, and **Xiaoming Liu**, “System and Method for Quantifying Cell Numbers in Magnetic Resonance Imaging (MRI),” U.S. Serial No. 13/775,363, filed on Feb 25, 2016.
2. Stephen Hsu, **Xiaoming Liu**, and Alex Liu, “Online Exam Proctoring System,” U.S. Serial No. 13/775,363, filed on Feb 25, 2013.
3. Kirk Lars Bruns, **Xiaoming Liu**, et al., “System and Methods for Emotive Software Usability,” U.S. Serial No. 13/452,329, filed on Apr 20, 2012.
4. **Xiaoming Liu**, Ya Xue, Peter Tu, “Image Congealing Via Efficient Feature Selection,” U.S. Serial No. 13/346,479, filed on Jan 9, 2012.
5. Peter Tu, **Xiaoming Liu**, et al., “Usage Measurement Methods for Interactive Advertising,” U.S. Serial No. 13/308,386, filed on Nov 30, 2011.
6. Peter Tu, **Xiaoming Liu**, et al., “Episodic Approaches to Interactive Advertising,” U.S. Serial No. 13/308,394, filed on Nov 30, 2011.
7. Peter Tu, **Xiaoming Liu**, et al., “An analytics-to-content interface for interactive advertising applications,” U.S. Serial No. 13/308,376, filed on Nov 30, 2011.
8. Ting Yu, **Xiaoming Liu**, et al., “Automatic Surveillance Video Matting Using a Shape Prior,” U.S. Serial No. 13/290928, filed on Nov 7, 2011.
9. **Xiaoming Liu**, et al., “Optimal Gradient Pursuit for Image Alignment,” U.S. Patent No. 8478077, issued on Jul 2, 2013.
10. Jilin Tu, **Xiaoming Liu**, et al., “Optimal Subspaces for Face Recognition,” U.S. Patent No. 8498454, issued on Jul 30, 2013.
11. **Xiaoming Liu**, et al., “System and Method for Automatic Landmark Labeling with Minimal Supervision,” U.S. Patent No. 8442330, issued on May 14, 2013.
12. Fred Wheeler, **Xiaoming Liu**, et al., “Assessing biometric sample quality using wavelets and a boosted classifier,” U.S. Patent No. 8442279, issued on May 14, 2013.
13. **Xiaoming Liu**, et al., “Improved Face Model Fitting on Video Sequences,” U.S. Serial No. 12/100620, filed on Apr 10, 2008.
14. Robert Kaucic, **Xiaoming Liu**, et al., “A Screening Automated Defect Recognition System For Inspecting Turbine Blades,” U.S. Serial No. 11/851422, filed on Sep 7, 2007.
15. Amitha Perera, **Xiaoming Liu**, et al., “Automatic Pose and Trajectory Tracking in Sports Video,” U.S. Serial No. 11/774958, filed on Jul 9, 2007.
16. **Xiaoming Liu**, et al., “Generic Face Alignment via Boosting,” U.S. Serial No. 60/943316, filed on Jun 12, 2007.
17. **Xiaoming Liu**, et al., “Automatic Gaze Estimation for Football Players,” U.S. Serial No. 11/752030, filed on May 22, 2007.
18. Ting Yu, **Xiaoming Liu**, et al., “Distributed Data Association and Filtering for Multiple Target Tracking,” U.S. Serial No. 60/912945, filed on Apr 20, 2007.
19. Peter Tu, **Xiaoming Liu**, et al., “Adaptive Advertisement,” U.S. Serial No. 60/908991, filed on Mar 30, 2007.
20. Gianfranco Doretto, Peter Tu, **Xiaoming Liu**, et al., “Person Reidentification,” U.S. Serial No. 07/05919, filed on Mar 8, 2007.
21. Fred Wheeler, **Xiaoming Liu**, et al., “A Method to Reconstruct High-quality Facial Images From Surveillance Video Using an Active Appearance Model,” U.S. Serial No. 60/886433, filed on Jan 24, 2007.

22. **Xiaoming Liu**, et al., “Method of Combining Images of Multiple Resolutions to Produce an Enhanced Active Appearance Model,” U.S. Patent No. 7885455, issued on Feb 8, 2011.
23. **Xiaoming Liu**, Jens Rittscher, et al., “System and Method For Automatic Person Counting And Detection Of Specific Events,” U.S. Patent No. 7596241, issued on Sep 29, 2009.

INVITED TALKS

1. July 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Tencent Youtu Lab, Shanghai, P. R. China.
2. June 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, National Taiwan University of Science & Technology.
3. Apr 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Department of Computer Science, University of Notre Dame, Southbend, IN.
4. Mar 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Adobe Research, San Jose, CA.
5. Feb 2017: Disentangled Representation Learning and Image Synthesis via Dr-GAN, National Geospatial-Intelligence Agency, Springfield, Virginia.
6. Feb 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, CVPR 2017 Area Chair Workshop, College park, MD.
7. Feb 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, FORD Research and Innovation Center, Dearborn, MI.
8. Feb 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Centre for Vision Research Seminar, York University, Toronto, Canada.
9. Feb 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Media Analytics group, NEC Labs America, Cupertino, CA.
10. Feb 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Bosch Research and Technology Center, Palo Alto, CA.
11. Dec 2016: Large-pose Face Recognition, Institute of Computing Technology, Chinese Academy of Sciences, Beijing, P. R. China.
12. Dec 2016: 2D/3D Shape Estimation and Recognition for Large-pose Faces, Horizon Robotics, Beijing, P. R. China.
13. Dec 2016: 2D/3D Shape Estimation and Recognition for Large-pose Faces, Department of Automation, Tsinghua University, Beijing, P. R. China.
14. Dec 2016: 2D/3D Shape Estimation and Recognition for Large-pose Faces, College of Computer Science, Beihang university, Beijing, P. R. China.
15. Dec 2016: High, Middle, and Low-level Vision Problems for Faces, Seoul National University, Seoul, South Korea.
16. Nov 2016: 2D/3D Shape Estimation and Recognition for Large-pose Faces, U.S. Army Research Laboratory, Adelphi, MD.
17. Oct 2016: Estimating 2D and 3D Facial Shape from Unconstrained Photos, Nanyang Technological University, Singapore.
18. Oct 2016: Estimating 2D and 3D Facial Shape from Unconstrained Photos, School of Computer Science and Engineering, Nanjing University of Science and Technology, Nanjing, P.R. China
19. Oct 2016: Estimating 2D and 3D Facial Shape from Unconstrained Photos, The 11th Chinese Conference on Biometric Recognition (CCBR2016), Chengdu, P.R. China.
20. Sep 2016: Learning to Fuse Information with Missing Modalities (Year 2), National Academy of Sciences (IC Academic Research Symposium), Washington, DC.
21. May 2016: Estimating 2D and 3D Facial Shape from Unconstrained Photos, Microsoft Research Asian, Beijing, P. R. China.
22. May 2016: Estimating 2D and 3D Facial Shape from Unconstrained Photos, Yonsei University, Seoul, South Korea.

23. May 2016: Unconstrained 3D Face Reconstruction, Institute of Automation, Chinese Academy of Sciences, Beijing, P. R. China.
24. May 2016: Estimating 2D and 3D Facial Shape from Unconstrained Photos, Institute of Computing Technology, Chinese Academy of Sciences, Beijing, P. R. China.
25. Jan 2016: Global motion compensation, Capital Normal University, Beijing, P. R. China.
26. Sep 2015: Learning to Fuse Information with Missing Modalities (Year 1), National Academy of Sciences (IC Academic Research Symposium), Washington, DC.
27. Aug 2015: Lectures on facial analysis and face recognition, Wisisoft Inc., Chengdu, P. R. China.
28. Aug 2015: Unconstrained 3D face reconstruction, College of Computer Science, Zhejiang University, Hangzhou, P. R. China.
29. July 2015: Unconstrained 3D face reconstruction, Robotics Institute VASC Seminar, Carnegie Mellon University, Pittsburgh PA.
30. July 2015: Learning-based Ballistic Breach Face Impression Image Matching, Surface & Nanostructure Metrology Group, National Institute of Standards and Technology (NIST), Gaithersburg, MD.
31. May 2015: Unconstrained 3D face reconstruction, Department of Electronic Engineering, The Chinese University of Hong Kong, Hong Kong.
32. Jan 2015: Visual Sensing and Automatic Understanding of Human Behavior, Spring 2015 Cognitive Forum, Michigan State University, East Lansing, Michigan.
33. Dec 2014: Efficient Motion-Saliency Detection and Its Application to Video Analysis, Midwest vision workshop, Chicago IL.
34. Oct 2014: Human Sensing: Efficient Visual Analysis for Faces and Hands, Toyota Technical Center, Ann Arbor, Michigan.
35. Apr 2014: Efficient Time Series Data Matching and its Application to Human Sensing, Signal processing seminar, Department of Mathematics, Michigan State University, East Lansing, Michigan.
36. Nov 2013: Efficient Time Series Data Matching and its Application to Human Sensing, Department of Computer Science, Rutgers University, New Brunswick, NJ.
37. Oct 2013: Human Sensing: Computational Approaches to Human Behavior Understanding from Visual Content, DevCon, TechSmith Inc., Lansing, Michigan.
38. Feb 2013: Human Sensing: Computational Approaches to Human Behavior Understanding from Visual Signals, Electrical and Computer Engineering Seminar Series, Michigan State University, East Lansing, Michigan.
39. Nov 2012: Computer Vision and its Applications, College of Engineering Noon-time Seminar, Michigan State University, East Lansing, Michigan.
40. Jul 2012: Facial Analysis: Theory and Applications, Advanced Multimedia Processing Lab, Cornell University, Ithaca, New York.
41. Jun 2012: Advanced Behavior Recognition in Crowded Environments, NJ Conference 2012, Washington DC.
42. Apr 2012: Facial Analysis: Theory and Applications, College of Computer Science, Zhejiang University, Hangzhou, P.R.China.
43. Mar 2012: Facial Analysis: Theory and Applications, Computer Science Departmental Colloquium, Georgia State University, Atlanta, Georgia.
44. Feb 2012: Facial Analysis: Biometrics and Beyond, Computer Science and Engineering Department Seminar, Michigan State University, East Lansing, Michigan.
45. Jan 2012: Group Context Learning for Event Recognition, IEEE Workshop on Applications of Computer Vision (WACV) 2012, Breckenridge, Colorado.
46. Oct 2011: Computer Vision-based Student Engagement Inference for Online Education (with Peter Shea), School of Education Seminar, State University of New York at Albany, Albany, New York.
47. Oct 2011: Visual Analysis via Boosted Learning, Computer Science Department Seminar, State University of New York at Albany, Albany, New York.

48. Jun 2011: Supervised and Semi-Supervised Image Alignment, Computer vision seminar, University of South Florida, Tampa, Florida.
49. Oct 2010: Supervised and Semi-Supervised Image Alignment, Computer & Information Sciences Department Colloquium, Temple University, Philadelphia, Pennsylvania.
50. Oct 2010: Supervised and Semi-Supervised Image Alignment, Electrical Engineering Department Colloquium, The City College of New York, New York City, New York.
51. Oct 2010: Intelligent Video (with Peter Tu), School of Electrical and Computer Engineering, Cornell University, Ithaca, New York.
52. Nov 2009: Image Alignment: Theory and Application, Computer Science Department Seminar, State University of New York at Albany, Albany, New York.
53. Nov 2009: Image Alignment: Theory and Application, Naval Research Laboratory, Washington DC.
54. Sep 2009: Image Alignment: Theory and Application, Artificial Intelligence Lab., Zhejiang University, Hangzhou, P. R. China.
55. Jun 2009: Improving Face Recognition with a Quality-based Probabilistic Framework, IEEE Computer Society Workshop on Biometrics (in conjunction with CVPR 2009), Miami Beach, Florida.
56. May 2008: Discriminate Image Alignment, Digital Video and Multimedia (DVMM) Lab, Columbia University, New York City, New York.
57. May 2008: Discriminate Image Alignment, Robotics Institute, Carnegie Mellon University, Pittsburgh, Pennsylvania.
58. Feb 2008: Face Alignment: Algorithms and Applications, National Sensor, Surveillance and Biometric Technologies Center Of Excellence, New York City, New York.
59. Sep 2007: What are Customers Looking at? IEEE International Conference on Advanced Video and Signal-Based Surveillance (AVSS) 2007, London, UK.
60. Aug 2007: Generative and Discriminative Face Alignment, Electrical, Computer, & Systems Engineering (ECSE) Department, Rensselaer Polytechnic Institute, Troy, New York.
61. Jun 2007: Generic Face Alignment using Boosted Appearance Model, IEEE Conference on Computer Vision Pattern Recognition (CVPR) 2007, Minneapolis, Minnesota.
62. Jun 2007: Intelligent Video for Security (with Fred Wheeler), Northeast Technology and Product Assessment Committee (NTPAC) Corrections Conference, Sturbridge, Massachusetts.
63. Apr 2007: Intelligent Video at GE, Artificial Intelligence Lab., Zhejiang University, Hangzhou, P.R.China.
64. Feb 2007: Multi-view Face Enhancement and Forensic Face Recognition (with Fred Wheeler), Identix Inc., Jersey City, New Jersey.
65. Aug 2005: Towards Intelligent Video Solutions (with Nils Krahnstoeber and Jens Rittscher), Robotics Institute, Carnegie Mellon University, Pittsburgh, Pennsylvania.
66. Sep 2004: Pose Robust Video-Based Face Recognition, Siemens Corporate Research, Princeton, New Jersey.
67. Sep 2004: Pose Robust Video-Based Face Recognition, GE Global Research, Niskayuna, New York.
68. Aug 2004: Pose Robust Video-Based Face Recognition, Epson Palo Alto Lab, Palo Alto, California.
69. May 2002: Shot Boundary Detection Using Temporal Statistics Modeling, IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2002, Orlando, Florida.
70. Feb 2001: Face Authentication with Tolerance to Expression Variations and Registration Errors, Media Site Inc., Pittsburgh, Pennsylvania.

CURRENT GRADUATE
STUDENTS

Yousef Atoum (2013-)
Xi Yin (2013-)
Amin Jourabloo (2014-)
Luan Tran (2015-)
Yaojie Liu (2016-)
Garrick Brazil (2016-)
Adam Terwilliger (2017-)
Joel Stehouwer (2017-)
Bangjie Yin (2017-)

UNDERGRAD STUDENTS ADVISED
Jacob Jensen (Fall 2013-Spring 2014)
Marco Botros (Fall 2013-Spring 2014)
Nayana Kodur (Summer 2014-Fall 2014)
Zach Richardson (Fall 2015)
Jack Dean Smith (Fall 2015-Spring 2016)
Zhiming Jiang (Summer 2016)
Ziyuan Zhang (Summer 2017)
Xiaohan Zhang (Summer 2017)

HIGH SCHOOL STUDENTS ADVISED
William Ren (Summer 2016, 2017)

GRADUATED STUDENTS **Ph.D. student advisees**

- Joseph Roth (Fall 2012-Summer 2016, CSE), “Unconstrained 3D Face Reconstruction from Photo Collections”. Recipient of the **2016 Outstanding Graduate Student Award** in the CSE Department at MSU; recipient of the **First Place of Fitch H. Beach Awards** - the highest honor among all the 2016 graduating PhD students in the College of Engineering at MSU. First job at Google@Pittsburgh.
- Muhammad Jamal Afridi (Fall 2012- Fall 2016, CSE), “Convolutional Neural Networks for Automated Cell Detection in Magnetic Resonance Imaging Data”. Co-advised with Erik Shapiro, Arun Ross. First job at 3M Company, Maplewood, MN.
- Morteza Safdarnejad (Fall 2013 - Spring 2017, ECE), “Robust Global Motion Compensation and its Applications”. Co-advised with Lalita Udpa. First job at Adobe Systems Incorporated, San Jose, CA.

M.S. student advisees

- Lingyi Wu (Fall 2012-Summer 2014, CSE), First job at Med-Care Diabetic and Medical Supplies, Inc., Boca Raton, FL.
- Liping Chen (Fall 2013-Spring 2016, CSE), First job at Amazon.com, Inc., Seattle, WA.

INTERN RESEARCHER SUPERVISION
Mahesh Ramachandran, University of Maryland at College Park, 2007. (co-supervision with Gianfranco Doretto)
Hao Wu, University of Maryland at College Park, 2007. (co-supervision with Gianfranco Doretto)
Peng Yang, Rutgers university, 2007. (co-supervision with Gianfranco Doretto)
Avinash Ravichandran, Johns Hopkins University, 2007. (co-supervision with Gianfranco Doretto)
Yilei Xu, University of California at Riverside, 2008.
Ryan Connaughton, University of Notre Dame, 2010. (co-supervision with Fred Wheeler)
Yimeng Zhang, Cornell University, 2011. (co-supervision with Ming-Ching Chang, Weina Ge) **Recipient of the prestigious GE Early Identification Award.**

VISITING SCHOLAR
Lekun Zhou, Zhejiang University (Fall 2013)
Ke Ning, Zhejiang University (Fall 2015)
Ying Tai, Nanjing University of Science and Technology (Spring 2016)
Yunfei Wang, Capital Normal University (Fall 2016)

PROFESSIONAL ACTIVITIES
Member of IEEE
Member of Sigma Xi
Program Committee

- 7th Asian Conference on Computer Vision (ACCV) 2006, Hyderabad, India, January 13-16, 2006.
- IEEE workshop on Beyond Patches (in conjunction with CVPR 2006), New York, NY, June 17, 2006.
- Workshop on Non-rigid registration and tracking through learning (in conjunction with ICCV 2007), Rio de Janeiro, Brazil, October 14, 2007.
- IEEE Workshop on Motion and Video Computing (WMVC), Copper Mountain, Colorado, January 8-9, 2008.
- International Workshop on Instinctive computing, Carnegie Mellon University, Pittsburgh, PA, June 15-16, 2009.

- 1st ACM International Workshop on Interactive Multimedia for Consumer Electronics (IMCE 2009), Beijing, China, October 23, 2009.
- Video Intelligence (VI-2010), ICCS Workshop, Amsterdam, May 30, 2010.
- IEEE International Workshop on Analysis and Modeling of Faces and Gestures (AMFG 2010, in conjunction with CVPR 2010), June 14, 2010.
- IEEE International Conference on Multimedia and Expo (ICME 2010), July 19-23, 2010.
- The 10th Asian Conference of Computer Vision (ACCV 2010), November 8-12, 2010.
- IEEE Workshop on Motion and Video Computing (WMVC), Kona, Hawaii, January 6, 2011.
- The 9th IEEE Conference on Automatic Face and Gesture Recognition (FG 2011), March 21-23, 2011.
- IEEE International Conference on Multimedia and Expo (ICME 2011) July 11-15, 2011.
- The 13th International Conference on Computer Vision (ICCV 2011), November 6-13, 2011.
- The International Workshop on Interactive Multimedia on Mobile and Portable Devices (IMMPD'11, in conjunction with ACM Multimedia 2011), November 28, 2011.
- The 1st International Conference on Pattern Recognition Applications and Methods (ICPRAM 2012), February 6-8, 2012.
- The 25th IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2012), June 18-20, 2012.
- IEEE International Conference on Multimedia and Expo (ICME 2012), July 9-13, 2012.
- The IEEE Fifth International Conference on Biometrics: Theory, Applications and Systems (BTAS 2012), September 23-27, 2012.
- The 9th IEEE Conference on Advanced Video and Signal-based Surveillance (AVSS 2012), September 18-21, 2012.
- The 2012 International Conference on Advanced Vehicle Technologies and Integration (VTI 2012), July 16-19, 2012.
- The 11th Asian Conference of Computer Vision (ACCV 2012), November 5-9, 2012.
- The IEEE Workshop on Applications of Computer Vision 2013 (WACV 2013), January 16-18, 2013.
- The 2nd International Conference on Pattern Recognition Applications and Methods (ICPRAM 2013), February 15-18, 2013.
- The 5th IEEE International Workshop on Analysis and Modeling of Faces and Gestures (AMFG2013), in conjunction with CVPR 2013, June 28, 2013.
- The IEEE Fifth International Conference on Biometrics: Theory, Applications and Systems (BTAS 2013), September 29 - October 2, 2013.
- The 1st International Workshop on Multimedia Affective Computing, in conjunction with ICME 2014, July 14, 2014.
- The workshop on Face and Facial Expression Recognition (FFER) from Real World Videos, in conjunction with ICPR 2014, Aug 24, 2014.
- The workshop on My Car Has Eyes: Intelligent Vehicle With Vision Technology, in conjunction with ACCV 2014, Nov 1, 2014.
- The 6th IEEE International Workshop on Analysis and Modeling of Faces and Gestures (AMFG2015), in conjunction with CVPR 2015, Jun 12, 2015.
- The IEEE Seventh International Conference on Biometrics: Theory, Applications and Systems (BTAS 2015), Sep 2015.
- The 2nd Computer Vision Problems in Plant Phenotyping workshop (CVPPP), in conjunction with BMVC 2015, Sep 10, 2015.
- The ACCV 2016 Workshop on Large-Scale Soft Biometrics (LSSB), Nov 2016.
- The second workshop on Face and Facial Expression Recognition (FFER 2016), in conjunction with ICPR 2016, Dec 4, 2016.
- The Workshop on Facial Informatics, in conjunction with ACCV 2016, Nov 20, 2016.
- The First International Workshop on the Bright and Dark Sides of Computer Vision: Challenges and Opportunities for Privacy and Security, in conjunction with CVPR 2017, July 21, 2017.
- The CVPR 2017 workshop on DeepVision: Temporal Deep Learning, July 26, 2017.

Program Chair

- IEEE Winter Conference on Applications of Computer Vision (WACV 2018), March 12-15, 2018.
- 9th IEEE International Conference on Biometrics: Theory, Applications and Systems (BTAS 2018), September 17-20, 2018.

Area Chair/Co-Chair

- The 21st International Conference on Pattern Recognition (ICPR 2012), November 11-15, 2012.
- The 6th IAPR International Conference on Biometrics (ICB 2013), June 4 - 7, 2013.
- Doctoral Consortium of 10th IEEE Conference on Automatic Face and Gesture Recognition (FG 2013), April 23, 2013.
- IEEE Winter Conference on Applications of Computer Vision (WACV 2014), March 24-26, 2014.
- The 11th IEEE International Conference on Advanced video and Signal-based Surveillance (AVSS 2014), August 26-29, 2014.
- The 11th IEEE Conference on Automatic Face and Gesture Recognition (FG 2015), May 4-8, 2015.
- IEEE Winter Conference on Applications of Computer Vision (WACV 2016), March 7-9, 2016.
- The 23rd International Conference on Pattern Recognition (ICPR 2016), December 4-8, 2016.
- The 12th IEEE Conference on Automatic Face and Gesture Recognition (FG 2017), May 29- June 3, 2017.
- 2017 IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2017), June 24-30, 2017.
- Tutorial Chair, IEEE Winter Conference on Applications of Computer Vision (WACV 2017), March 24-31, 2017.
- Corporate Relations Chair, International Joint Conference on Biometrics (IJCB 2017), October 1-4, 2017.
- The 19th IEEE International Conference on Image Processing (ICIP 2017), September 17-20, 2017.
- Doctoral Consortium Co-Chair, 2018 IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2018), June 18-23, 2017.

Session Chair

- The IEEE 6th International Conference on Biometrics: Theory, Applications and Systems (BTAS 2013), September 29 - October 2, 2013.
- The 7th IAPR International Conference on Biometrics (ICB 2015), May 19 - 22, 2015.
- The Midwest Vision Workshop, April 14, 2016.
- IEEE Computer Society Workshop on Biometrics, in conjunction with CVPR 2016, June 26, 2016.
- The 23rd International Conference on Pattern Recognition (ICPR 2016), December 6, 2016.
- The Midwest Vision Workshop, May 5, 2017.
- IEEE Computer Society Workshop on Biometrics, in conjunction with CVPR 2017, July 21, 2017.

Panelist

- NSF Panel on IIS-Robust Intelligence (RI) small program, March 2012.
- Technology Innovation panel on NIJ Conference, June 2012.
- NSF Panel on IIS-Robust Intelligence (RI) small program, May 29-30 2014.
- ICPR 2014 Special Panel on Industry Related Research, August 26 2014.
- “Recent Advances in Biometrics” session in the 13th Annual Smart Card Alliance Government Conference, October 30, 2014.
- NSF Panel on IIS-Research Initiation Initiative (CRII) program, Nov 17-18 2016.

Grant Review

- DARPA 2013.
- NIJ 2013, 2015.
- NSF 2015.
- Hong Kong Research Grants Council (RGC) 2013, 2014, 2015.

Ph.D. Dissertation Committee Member

- Yimeng Zhang, Cornell University.
- Kien Trung Nguyen, Michigan State University.
- Alessandra Aparecida Paulino, Michigan State University.
- Sunpreet Arora, Michigan State University.
- Lanbo She, Michigan State University.
- Liyan Wang, Michigan State University.
- Thomas Swearingen, Michigan State University.
- Denton Bobeldyk, Michigan State University.

- Shaohua Yang, Michigan State University.
- Qi Qian, Michigan State University.
- Zhichao Lu, Michigan State University.
- Shuai Yuan, Michigan State University.
- Yaohui Ding, Michigan State University.
- Mehmet Akif Alper, Michigan State University.
- Jianpeng Xu, Michigan State University.
- Yuzhen Lu, Michigan State University.
- Inci Baytas, Michigan State University.
- Vahid Mirjalili, Michigan State University.
- Rundong Zhao, Michigan State University.
- Steven Hoffman, Michigan State University.
- Seongjong Song, Yonsei University, South Korea.
- Mohammed Al-Qizwini, Michigan State University.
- Xiao Zeng, Michigan State University.
- Anurag Chowdhury, Michigan State University.
- Elham Tabassi, Michigan State University.
- Xi Peng, Rutgers University.

Associate Editor

- Neurocomputing journal (Dec 2016-).

Master Thesis Committee

- Scott Klum, Michigan State University.
- Rosemary Dutka, Michigan State University.
- Jing Yang, Michigan State University.
- Malcolm Doering, Michigan State University.
- Raghunandan Pasula, Michigan State University.
- Aaron Gonzales, Michigan State University.

Reviewing Activities for Archived Journals

- Advances in Artificial Intelligence
- IEEE Transactions on Pattern Analysis Machine Intelligence (PAMI)
- IEEE Transactions on Image Processing
- IEEE Transactions on Multimedia
- IEEE Transactions on Circuits and Systems for Video Technology (CSVT)
- IEEE Transactions on Medical Imaging
- IEEE Transactions on Human-Machine Systems
- IEEE Transactions on Information Forensics and Security
- IEEE Transactions on Systems, Man and Cybernetics, Part B
- IEEE Transactions on Neural Networks
- IEEE Signal Processing Letters
- International Journal of Computer Vision
- Computer Vision and Image Understanding
- Image and Vision Computing
- Pattern Recognition
- Pattern Recognition Letter
- Machine Vision and Applications
- EURASIP Journal on Signal Processing: Image Communication
- Neurocomputing
- Journal of Electronic Imaging
- Journal of Artificial Intelligence Research
- Turkish Journal of Electrical Engineering & Computer Sciences
- PLOS ONE
- The Visual Computer

Reviewing Activities for Conferences

- IEEE Conference on Computer Vision and Pattern Recognition
- IEEE International Conference on Computer Vision
- European Conference on Computer Vision
- Asian Conference on Computer Vision
- IEEE Winter Vision Meetings
- IEEE International Conference on Image Processing
- IEEE International Conference on Acoustics, Speech, and Signal Processing
- IEEE International Conference on Multimedia & Expo
- IEEE International Symposium on Circuits and Systems
- International Conference on Pattern Recognition
- SIGGRAPH Asia

Services

- Graduate Studies and Research Committee Member, MSU CSE Department, Fall 2012-Spring 2014, Fall 2015, Spring 2016.
- Faculty advisor, NSF-sponsored Research Experience for Teacher (RET) program at MSU, Summer 2013, 2014, 2015.
- Colloquium Committee Co-Chair, MSU CSE Department, Fall 2013-Spring 2015.
- Instructor, MSU Grandparent University, Summer 2014.
- Faculty Search Committee Member, MSU CSE Department, Fall 2014-Spring 2015.
- Faculty Search Committee Member, MSU CSE Department, Fall 2015-Spring 2016.
- University Council/Faculty Senate representative, MSU, Fall 2014-present.
- Faculty mentor for Autonomous Ground Vehicle Research Club, Michigan State University, Fall 2016-present.
- Mentor of the CVPR 2017 Doctoral Consortium (DC), July 24, 2017.

Other Activities

- Review book proposal submitted to the engineering technology editorial team at John Wiley and Sons, Ltd
- Judge panel, MEng student projects evaluation, School of Electrical and Computer Engineering, Cornell University, Ithaca, New York, May 2010
- Initiate “Rosenblum Undergraduate Research Opportunity Award (RUROA)” at MSU CSE Department, Fall 2013.
- Organizer of the Multi-group seminar in CSE since Spring 2015. This seminar brings together ~30 MSU graduate students in the area of computer vision, pattern recognition and biometrics, and organizes weekly presentations for students to share progress and research ideas.
- Member of the advisory committee of the 5-year AI flagship project in Korea titled “Intelligent interaction based on context awareness and intention understanding”, starting April 2017.
- Technical Activities Committee member of IEEE Biometrics Council, starting June 2017.