

Xiaoming LIU

CONTACT INFORMATION

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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.

EDUCATION

Carnegie Mellon University, Pittsburgh, PA. USA

Ph.D., Electrical and Computer Engineering

October, 2004

- 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)

Zhejiang University, Hangzhou, Zhejiang, P.R. China

M.S., Computer Science and Engineering

March, 2000

- Dissertation Title: "Study on Video based Human Animation Techniques"
- Advisor: Prof. Yueting Zhuang

Beijing Information Technology Institute, Beijing, P.R.China

B.A., Computer Science and Engineering

July, 1997

EXPERIENCE

Oct 2022- Anil K. and Nandita Jain Endowed Professor of Engineering, Michigan State University, East Lansing, MI

Aug 2021- Visiting Researcher Scientist, Google Research, Mountain View, CA

Jan 2021- MSU Foundation Professor, Department of Computer Science and Engineering, Michigan State University, East Lansing, MI

Jul 2020- Professor, Department of Computer Science and Engineering, Michigan State University, East Lansing, MI

Jul 2018-Jun 2020 Associate Professor with Tenure, Department of Computer Science and Engineering, Michigan State University, East Lansing, MI

Aug 2012-Jun 2018 Tenure-track Assistant Professor, Department of Computer Science and Engineering, Michigan State University, East Lansing, MI

Nov 2004-Aug 2012 Computer Scientist, Visualization & Computer Vision Lab, GE Global Research, Niskayuna, NY

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

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

HONORS AND
AWARDS

Best Paper Award as a co-author at the 21st Annual International Conference on Mobile Systems, Applications and Services (MobiSys '23)

2023 Withrow Distinguished Scholar–Senior Award. Established by the Withrow family to recognize faculty of the MSU College of Engineering who have demonstrated excellence in scholarly activities.

IEEE Fellow: for contributions to facial image analysis and recognition, Nov 2022.

Anil K. and Nandita Jain Endowed Professor of Engineering: one of the most prestigious endowed faculty appointments in Michigan State University. Oct 2022.

MSU Foundation Professor: one of the most prestigious endowed professorships in Michigan State University. Jan 2021.

Fellow of International Association for Pattern Recognition (IAPR) 2020: “For contributions to face and video analysis”.

Best Oral Paper Award for the paper “UGLLI Face Alignment: Estimating Uncertainty with Gaussian Log-Likelihood Loss” at the First Workshop on Statistical Deep Learning in Computer Vision (SDLCV) 2019.

Finalist of the CVPR 2019 Best Paper Award for my students’ work of “Deep Tree Learning for Zero-shot Face Anti-Spoofing”.

2018 Withrow Distinguished Scholar–Junior Award. Established by the Withrow family to recognize faculty of the MSU College of Engineering who have demonstrated excellence in scholarly activities.

Invited participant, Microsoft Research Faculty Summit 2017.

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

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

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

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

GRANTS & PROJECTS Total funding during GE employment was **\$2.95M**. Total funding during MSU employment is **\$27.0M**, where my portion is **\$9.6M**.

- **Principal Investigator**, “Physics-driven Modeling and Learning for Person Recognition at a Distance and Altitude,” IARPA, Co-PI Dr. Arun Ross, Dr. Anil Jain, Dr. Atlas Wang (UT Austin), Dr. Stanley Chan (Purdue), Dr. Humphrey Shi (U Oregon), \$12.5M, 11/21-10/25.
- **Principal Investigator**, “Computer vision research,” Urus Entertainment Inc., Research Gift, \$70K, 5/21-5/22.
- **Principal Investigator**, “Intelligent Diagnosis for Machine and Human-Centric Adversaries,” DARPA Reverse Engineering of Deceptions (RED) program, Co-PI, Dr. Sijia Liu and Dr. Xue Lin (Northeastern University), \$2M, 11/20-4/24.
- **Principal Investigator**, “Computer vision research,” Qualcomm Technologies Inc., Research Gift, Co-PI, Dr. Yiyong Tong, \$125K, 3/20-2/22.
- **Principal Investigator**, “Face manipulation detection,” Facebook, Co-PI, Dr. Anil Jain, \$387K, 6/20-6/22.
- **Principal Investigator**, “3D vehicle detection and reconstruction,” Ford-MSU Innovation Alliance, \$400K, 3/19-12/22.
- **Principal Investigator**, “SCH: INT: Collaborative Research: Unobtrusive sensing and motivational feedback for family wellness” National Science Foundation, Co-PI, Dr. Wei Peng, \$365K, 8/19-8/22.
- **Principal Investigator**, “On the Study of Bias in Face Recognition,” National Institute of Standards and Technology, \$147K, 9/19-12/21.
- **Principal Investigator**, “Computer vision research,” Facebook Reality Lab, Research Gift, \$25K, 5/19-10/19.
- **Principal Investigator**, “Computer vision research,” Incode Inc., Research Gift, \$30K, 1/19-12/19.
- **Principal Investigator**, “Group Travel Grant for the Doctoral Consortium of the IEEE Conference on Computer Vision and Pattern Recognition,” National Science Foundation, \$26K, 6/18-10/18.
- **Principal Investigator**, “Person Identification at a Distance,” Army Research Office, \$500K, 6/18-5/21.
- **Principal Investigator**, “Computer vision research,” Deepcam Inc., Research Gift, \$30K, 9/17-8/18.
- **Principal Investigator**, “Accurate 3D Object Classification in Open World,” Office of Naval Research, \$300K, 6/17-5/20.
- **Principal Investigator**, “Computer vision research,” Adobe Research, Research Gift, \$17K, 9/17-3/18.
- **Principal Investigator**, “Gait-based Rider Authentication for Autonomous Carsharing,” Ford-MSU Innovation Alliance, \$175K, 1/17-3/19.
- **Co-Principal Investigator**, “Presentation Attack Detection: Solutions for Fingerprints, Face and Iris Systems,” IARPA, PI Dr. Arun Ross, \$6.86M, 1/17-2/22.
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, \$288K, 1/17-10/22.
- **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, \$2.10M, 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, 05/15-12/19.
- **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
- **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.

TEACHING

CSE 471: Media Processing and Multimedia, Spring 2014-2018, 2020

CSE 891-006: Computer Vision Seminar, Spring 2013.

CSE 803 Computer Vision: Fall 2012-2017, 2019-2022.

Teaching Assistant for Signal and Systems in CMU: Gave recitations, directed labs, prepared homework solutions, **Carnegie Mellon University**, Pittsburgh, PA. Fall 2002 & Fall 2003.

PUBLICATIONS

[Google Scholar](#) lists my **h-index** as **71**, with over 20K citations.

Journal Articles

1. Feng Liu, **Xiaoming Liu**, “On Learning Implicit Functions for Topology-Varying Dense 3D Shape Correspondence,” in IEEE Transactions on Pattern Analysis Machine Intelligence (PAMI) (in press), Nov 2022. [arXiv](#)
2. Xiaohong Liu, Yaojie Liu, Jun Chen, **Xiaoming Liu**, “PSSC-Net: Progressive Spatio-Channel Correlation Network for Image Manipulation Detection and Localization,” in IEEE Transactions on Circuits and Systems for Video Technology Volume 32, Issue 11, Pages 7505-7517, Nov 2022. [arXiv](#)
3. Yaojie Liu, **Xiaoming Liu**, “On Learning Deep Tree Network for Zero-shot Face Anti-Spoofing,” in IEEE Transactions on Pattern Analysis Machine Intelligence (PAMI), doi: 10.1109/TPAMI.2022.3176387, May 2022. [arXiv](#)
4. Mehdi Bahri, Eimear O’ Sullivan, Shunwang Gong, Feng Liu, **Xiaoming Liu**, Michael Bronstein, Stefanos Zafeiriou, “Shape My Face: Registering 3D Face Scans by Surface-to-Surface Translation,” International Journal of Computer Vision (IJCV), 129, pages 2680-2713, 2021. [PDF](#)
5. Pengyu Chu, Zhaojian Li, Kyle Lammers, Renfu Lu, **Xiaoming Liu**, “DeepApple: Deep Learning-based Apple Detection using a Suppression Mask R-CNN,” in Pattern Recognition Letters, 147: 206-211 (2021). [PDF](#)
6. Ziyuan Zhang, Luan Tran, Feng Liu, **Xiaoming Liu**, “On Learning Disentangled Representations for Gait Recognition,” in IEEE Transactions on Pattern Analysis Machine Intelligence (PAMI), doi:10.1109/TPAMI.2020.2998797, May 2020. [arXiv](#).

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7. Tian Xie, Guan-Hua Tu, Bangjie Yin, Chi-Yu Li, Chunyi Peng, Mi Zhang, Hui Liu, **Xiaoming Liu**, “The Untold Secrets of WiFi-Calling Services: Vulnerabilities, Attacks, and Countermeasures,” in IEEE Transactions on Mobile Computing, Volume 20, Issue 11, Pages 3131-3147, doi:10.1109/TMC.2020.2995509, NOVEMBER 2021. [PDF](#)
 8. Luan Tran, **Xiaoming Liu**, “On Learning 3D Face Morphable Model from In-the-wild Images,” in IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), Vol. 43, No. 1, pp. 157-171, January 2021. [arXiv PDF](#)
 9. Feng Liu, Qijun Zhao, **Xiaoming Liu**, Dan Zeng, “Joint Face Alignment and 3D Face Reconstruction with Application to Face Recognition,” in IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), Vol. 42, No. 3, pp. 664-678, March 2020. [arXiv](#)
 10. Luan Tran, Xi Yin, **Xiaoming Liu**, “Representation Learning by Rotating Your Faces,” in IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), Vol. 41, No. 12, pp. 3007-3021, Dec 2019. [arXiv](#)
 11. Xiangyu Zhu, **Xiaoming Liu**, Zhen Lei, Stan Li, “Face Alignment in Full Pose Range: A 3D Total Solution,” in IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), Vol. 41, No. 1, pp.78-92, January 2019. [PDF Supplemental](#)
 12. Songyang Zhang, Yang Yang, Jun Xiao, **Xiaoming Liu**, Yi Yang, Yueting Zhuang, “Fusing Geometric Features for Skeleton-Based Action Recognition using Multilayer LSTM Networks,” in IEEE Transactions on Multimedia, Volume 20, Issue 9, pp. 2330-2343, September 2018. [PDF](#)
 13. Xi Yin, **Xiaoming Liu**, Jin Chen, David Kramer, “Joint Multi-Leaf Segmentation, Alignment, and Tracking from Fluorescence Plant Videos,” IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), Vol. 40, No. 6, pp.1411-1423, June 2018. [arXiv](#)
 14. Xi Yin, **Xiaoming Liu**, “Multi-Task Convolutional Neural Network for Pose-Invariant Face Recognition,” in IEEE Transactions on Image Processing, Volume 27, Issue 2, pp.964-975, February 2018. [arXiv](#)
 15. Joseph Roth, Yiyong Tong, **Xiaoming Liu**, “Adaptive 3D Face Reconstruction from Unconstrained Photo Collections,” IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), Vol. 39, No. 11, pp.2127-2141, November 2017. [PDF](#)
 16. 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, Volume 78, Issue 5, pp.1991-2002, November 2017. [PDF Supplementary](#)
 17. 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), Volume 24, Issue 1, pp. 152-162, January 2018 = Proc. of IEEE Conference on Visual Analytics Science and Technology (VAST), Oct. 1-6, 2017, in Phoenix, Arizona. [PDF](#)
 18. Amin Jourabloo, **Xiaoming Liu**, “Pose-Invariant Face Alignment via CNN-based Dense 3D Model Fitting,” International Journal of Computer Vision (IJCV), Volume 124, Issue 2, pp.187-203, September 2017. [PDF](#)
 19. 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](#)
 20. Zhong Luan, Yuanyuan Shang, Xiuzhuang Zhou, Hui Ding, Guodong Guo, **Xiaoming Liu**, “Fast Single Image Dehazing Based on A Regression Model,” Neurocomputing, Volume 245, Pages 10-22, July 2017. [PDF](#)
 21. 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](#)
 22. 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](#)
 23. 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](#)
 24. 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](#)

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25. 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](#)
 26. 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, August 2015. [PDF](#)
 27. 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](#)
 28. 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, February 2015. [PDF](#)
 29. 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, October 2014. [PDF](#)
 30. Jixu Chen, **Xiaoming Liu**, "Transfer Learning with One-Class Data," *Pattern Recognition Letters*, Vol. 37, pp.32-40, February 2014. [PDF](#)
 31. Jixu Chen, **Xiaoming Liu**, Peter Tu and Amy Aragonés, "Learning Person-specific Models for Expression and Action Unit Recognition," *Pattern Recognition Letters*, Vol.34, No.15, pp.1964-1970, November 2013. [PDF](#)
 32. 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](#)
 33. **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](#)
 34. **Xiaoming Liu**, "Discriminative Face Alignment," *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, Vol.31, No.11, pp.1941-1954, November 2009. [PDF](#)
 35. **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](#)
 36. **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](#)
 37. 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)
 38. 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)
 39. 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)
 40. 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.
 41. **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)
 42. 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

43. 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.

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44. 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.
 45. Yaojie Liu, Joel Stehouwer, Amin Jourabloo, Yousef Atoum, and **Xiaoming Liu**, "Presentation Attack Detection for Face in Mobile Phones," in *Selfie Biometrics*, Ajita Rattani, Reza Derakhahani, and Arun Ross, Eds, Springer-Verlag, 2019.
 46. Luan Tran and **Xiaoming Liu**, "Learning 3D Face Morphable Model from In-the-wild Images," in *Deep Learning-based Face Analytics*, Vishal Patel, Nalini Ratha, Rama Chellappa, Eds, Cambridge University Press, 2019.

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, NeurIPS, ICCV, and ECCV are the top 4 publication venues in all computer science conferences, according to the h5-index, a citation measure for the recent five years. **Source** CVPR also ranks 4th in all scientific publication venues, where Nature, Science, and PNAS rank 1st, 3rd, and 13th, respectively. **Source**

47. Feng Liu, Minchul Kim, ZiAng Gu, Anil Jain, **Xiaoming Liu**, "Learning Clothing and Pose Invariant 3D Shape Representation for Long-Term Person Re-Identification," in *Proceeding of International Conference on Computer Vision (ICCV 2023)*. PDF
48. Zhiyuan Xie, Xiaomin Ouyang, Li Pan, Wenrui Lu, Guoliang Xing, **Xiaoming Liu**, "Mozart: A Mobile ToF System for Sensing in the Dark through Phase Manipulation," in *Proceedings of the 21st Annual International Conference on Mobile Systems, Applications and Services (MobiSys'23)*, Helsinki, Finland, June 2023. (**Best Paper Award**) PDF
49. Minchul Kim, Feng Liu, Anil Jain, **Xiaoming Liu**, "DCFace: Synthetic Face Generation with Dual Condition Diffusion Model," in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2023)*, Vancouver, Canada, June 2023. PDF (**Acceptance rate 25.8%**) PDF
50. Shengjie Zhu, **Xiaoming Liu**, "PMatch: Paired Masked Image Modeling for Dense Geometric Matching," in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2023)*, Vancouver, Canada, June 2023. PDF (**Acceptance rate 25.8%**) PDF
51. Shengjie Zhu, **Xiaoming Liu**, "Video Depth Estimation in light of Limited Inference View Angles," in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2023)*, Vancouver, Canada, June 2023. PDF (**Acceptance rate 25.8%**) PDF
52. Vishal Asnani, Xi Yin, Tal Hassner, **Xiaoming Liu**, "MaLP: Manipulation Localization Using a Proactive Scheme," in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2023)*, Vancouver, Canada, June 2023. PDF (**Acceptance rate 25.8%**) PDF
53. Yiyu Sun, Yaojie Liu, **Xiaoming Liu**, Yixuan Li, Wen-Sheng Chu, "Rethinking Domain Generalization for Face Anti-spoofing: Separability and Alignment," in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2023)*, Vancouver, Canada, June 2023. (**Acceptance rate 25.8%**) PDF
54. Xiao Guo, Iacopo Masi, Xiaohong Liu, Zhiyuan Ren, Steven Grosz, **Xiaoming Liu**, "Hierarchical Fine-Grained Image Forgery Detection and Localization," in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2023)*, Vancouver, Canada, June 2023. (**Acceptance rate 25.8%**) PDF
55. Yunfei Long, Abhinav Kumar, Daniel Morris, **Xiaoming Liu**, Marcos Paul Gerardo Castro, Punarjay Chakravarty, "RADIANT: RADar Image Association NeTwork for 3D Object Detection," in *Proceeding of Thirty-Seventh AAAI Conference on Artificial Intelligence (AAAI)*, Washington DC, Feb 2023. PDF
56. Minchul Kim, Feng Liu, Anil Jain, **Xiaoming Liu**, "Cluster and Aggregate: Face Recognition with Large Probe Set," in *Proceeding of Thirty-sixth Conference on Neural Information Processing Systems (NeurIPS) 2022*, New Orleans, LA, June 2022. PDF
57. Feng Liu, **Xiaoming Liu**, "2D GANs Meet Unsupervised Single-View 3D Reconstruction," in *Proceeding of European Conference on Computer Vision (ECCV) 2022*, Tel-Aviv, Israel, Oct 2022. PDF

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58. Feng Liu, Minchul Kim, Anil Jain, **Xiaoming Liu**, “Controllable and Guided Face Synthesis for Unconstrained Face Recognition,” in *Proceeding of European Conference on Computer Vision (ECCV) 2022*, Tel-Aviv, Israel, Oct 2022. [PDF](#)
 59. Abhinav Kumar, Garrick Brazil, Enrique Corona, Mostafa Parchami, **Xiaoming Liu**, “DEVIANT: Depth EquiVariant NeTwork for Monocular 3D Object Detection,” in *Proceeding of European Conference on Computer Vision (ECCV) 2022*, Tel-Aviv, Israel, Oct 2022. [PDF](#)
 60. Xiao Guo, Yaojie Liu, Anil Jain, **Xiaoming Liu**, “Multi-domain Learning for Updating Face Anti-spoofing Models,” in *Proceeding of European Conference on Computer Vision (ECCV) 2022*, Tel-Aviv, Israel, Oct 2022. **(Oral)** [PDF](#)
 61. Minchul Kim, Anil Jain, **Xiaoming Liu**, “AdaFace: Quality Adaptive Margin for Face Recognition,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2022)*, New Orleans, LA, June 2022. **(Oral)** [PDF](#)
 62. Vishal Asnani, Xi Yin, Tal Hassner, Sijia Liu, **Xiaoming Liu**, “Proactive Image Manipulation Detection,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2022)*, New Orleans, LA, June 2022. [PDF](#)
 63. Andrew Hou, Michel Sarkis, Ning Bi, Yiyong Tong, **Xiaoming Liu**, “Face Relighting with Geometrically Consistent Shadows,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2022)*, New Orleans, LA, June 2022. [PDF](#)
 64. Yifan Gong, Yuguang Yao, Yize Li, Yimeng Zhang, **Xiaoming Liu**, Xue Lin, Sijia Liu, “Reverse Engineering of Imperceptible Adversarial Image Perturbations,” in *Proceeding of The International Conference on Learning Representations (ICLR) 2022*, virtual, Apr 2022. [PDF](#)
 65. Safa Medin, Bernhard Egger, Anoop Cherian, Ye Wang, Joshua Tenenbaum, **Xiaoming Liu**, Tim Marks, “MOST-GAN: 3D Morphable StyleGAN for Disentangled Face Image Manipulation,” in *Proceeding of Thirty-Sixth AAAI Conference on Artificial Intelligence (AAAI) 2022*, virtual, Feb 2022. [PDF](#) (Acceptance rate 15%)
 66. Feng Liu, **Xiaoming Liu**, “Voxel-based 3D Detection and Reconstruction of Multiple Objects from a Single Image,” in *Proceeding of Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS) 2021*, virtual, Dec 2021. [PDF](#) (Acceptance rate 26%)
 67. Zhiyuan Xie, Xiaomin Ouyang, **Xiaoming Liu**, Guoliang Xing, “UltraDepth: Exposing High-resolution Texture from Depth Cameras,” in ACM Conference on Embedded Networked Sensor Systems (SenSys) 2021. [PDF](#) (Acceptance rate $18\% = \frac{25}{139}$)
 68. Yunfei Long, Daniel Morris, **Xiaoming Liu**, Marcos Paul Gerardo Castro, Punarjay Chakravarty, Praveen Narayanan, “Full Velocity Radar Returns by Radar-Camera Fusion,” in *Proceeding of International Conference on Computer Vision (ICCV 2021)*. [PDF](#) **(Oral, Acceptance rate 3%)**
 69. Feng Liu, Luan Tran, **Xiaoming Liu**, “Fully Understanding Generic Objects: Modeling, Segmentation, and Reconstruction,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2021)*, Nashville, TN, June 2021. [PDF](#) (Acceptance rate 23.7%)
 70. Abhinav Kumar, Garrick Brazil, **Xiaoming Liu**, “GrooMeD-NMS: Grouped Mathematical Differentiable NMS for Monocular 3D Object Detection,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2021)*, Nashville, TN, June 2021. [PDF](#) (Acceptance rate 23.7%)
 71. Andrew Hou, Ze Zhang, Michel Sarkis, Ning Bi, Yiyong Tong, **Xiaoming Liu**, “Towards High Fidelity Face Relighting with Realistic Shadows,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2021)*, Nashville, TN, June 2021. [PDF](#) (Acceptance rate 23.7%)
 72. Sixue Gong, **Xiaoming Liu**, Anil Jain, “Mitigating Face Recognition Bias via Group Adaptive Classifier,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2021)*, Nashville, TN, June 2021. [PDF](#) [arXiv](#) (Acceptance rate 23.7%)
 73. Saif Imran, **Xiaoming Liu**, Daniel Morris, “Depth Completion with Twin-Surface Extrapolation at Occlusion Boundaries,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2021)*, Nashville, TN, June 2021. [PDF](#) (Acceptance rate 23.7%)
 74. Yunfei Long, Daniel Morris, **Xiaoming Liu**, Marcos Paul Gerardo Castro, Punarjay Chakravarty, Praveen Narayanan, “Radar Camera Pixel Association and Fusion,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2021)*, Nashville, TN, June 2021. [PDF](#) (Acceptance rate 23.7%)

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75. Ziqian Bai, Zhaopeng Cui, **Xiaoming Liu**, Ping Tan, “Learning to Optimize Riggable 3D Face Reconstruction,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2021)*, Nashville, TN, June 2021. [PDF](#) (Acceptance rate 23.7%)
 76. Feng Liu, **Xiaoming Liu**, “Learning Implicit Functions for Topology-Varying Dense 3D Shape Correspondence,” in *Proceeding of Thirty-fourth Conference on Neural Information Processing Systems (NeurIPS) 2020*, virtual, Dec 2020. [PDF](#) (Oral, Acceptance rate 1.1%)
 77. Garrick Brazil, Gerard Pons-moll, **Xiaoming Liu**, Bernt Schiele, “Kinematic 3D Object Detection in Monocular Video, ” in *Proceeding of European Conference on Computer Vision (ECCV) 2020*, Glasgow, UK, August 2020. [PDF](#) (Acceptance rate 27%)
 78. Yaojie Liu, Joel Stehouwer, **Xiaoming Liu**, “On Disentangling Spoof Traces for Generic Face Anti-Spoofing,” in *Proceeding of European Conference on Computer Vision (ECCV) 2020*, Glasgow, UK, August 2020. [PDF](#) (Acceptance rate 27%)
 79. Sixue Gong, **Xiaoming Liu**, Anil Jain, “Jointly De-biasing Face Recognition and Demographic Attribute Estimation,” in *Proceeding of European Conference on Computer Vision (ECCV) 2020*, Glasgow, UK, August 2020. [PDF](#) (Acceptance rate 27%)
 80. Yuge Huang, Pengcheng Shen, Ying Tai, Shaoxin Li, **Xiaoming Liu**, Jilin Li, Feiyue Huang, Rongrong Ji, “Improving Face Recognition from Hard Samples via Distribution Distillation Loss,” in *Proceeding of European Conference on Computer Vision (ECCV) 2020*, Glasgow, UK, August 2020. [PDF](#) (Acceptance rate 27%)
 81. Yuge Huang, Yuhan Wang, Ying Tai, **Xiaoming Liu**, Pengcheng Shen, Shaoxin Li, Jilin Li, Feiyue Huang, “CurricularFace: Dynamic Curriculum Learning Loss for Deep Face Recognition,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2020)*, Seattle, WA, June 2020. [PDF](#) (Acceptance rate 22.1%)
 82. Joel Stehouwer, Yaojie Liu, Amin Jourabloo, **Xiaoming Liu**, “Noise Modeling, Synthesis and Classification for Generic Object Anti-Spoofing,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2020)*, Seattle, WA, June 2020. [PDF](#) (Acceptance rate 22.1%)
 83. Abhinav Kumar, Tim Marks, Wenxuan Mou, Ye Wang, Michael Jones, Anoop Cherian, Toshiaki Koike-Akino, **Xiaoming Liu**, Chen Feng, “LUVLi Face Alignment: Estimating Landmarks’ Location, Uncertainty, and Visibility Likelihood,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2020)*, Seattle, WA, June 2020. [PDF](#) (Acceptance rate 22.1%)
 84. Hao Dang*, Feng Liu*, Joel Stehouwer*, **Xiaoming Liu**, Anil Jain, “On the Detection of Digital Face Manipulation,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2020)*, Seattle, WA, June 2020. [PDF](#) [arXiv](#) (Acceptance rate 22.1%)
 85. Chang Chen, Zhiwei Xiong, **Xiaoming Liu**, Feng Wu, “Camera Trace Erasing,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2020)*, Seattle, WA, June 2020. [PDF](#) (Acceptance rate 22.1%)
 86. Ziqian Bai, Zhaopeng Cui, Jamal Ahmed Rahim, **Xiaoming Liu**, Ping Tan, “Deep Facial Non-Rigid Multi-View Stereo,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2020)*, Seattle, WA, June 2020. [PDF](#) (Acceptance rate 22.1%)
 87. Shengjie Zhu, Garrick Brazil, **Xiaoming Liu**, “The Edge of Depth: Explicit Constraints between Segmentation and Depth,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2020)*, Seattle, WA, June 2020. [PDF](#) (Acceptance rate 22.1%)
 88. Garrick Brazil, **Xiaoming Liu**, “Monocular 3D Region Proposal Network for 3D Object Detection,” In *Proceeding of International Conference on Computer Vision (ICCV 2019)*, Seoul, South Korean, Oct. 2019. [arXiv](#) (Oral, Acceptance rate 4.3%)
 89. Feng Liu, Tran Luan, **Xiaoming Liu**, “3D Face Modeling from Diverse Raw Scan Data,” In *Proceeding of International Conference on Computer Vision (ICCV 2019)*, Seoul, South Korean, Oct. 2019. [arXiv](#) (Oral, Acceptance rate 4.3%)
 90. Bangjie Yin*, Luan Tran*, Haoxiang Li, Xiaohui Shen, **Xiaoming Liu**, “Towards Interpretable Face Recognition,” in *Proceeding of International Conference on Computer Vision (ICCV 2019)*, Seoul, South Korean, Oct. 2019. [arXiv](#) (* denotes equal contribution by the authors) (Oral, Acceptance rate 4.3%)
 91. Yaojie Liu, Joel Stehouwer, Amin Jourabloo, **Xiaoming Liu**, “Deep Tree Learning for Zero-shot Face Anti-Spoofing,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2019)*, Long beach, CA, June 2019. [PDF](#) (Oral, Acceptance rate 5.6%) **Finalist of the CVPR 2019 Best Paper Award**

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92. Ziyuan Zhang, Luan Tran, Xi Yin, Yousef Atoum, **Xiaoming Liu**, Jian Wan, Nanxin Wang, “Gait Recognition via Disentangled Representation Learning,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2019)*, Long beach, CA, June 2019. [PDF](#) (**Oral, Acceptance rate 5.6%**)
 93. Tran Luan, Feng Liu, **Xiaoming Liu**, “Toward High-fidelity Nonlinear 3D Face Morphoable Model,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2019)*, Long beach, CA, June 2019. [PDF](#) (**Acceptance rate 25.2%**)
 94. Saif Imran, Yunfei Long, **Xiaoming Liu**, Daniel Morris, “Depth Coefficients for Depth Completion,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2019)*, Long beach, CA, June 2019. [PDF](#) (**Acceptance rate 25.2%**)
 95. Garrick Brazil, **Xiaoming Liu**, “Pedestrian Detection with Autoregressive Network Phases,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2019)*, Long beach, CA, June 2019. [arXiv PDF](#) (**Acceptance rate 25.2%**)
 96. Luan Tran, Kihyuk Sohn, Xiang Yu, **Xiaoming Liu**, Manmohan Chandraker, “Gotta Adapt ’Em All: Joint Pixel and Feature-Level Domain Adaptation for Recognition in the Wild,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2019)*, Long beach, CA, June 2019. [arXiv PDF](#) (**Acceptance rate 25.2%**)
 97. Xi Yin, Xiang Yu, Kihyuk Sohn, **Xiaoming Liu**, Manmohan Chandraker, “Feature Transfer Learning for Deep Face Recognition with Under-Represented Data,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2019)*, Long beach, CA, June 2019. [arXiv PDF](#) (**Acceptance rate 25.2%**)
 98. Ying Tai*, Yicong Liang*, **Xiaoming Liu**, Lei Duan, Jilin Li, Chengjie Wang, Feiyue Huang, Yu Chen, “Towards Highly Accurate and Stable Face Alignment for High-Resolution Videos,” in *Proceeding of The 33rd AAAI Conference on Artificial Intelligence (AAAI 2019)*, Honolulu, Hawaii, USA, January 2019. [PDF](#) (**Acceptance rate 16.2%**) (* denotes equal contribution by the authors)
 99. Amin Jourabloo*, Yaojie Liu*, **Xiaoming Liu**, “Face De-spoofing: Anti-Spoofing via Noise Modeling,” in *Proceeding of European Conference on Computer Vision (ECCV) 2018*, Munich, Germany, September 2018. (* denotes equal contribution by the authors) [PDF](#) (**Acceptance rate 31.8%**)
 100. Luan Tran, **Xiaoming Liu**, “Nonlinear 3D Face Morphable Model,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2018)*, Salt Lake City, UT, June 2018. [PDF](#) (**Spotlight, Acceptance rate 6.8%**)
 101. Yu Chen*, Ying Tai*, **Xiaoming Liu**, Chunhua Shen, Jian Yang, “FSRNet: End-to-End Learning Face Super-Resolution with Facial Priors,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2018)*, Salt Lake City, UT, June 2018. [arXiv PDF](#) (**Spotlight, Acceptance rate 6.8%**)
 102. Yaojie Liu*, Amin Jourabloo*, **Xiaoming Liu**, “Learning Deep Models for Face Anti-Spoofing: Binary or Auxiliary Supervision,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2018)*, Salt Lake City, UT, June 2018. (* denotes equal contribution by the authors) [PDF](#) (**Acceptance rate 30%**)
 103. Feng Liu, Ronghang Zhu, Dan Zeng, Qijun Zhao, **Xiaoming Liu**, “Disentangling Features in 3D Face Shapes for Joint Face Reconstruction and Recognition,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2018)*, Salt Lake City, UT, June 2018. [PDF](#) (**Acceptance rate 30%**)
 104. 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. [PDF](#) (**Acceptance rate 29%**)
 105. 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. [PDF](#) (**Acceptance rate 29%**)
 106. Ying Tai, Jian Yang, **Xiaoming Liu**, Chunyan Xu, “MemNet: A Persistent Memory Network for Image Restoration,” In *Proceeding of International Conference on Computer Vision (ICCV 2017)*, Venice, Italy, Oct. 2017. (**Spotlight, Acceptance rate 2.6%**) [PDF](#)
 107. 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. [PDF](#) (**Acceptance rate 29%**)
 108. 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. [PDF](#) (**Acceptance rate 29%**)

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109. 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 2.6%)** [PDF](#)
 110. 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 29%)** [PDF](#)
 111. 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 29%)** [PDF](#)
 112. 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 29%)** [PDF](#)
 113. 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 26.6%)** [PDF](#)
 114. 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 2.9%)** [PDF](#)
 115. 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 29.9%)** [PDF](#)
 116. Joseph Roth, Yiyong 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 29.9%)** [PDF](#)
 117. 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 3.9%)** [PDF](#)
 118. 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 30.3%)** [PDF](#)
 119. 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 32.5%)** [PDF](#)
 120. Joseph Roth, Yiyong Tong, **Xiaoming Liu**, “Unconstrained 3D Face Reconstruction,” in *Proceeding of IEEE Computer Vision and Pattern Recognition (CVPR 2015)*, Boston MA, June 2015. **(Acceptance rate 28.4%)** [PDF](#)
 121. 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 24.3%)** [PDF](#)
 122. 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 28%)** [PDF](#)
 123. 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 20.7%, Best Paper Award Runner-up)** [PDF](#)
 124. 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](#)
 125. **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](#)

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126. **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](#)
 127. 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](#)
 128. 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](#)
 129. 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](#)
 130. **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](#)
 131. **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](#)
 132. **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](#)
 133. 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](#)
 134. **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](#)
 135. **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](#)
 136. **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](#)
 137. **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)

138. Kien Nguyen, Clinton Fookes, Sridha Sridharan, Feng Liu, **Xiaoming Liu**, Arun Ross, Dana Michalski, Huy Nguyen, Debayan Deb, Mahak Kothari, Manisha Saini, Dawei Du, Scott McCloskey, Gabriel Bertocco, Fernanda Andaló, Terrance E. Boulton, Anderson Rocha, Haidong Zhu, Zhaoheng Zheng, Ram Nevatia, Zaigham Randhawa, Sinan Sabri, Gianfranco Doretto, “AG-ReID 2023: Aerial-Ground Person Re-identification Challenge Results,” in *Proceedings of the International Joint Conference on Biometrics (IJCB 2023)*, Ljubljana, Slovenia, Sep 2023.
139. Debayan Deb, **Xiaoming Liu**, Anil Jain, “FaceGuard: A Self-Supervised Defense Against Adversarial Face Images,” in *Proceedings of the 17th International Conference on Automatic Face and Gesture Recognition (FG) 2023*, Hawaii, USA, Jan 2023. [arXiv](#)
140. Debayan Deb, **Xiaoming Liu**, Anil Jain, “Unified Detection of Digital and Physical Face Attacks,” in *Proceedings of the 17th International Conference on Automatic Face and Gesture Recognition (FG) 2023*, Hawaii, USA, Jan 2023. [arXiv](#)

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141. Masa Hu, Garrick Brazil, Nanxiang Li, Liu Ren, **Xiaoming Liu**, “Camera Self-Calibration Using Human Faces,” in *Proceedings of the 17th International Conference on Automatic Face and Gesture Recognition (FG) 2023*, Hawaii, USA, Jan 2023. [PDF](#)
 142. Yaojie Liu, Andrew Hou, Xinyu Huang, Liu Ren, **Xiaoming Liu**, “Blind Removal of Facial Foreign Shadow,” in *Proceedings of British Machine Vision Conference (BMVC) 2022*, London UK, Nov 2022. [PDF](#)
 143. Armand Comas-Massagué, Tim Marks, Hassan Mansour, Suhas Lohit, Yechi Ma, **Xiaoming Liu**, “TURNIP: Time-Series U-Net with Recurrence for NIR Imaging PPG,” in *Proceedings of the 28th IEEE International Conference on Image Processing (ICIP) 2021*, Anchorage, Alaska, Sep 2021. [PDF](#)
 144. Xi Yin, Ying Tai, Yuge Huang, **Xiaoming Liu**, “FAN: Feature Adaptation Network for Surveillance Face Recognition and Normalization,” in *Proceedings of the 15th Asian Conference on Computer Vision (ACCV) 2020*, virtual, Nov 2020. [PDF](#)
 145. Yousef Atoum, Mao Ye, Liu Ren, Ying Tai, **Xiaoming Liu**, “Color-wise Attention Network for Low-light Image Enhancement,” in NTIRE: New Trends in Image Restoration and Enhancement workshop and challenges (in conjunction with CVPR 2020), Seattle, WA. [PDF](#)
 146. Abhinav Kumar, Tim Marks, Wenxuan Mou, Chen Feng, **Xiaoming Liu**, “UGLLI Face Alignment: Estimating Uncertainty with Gaussian Log-Likelihood Loss,” in Statistical Deep Learning in Computer Vision Workshop (in conjunction with ICCV 2019), Seoul, South Korea. **(Oral)** [PDF](#)
 147. Adam Terwilliger, Garrick Brazil, **Xiaoming Liu**, “Recurrent Flow-Guided Segmentation Prediction,” in *Proceedings of the IEEE Winter Conference on Applications of Computer Vision (WACV) 2019*, Hawaii, USA, January 2019. [PDF](#)
 148. Anurag Chowdhury, Yousef Atoum, Luan Tran, **Xiaoming Liu**, Arun Ross, “MSU AVIS dataset: Fusing Face and Voice Biometrics for Person Recognition in Indoor Surveillance Videos,” in *Proceedings of the 24th International Conference on Pattern Recognition (ICPR) 2018*, Beijing, China, August 20-24, 2018. [PDF](#)
 149. Yaojie Liu, Amin Jourabloo, William Ren, **Xiaoming Liu**, “Dense Face Alignment,” in *Proceedings of the 7th IEEE International Workshop on Analysis and Modeling of Faces and Gestures (AMFG) (conjunction with ICCV 2017)*, Venice, Italy, Oct 28, 2017. [PDF](#)
 150. 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) [PDF](#)
 151. 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](#)
 152. 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](#)
 153. Joseph Roth, Andrew Carrievau, **Xiaoming Liu**, Anil Jain, “Learning-based Ballistic Breach 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](#)
 154. 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](#)
 155. 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](#)
 156. 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](#)
 157. 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](#)

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158. 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](#)
 159. 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](#)
 160. 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](#)
 161. 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](#)
 162. 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](#)
 163. 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](#)
 164. 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** $\frac{231}{869} = 26.6\%$)
 165. 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** $\frac{231}{869} = 26.6\%$)
 166. Jixu Chen, **Xiaoming Liu**, Peter Tu, and Amy Aragones, “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](#)
 167. **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](#)
 168. 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](#)
 169. 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](#)
 170. 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](#)
 171. **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](#)
 172. Jilin Tu, Brandon Lafflen, **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](#)
 173. 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](#)
 174. 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](#)

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175. 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](#)
 176. **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](#)
 177. 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](#)
 178. **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](#)
 179. **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](#)
 180. 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](#)
 181. **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](#)
 182. 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](#)
 183. **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](#)
 184. **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](#)
 185. **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](#)
 186. **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](#)
 187. 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](#)
 188. 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.
 189. **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.
 190. **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.
 191. 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.

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192. **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](#)
 193. 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](#)
 194. **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.
 195. **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.

Invited Papers

196. 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.
197. 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.
198. 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.
199. 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.

Papers Under Review

200. K. Nguyen, C. Fookes, S. Sridharan, Y. Tian, F. Liu, **X. Liu**, A. Ross, “The State of Aerial Surveillance: A Survey,” under review in *IEEE Transactions on Pattern Analysis Machine Intelligence (PAMI)*, Jan 2022.
201. Vishal Asnani, Xi Yin, Tal Hassner, **Xiaoming Liu**, “Reverse Engineering of Generative Models: Inferring Model Hyperparameters from Generated Images,” under review in *IEEE Transactions on Pattern Analysis Machine Intelligence (PAMI)*, April 2021.
202. Shengjie Zhu, Feng Liu, **Xiaoming Liu**, “DePose: Accurate Two-View Camera Pose Estimation Using Dense Image Correspondence,” under review in *CVPR 2024*.
203. Yiyang Su, Minchul Kim, Feng Liu, **Xiaoming Liu**, “GlobalGait: Global Spatiotemporal Representation Learning for Gait Recognition via Sequence Completion,” under review in *CVPR 2024*.
204. Yuguang Yao, Jiancheng Liu, Yifan Gong, **Xiaoming Liu**, Yanzhi Wang, Xue Lin, Sijia Liu, “Can Adversarial Examples Be Parsed to Reveal Victim Model Information?” under review in *CVPR 2024*.
205. Zhiyuan Ren, Minchul Kim, Feng Liu, **Xiaoming Liu**, “TIGER: Time-varying Denoising Model for 3D Point Cloud Generation with Diffusion Process,” under review in *CVPR 2024*.
206. Abhinav Kumar, Yuliang Guo, Xinyu Huang, Liu Ren, **Xiaoming Liu**, “SeaBird: Segmentation in Bird View for Monocular 3D Object Detection,” under review in *NeurIPS 2023*.
207. Feng Liu, Minchul Kim, Zhiyuan Ren, Yiyang Su, Zhangyang Wang, Humphrey Shi, Anil K. Jain, **Xiaoming Liu**, “HumanFusion: Controllable and Versatile Human Image Synthesis and Editing,” under review in *NeurIPS 2023*.
208. Andrew Hou, Feng Liu, Zhiyuan Ren, Michel Sarkis, Ning Bi, Yiyang Tong, **Xiaoming Liu**, “INFAMOUS-NeRF: Improving Face Modeling Using Semantically-Aligned Hypernetworks with Neural Radiance Fields,” under review in *NeurIPS 2023*.

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209. Minchul Kim, Yiyang Su, Feng Liu, Anil Jain, **Xiaoming Liu**, “KeyPoint Relative Position Encoding (KPRPE) for Face Recognition,” under review in NeurIPS 2023.
 210. Shengjie Zhu, Abhinav Kumar, Masa Hu, **Xiaoming Liu**, “Tame a Wild Camera: In-the-Wild Monocular Camera Calibration,” under review in NeurIPS 2023.
 211. Vishal Asnani, Abhinav Kumar, Suya You, **Xiaoming Liu**, “PrObE: Proactive Object Detection Wrapper,” under review in NeurIPS 2023.
 212. Zhiyuan Ren, Yiyang Su, **Xiaoming Liu**, “ChatGPT-Powered Hierarchical Comparisons for Image Classification,” under review in NeurIPS 2023.
 213. Xiao Guo, Vishal Asnani, Sijia Liu, **Xiaoming Liu**, “Tracing Hyperparameter Dependencies for Model Parsing via Learnable Graph Pooling Network,” under review in NeurIPS 2023.
 214. Feng Liu, Ryan Ashbaugh, Nicholas Chimitt, Najmul Hassan, Ali Hassani, Ajay Jaiswal, Minchul Kim, Zhiyuan Mao, Christopher Perry, Zhiyuan Ren, Yiyang Su, Pegah Varghaei, Kai Wang, Xingguang Zhang, Stanley Chan, Arun Ross, Humphrey Shi, Zhangyang Wang, Anil Jain and **Xiaoming Liu**, “FarSight: A Physics-Driven Whole-Body Biometric System at Large Distance and Altitude,” under review in WACV 2024.
 215. Xing Di, Yi-Yu Zheng, **Xiaoming Liu**, Yu Cheng, “Facial Omni-Representation Pre-training via Prototype-based Self-Distillation,” under review in WACV 2024.
 216. Yunfei Long, Abhinav Kumar, Daniel Morris, **Xiaoming Liu**, “BARON: Bird’s-eye cAmera-Radar fusiON for 3D Object Detection,” under review in AAAI 2024.

Patents

1. Ziyuan Zhang, **Xiaoming Liu**, “Disentangled Representations for Gait Recognition,” U.S. Serial No. 63/074,082, filed on Sep 3, 2020.
2. **Xiaoming Liu**, Luan Tran, Xi Yin, Yousef Atoum, Ziyuan Zhang, Jain Wan, Kwaku Prakah-Asante, Mike Blommer, “Systems and Methods for Gait Recognition via Disentangled Representation Learning,” U.S. Serial No. 17/155,350, filed on Jan 22, 2021.
3. Yaojie Liu, Amin Jourabloo, and **Xiaoming Liu**, “Learning Deep Models for Face Anti-Spoofing via Auxiliary Supervision,” U.S. Serial No. 62/626,486, filed on Feb 5, 2018.
4. Luan Tran, Xi Yin, and **Xiaoming Liu**, “Disentangled Representation Learning GAN for Pose-Invariant Face Recognition,” U.S. Serial No. 62/560001, filed on Sep 18, 2017.
5. Alsallakh Bilal, Amin Jourabloo, Mao Ye, **Xiaoming Liu**, Liu Ren, “Visual Analytics System For Convolutional Neural Network Based Classifiers,” U.S. Serial No. 62/537,613, filed on Jul 27, 2017.
6. Michael Bliss, Yunfei Zhang, **Xiaoming Liu**, Yousef Atoum, and Joseph Roth, “Method and Apparatus for Providing Trailer Information,” U.S. patent No. 10,332,002, issued on Jun 25, 2019.
7. 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. 15/620,545, filed on Feb 25, 2016.
8. Stephen Hsu, **Xiaoming Liu**, and Alex Liu, “Online Exam Proctoring System,” U.S. Patent No. 9,154,748, issued on Oct 6, 2015.
9. 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.
10. **Xiaoming Liu**, Ya Xue, Peter Tu, “Image Congealing Via Efficient Feature Selection,” U.S. Serial No. 13/346,479, filed on Jan 9, 2012.
11. Peter Tu, **Xiaoming Liu**, et al., “Usage Measurement Methods for Interactive Advertising,” U.S. Serial No. 13/308,386, filed on Nov 30, 2011.
12. Peter Tu, **Xiaoming Liu**, et al., “Episodic Approaches to Interactive Advertising,” U.S. Serial No. 13/308,394, filed on Nov 30, 2011.
13. 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.

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14. 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.
 15. **Xiaoming Liu**, et al., "Optimal Gradient Pursuit for Image Alignment," U.S. Patent No. 8478077, issued on Jul 2, 2013.
 16. Jilin Tu, **Xiaoming Liu**, et al., "Optimal Subspaces for Face Recognition," U.S. Patent No. 8498454, issued on Jul 30, 2013.
 17. **Xiaoming Liu**, et al., "System and Method for Automatic Landmark Labeling with Minimal Supervision," U.S. Patent No. 8442330, issued on May 14, 2013.
 18. 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.
 19. **Xiaoming Liu**, et al., "Improved Face Model Fitting on Video Sequences," U.S. Serial No. 12/100620, filed on Apr 10, 2008.
 20. 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.
 21. 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.
 22. **Xiaoming Liu**, et al., "Generic Face Alignment via Boosting," U.S. Serial No. 60/943316, filed on Jun 12, 2007.
 23. **Xiaoming Liu**, et al., "Automatic Gaze Estimation for Football Players," U.S. Serial No. 11/752030, filed on May 22, 2007.
 24. 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.
 25. Peter Tu, **Xiaoming Liu**, et al., "Adaptive Advertisement," U.S. Serial No. 60/908991, filed on Mar 30, 2007.
 26. Gianfranco Doretto, Peter Tu, **Xiaoming Liu**, et al., "Person Reidentification", U.S. Serial No. 07/05919, filed on Mar 8, 2007.
 27. 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.
 28. **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.
 29. **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. Oct 2, 2023, 11th IEEE International Workshop on Analysis and Modeling of Faces and Gestures (AMFG) (in conjunction with ICCV 2023) (Keynote).
2. Sep 2023, On the Detection, Localization and Reverse Engineering of Diverse Image Manipulations, Google Research (virtual).
3. Jul 11, 2023, AIGC for Biometrics, Google Research (virtual).
4. Jun 30, 2023, On the Detection, Localization and Reverse Engineering of Diverse Image Manipulations, 11th ACM Workshop on Information Hiding and Multimedia Security, Chicago, IL (Keynote).
5. May 3, 2023, Visual Data Understanding: from Algorithms to AI Model's Social Impact, SDSS, UNC Chapel Hill.
6. Apr 28, 2023, Autonomous Sensing: from 3D Object Detection to Biometric Recognition, Department of Computer Science and Engineering, SUNY Buffalo, Buffalo, NY.
7. Mar 14, 2023, Face recognition at a (far) distance, Face Recognition Workshop London 2023, London, UK.
8. Jan 12, 2023, Autonomous Sensing: from 3D Object Detection to Biometric Recognition, Microsoft Azure Cognitive Services Research Distinguished Talk Series (virtual).

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9. Dec 5, 2022, 3D Perception: A Journey of Pursuing 3D World Understanding, Seminar at Korea Advanced Institute of Science and Technology (KAIST), Seoul, South Korean.
 10. Oct 10, 2022, 3D Perception: A Journey of Pursuing 3D World Understanding, Seminar at Mohamed bin Zayed University of Artificial Intelligence (MBZUAI), Abu Dhabi, United Arab Emirates.
 11. Aug 15, 2022, 3D Perception: from 3D Detection, Shape Reconstruction, to Depth Prediction, Mitsubishi Electric Research Laboratories (MERL), Cambridge MA.
 12. Jul 15, 2022, 3D Perception: A Journey of Pursuing 3D World Understanding, Bosch Research and Technology Center, Sunnyvale, CA.
 13. Jul 14, 2022, Computer Vision: A Journey of Pursuing 3D World Understanding, Google Cloud AI, Sunnyvale, CA.
 14. May 24, 2022, Computer Vision: A Journey of Pursuing 3D World Understanding, Seminar Series in Cognitive Computing at Baidu Research (virtual)
 15. May 18, 2022, Recent Progress in Biometrics, Amazon One (virtual)
 16. Apr 7, 2022, Computer Vision: A Personal Journey of Pursuing 3D World Understanding, UNC Chapel Hill, CS department seminar.
 17. Mar 16, 2022, Person Recognition at a Distance, Axon (virtual)
 18. Jan 4, 2022, Trustworthy Face Recognition, Workshop on Explainable & Interpretable Artificial Intelligence for Biometrics (xAI4Biometrics 2022, in conjunction with WACV 2021) (Keynote).
 19. Nov 17, 2021, Toward 3D Visual Perception and Trustworthy Biometrics, The 17th IEEE International Conference on Advanced Video and Signal-based Surveillance (AVSS 2021) (Keynote).
 20. Oct 28, 2021, Trustworthy AI: Biometrics as an example, University of Tennessee at Chattanooga AI lectures. (virtual)
 21. Oct 16, 2021, 3D Perception from Monocular or Fused Sensory Inputs, The 3rd International Workshop on Real-World Computer Vision from Inputs with Limited Quality (RLQ) (in conjunction with ICCV 2021) (Keynote).
 22. Oct 11, 2021, Monocular 3D Object Detection and Reconstruction, Workshop on 3D Object Detection from Images (in conjunction with ICCV 2021) (Keynote).
 23. Oct 11, 2021, Trustworthy Face Recognition, Masked Face Recognition Challenge & Workshop (in conjunction with ICCV 2021) (Keynote).
 24. Sep 16, 2021, Monocular 3D Perception: from 3D Detection, Shape Reconstruction, to Depth Prediction, Computer Vision and Image Processing group (CVIP) seminar, University of Dundee, UK. (virtual)
 25. Sep 14, 2021, 3D Perception: from 3D Detection, Shape Reconstruction, to Depth Prediction, Google Research (virtual).
 26. Sep 11, 2021, Trustworthy Biometrics: Sustaining Biometrics Research into the Next Decade, The 15th Chinese Conference on Biometrics Recognition (CCBR), Shanghai, China (virtual) (Keynote).
 27. Sep 7, 2021, Trustworthy Biometrics: Sustaining Biometrics Research into the Next Decade, Google Research (virtual).
 28. Aug 24, 2021, Deepfakes & Automated Face Recognition, 2021 Federal Identity Forum & Exposition (FedID) Academic panel. (virtual)
 29. Aug 15, 2021, On the Detection and Reverse Engineering of Diverse Attacks to Faces, The 3rd Workshop on Adversarial Learning Methods for Machine Learning and Data Mining (in conjunction with KDD 2021) (Keynote).
 30. July 8, 2021, On Recent Development of Trustworthy Biometrics, Trustworthy Biometrics Webinar, IEEE Beijing Section Biometrics Council Chapter, Beijing China. (virtual)
 31. May 5, 2021, Model Parsing for Generative Models, SemaFor PI Meeting. (virtual)
 32. Nov 17, 2020, Monocular Video-based 3D Perception for Autonomous Driving, 7th Tech.AD USA conference 2020, Detroit MI. (virtual)
 33. Nov 13, 2020, 3D Perception for Autonomous Driving: Research and education, Southern University of Science & Technology, Shenzhen, China. (virtual)

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34. Oct 27, 2020, Autonomous Sensing: from 3D Object Detection to Biometric Recognition, Army Research Laboratory, Adelphi, MD (virtual)
 35. Aug 4, 2020, Monocular Vision-based 3D Perception for Autonomous Driving, General Motor Research and Development Center, Warren MI. (virtual)
 36. Jul 29, 2020, Recent Trend in Computer Vision, Bosch Research and Technology Center, Palo Alto, CA. (virtual)
 37. Jun 19, 2020, Monocular 3D Object Detection, UG2+ workshop and challenge (in conjunction with CVPR 2020), Seattle WA (Keynote). (virtual)
 38. Jun 15, 2020, Monocular Vision-based 3D Perception for Autonomous Driving, Workshop on Long-Term Visual Localization, Visual Odometry and Geometric and Learning-based SLAM (in conjunction with CVPR 2020), Seattle WA (Keynote). (virtual)
 39. May 14, 2020, Monocular Vision-based 3D Perception for Autonomous Driving, Canadian Robot Vision Conference, Ottawa Canada (Invited symposium speaker). (virtual)
 40. Nov 21, 2019, Monocular Image-based 3D Perception for Autonomous Driving, 6th Tech.AD USA conference 2019, Detroit MI.
 41. Nov 21, 2019, Computer Vision for Autonomous Driving, FORD Research and Innovation Center, Dearborn, MI.
 42. Oct 28, 2019, On the Interpretability, Vulnerability, and Decomposability of Faces, Lightweight Face Recognition challenge & workshop (in conjunction with ICCV 2019), Seoul, South Korean (Keynote).
 43. Oct 27, 2019, Tackling Person Identification at a Distance: Pose, Resolution and Gait, Workshop on face recognition in low-quality video (in conjunction with ICCV 2019), Seoul, South Korean (Keynote).
 44. Sep 10, 2019, Biometrics Research at Michigan State University, Office of Biometric Identity Management (OBIM), U.S. Department of Homeland Security (DHS), Washington, DC.
 45. Sep 10, 2019, Learning to Fuse Information with Missing Modalities (Year 5), National Academy of Sciences (IC Academic Research Symposium), Washington, DC.
 46. Jul 15, 2019, Monocular Image-based 3D Detection and Reconstruction of Objects, Argo AI, Pittsburgh, PA.
 47. Jul 9, 2019, Inverse Graphics for 3D Modeling and Reconstruction: from Face to Generic Objects, School of Computer Science, Simon Fraser University, Vancouver, Canada.
 48. Jul 2, 2019, Inverse Graphics for 3D Modeling and Reconstruction: from Face to Generic Objects, Amazon Go, Seattle, WA.
 49. Jun 17, 2019, Monocular Image-based 3D Detection and Reconstruction of Objects, CVPR Workshop on autonomous driving (WAD), Long beach, CA (Keynote).
 50. Jun 16, 2019, Learning Deep Models for Face anti-Spoofing, CVPR Chalearn Looking at People Workshop on Face Spoofing Attack, Long beach, CA (Keynote).
 51. Jun 5, 2019, Inverse Graphics for 3D Object Modeling and Reconstruction: from Face to Generic Objects, School of informatics, University of Edinburgh, UK
 52. Jun 6, 2019, Inverse Graphics for 3D Object Modeling and Reconstruction: from Face to Generic Objects, Department of Computing, Imperial College London, UK
 53. Jun 7, 2019, Inverse Graphics for 3D Object Modeling and Reconstruction: from Face to Generic Objects, Centre for Vision, Speech and Signal Processing (CVSSP), University of Surrey, UK
 54. May 14, 2019, Inverse Graphics for 3D Object Modeling and Reconstruction: from Face to Generic Objects, Kitware Inc., Clifton Park, NY.
 55. May 13, 2019, Inverse Graphics for 3D Object Modeling and Reconstruction: from Face to Generic Objects, Computer Science Department, State University of New York at Albany, Albany, New York.
 56. Apr 10, 2019, 3D Object Modeling and Reconstruction: from Face to Generic Objects, Tencent Youtu Lab, Shanghai, China.
 57. Apr 9, 2019, 3D Faces: Reconstruction, Recognition, and Modeling, Zhejiang University CAD&CG National Key Lab, Hangzhou, China.
 58. Apr 4, 2019, 3D Faces: Reconstruction, Recognition, and Modeling, Tencent Youtu X-lab, Shenzhen, P.R. China.

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59. Apr 3, 2019, 3D Faces: Reconstruction, Recognition, and Modeling, The Chinese University of Hong Kong, Hong Kong.
 60. Mar 27, 2019, 3D Face Modeling, Reconstruction and its Role in Face Recognition, VALSE Webinar, East Lansing, MI.
 61. Mar 25, 2019, Deep learning: the Past, Present and Future, Michigan Actuarial Society Spring 2019 Meeting, East Lansing, MI.
 62. Mar 1, 2019, Computer Vision for Autonomous Driving, MetroCAD 2019 conference, Detroit, MI.
 63. Feb 25, 2019: Learning 3D Morphable Model from 2D Images, CVPR 2019 Area Chair Workshop, UCSD, CA.
 64. Feb 22, 2019: 3D Faces: Reconstruction, Recognition, and Modeling, 12 Sigma Technologies, San Diego, CA.
 65. Feb 15, 2019: Learning 3D Faces Models, Institute of Computing Technology, Chinese Academy of Sciences, Beijing, P. R. China.
 66. Jan 16, 2019: 3D Faces: Reconstruction, Recognition, and Modeling, Department of Computer Science, Wayne State University, Detroit, MI.
 67. Jan 8, 2019: 3D Faces: Reconstruction, Recognition, and Modeling, Facebook Reality Lab, Pittsburgh, PA.
 68. Oct 23, 2018: 3D Faces: Reconstruction, Recognition, and Modeling, Snap Research, Los Angeles, CA.
 69. Oct 22, 2018: 3D Faces: Reconstruction, Recognition, and Modeling, Department of electrical and computer engineering, UC Riverside, Riverside, CA.
 70. Sep 25, 2018: Learning to Fuse Information with Missing Modalities (Year 4), National Academy of Sciences (IC Academic Research Symposium), Washington, DC.
 71. Sep 6, 2018, Computer Vision for Autonomous Driving, High Performance Computing (HPC) Forum, Dearborn, MI.
 72. Mar 19, 2018, Encoder and Decoder in Semi-supervised and Supervised Learning, Midwest Vision Workshop, Ann Arbor MI.
 73. Jan 29, 2018: Visual Understanding of Human Faces, Michigan State University Machine Learning Seminar, East Lansing, MI.
 74. Dec 16, 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Ant Financial, Beijing, P.R. China.
 75. Dec 15, 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, JD.Com Inc., Beijing, P.R. China.
 76. Dec 14, 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Capital Normal University, Beijing, P. R. China.
 77. Dec 11, 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Department of EECS, University of Michigan at Ann Arbor, Ann Arbor, MI.
 78. Dec 5, 2017: Deep Learning for Computer Vision, MSU Mathematics department machine learning course, East Lansing, MI.
 79. Dec 3, 2017: Deep Learning: the Past, Present and Future, MSU Chinese School, East Lansing, MI.
 80. Nov 26, 2017: Computer Vision for Autonomous Driving, Tech.AD Detroit conference, Detroit, MI.
 81. Nov 3, 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Department of EECS, Signals, Inference, and Networks (SINE) seminar, University of Illinois at Urbana-Champaign, Champaign, IL.
 82. Oct 28, 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, the 7th IEEE International Workshop on Analysis and Modeling of Faces and Gestures (AMFG), Venice, Italy (Keynote).
 83. Oct 13, 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Information Sciences Institute, University of Southern California, Los Angeles, CA.
 84. Oct 12, 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Department of Computer Science, University of California, Santa Barbara, Santa Barbara, CA.

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85. Sep 29, 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Amazon Visual Search, Seattle, WA.
 86. Sep 28, 2017: Learning to Fuse Information with Missing Modalities (Year 3), National Academy of Sciences (IC Academic Research Symposium), Washington, DC.
 87. Aug 2, 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Cloudeam Inc., Shenzhen, P. R. China.
 88. Jul 7, 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Tencent Youtu Lab, Shanghai, P. R. China.
 89. Jun 24, 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, National Taiwan University of Science & Technology.
 90. Apr 19, 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Department of Computer Science, University of Notre Dame, South bend, IN.
 91. Mar 28, 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Adobe Research, San Jose, CA.
 92. Feb 24, 2017: Disentangled Representation Learning and Image Synthesis via DR-GAN, National Geospatial-Intelligence Agency, Springfield, Virginia.
 93. Feb 27, 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, CVPR 2017 Area Chair Workshop, College Park, MD.
 94. Feb 22, 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, FORD Research and Innovation Center, Dearborn, MI.
 95. Feb 16, 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Centre for Vision Research Seminar, York University, Toronto, Canada.
 96. Feb 7, 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Media Analytics group, NEC Labs America, Cupertino, CA.
 97. Feb 6, 2017: Large-pose Face Analysis: Alignment, Reconstruction, and Recognition, Bosch Research and Technology Center, Palo Alto, CA.
 98. Dec 2016: Large-pose Face Recognition, Capital Normal University, Beijing, P. R. China.
 99. Dec 2016: Large-pose Face Recognition, Institute of Computing Technology, Chinese Academy of Sciences, Beijing, P. R. China.
 100. Dec 2016: 2D/3D Shape Estimation and Recognition for Large-pose Faces, Horizon Robotics, Beijing, P. R. China.
 101. Dec 2016: 2D/3D Shape Estimation and Recognition for Large-pose Faces, Department of Automation, Tsinghua University, Beijing, P. R. China.
 102. Dec 2016: 2D/3D Shape Estimation and Recognition for Large-pose Faces, College of Computer Science, Beihang university, Beijing, P. R. China.
 103. Dec 2016: High, Middle, and Low-level Vision Problems for Faces, Seoul National University, Seoul, South Korea.
 104. Nov 2016: 2D/3D Shape Estimation and Recognition for Large-pose Faces, U.S. Army Research Laboratory, Adelphi, MD.
 105. Oct 2016: Estimating 2D and 3D Facial Shape from Unconstrained Photos, Nanyang Technological University, Singapore.
 106. 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
 107. Oct 2016: Estimating 2D and 3D Facial Shape from Unconstrained Photos, The 11th Chinese Conference on Biometric Recognition (CCBR2016), Chengdu, P.R. China.
 108. Sep 2016: Estimating 2D and 3D Facial Shape from Unconstrained Photos, University of Western Ontario, London, Canada.
 109. Sep 2016: Learning to Fuse Information with Missing Modalities (Year 2), National Academy of Sciences (IC Academic Research Symposium), Washington, DC.

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110. May 2016: Estimating 2D and 3D Facial Shape from Unconstrained Photos, Microsoft Research Asian, Beijing, P. R. China.
 111. May 2016: Estimating 2D and 3D Facial Shape from Unconstrained Photos, Yonsei University, Seoul, South Korea.
 112. May 2016: Unconstrained 3D Face Reconstruction, Institute of Automation, Chinese Academy of Sciences, Beijing, P. R. China.
 113. May 2016: Estimating 2D and 3D Facial Shape from Unconstrained Photos, Institute of Computing Technology, Chinese Academy of Sciences, Beijing, P. R. China.
 114. Jan 2016: Global motion compensation, Capital Normal University, Beijing, P. R. China.
 115. Sep 2015: Learning to Fuse Information with Missing Modalities (Year 1), National Academy of Sciences (IC Academic Research Symposium), Washington, DC.
 116. Aug 2015: Lectures on facial analysis and face recognition, Wisisoft Inc., Chengdu, P. R. China.
 117. Aug 2015: Unconstrained 3D face reconstruction, College of Computer Science, Zhejiang University, Hangzhou, P. R. China.
 118. July 2015: Unconstrained 3D face reconstruction, Robotics Institute VASC Seminar, Carnegie Mellon University, Pittsburgh PA.
 119. July 2015: Learning-based Ballistic Breech Face Impression Image Matching, Surface & Nanostructure Metrology Group, National Institute of Standards and Technology (NIST), Gaithersburg, MD.
 120. May 2015: Unconstrained 3D face reconstruction, Department of Electronic Engineering, The Chinese University of Hong Kong, Hong Kong.
 121. Jan 2015: Visual Sensing and Automatic Understanding of Human Behavior, Spring 2015 Cognitive Forum, Michigan State University, East Lansing, Michigan.
 122. Dec 2014: Efficient Motion-Saliency Detection and Its Application to Video Analysis, Midwest vision workshop, Chicago IL.
 123. Oct 2014: Human Sensing: Efficient Visual Analysis for Faces and Hands, Toyota Technical Center, Ann Arbor, Michigan.
 124. 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.
 125. Nov 2013: Efficient Time Series Data Matching and its Application to Human Sensing, Department of Computer Science, Rutgers University, New Brunswick, NJ.
 126. Oct 2013: Human Sensing: Computational Approaches to Human Behavior Understanding from Visual Content, DevCon, TechSmith Inc., Lansing, Michigan.
 127. 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.
 128. Nov 2012: Computer Vision and its Applications, College of Engineering Noon-time Seminar, Michigan State University, East Lansing, Michigan.
 129. Jul 2012: Facial Analysis: Theory and Applications, Advanced Multimedia Processing Lab, Cornell University, Ithaca, New York.
 130. Jun 2012: Advanced Behavior Recognition in Crowded Environments, NIJ Conference 2012, Washington DC.
 131. Apr 2012: Facial Analysis: Theory and Applications, College of Computer Science, Zhejiang University, Hangzhou, P.R.China.
 132. Mar 2012: Facial Analysis: Theory and Applications, Computer Science Departmental Colloquium, Georgia State University, Atlanta, Georgia.
 133. Feb 2012: Facial Analysis: Biometrics and Beyond, Computer Science and Engineering Department Seminar, Michigan State University, East Lansing, Michigan.
 134. Jan 2012: Group Context Learning for Event Recognition, IEEE Workshop on Applications of Computer Vision (WACV) 2012, Breckenridge, Colorado.

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135. 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.
 136. Oct 2011: Visual Analysis via Boosted Learning, Computer Science Department Seminar, State University of New York at Albany, Albany, New York.
 137. Jun 2011: Supervised and Semi-Supervised Image Alignment, Computer vision seminar, University of South Florida, Tampa, Florida.
 138. Oct 2010: Supervised and Semi-Supervised Image Alignment, Computer & Information Sciences Department Colloquium, Temple University, Philadelphia, Pennsylvania.
 139. Oct 2010: Supervised and Semi-Supervised Image Alignment, Electrical Engineering Department Colloquium, The City College of New York, New York City, New York.
 140. Oct 2010: Intelligent Video (with Peter Tu), School of Electrical and Computer Engineering, Cornell University, Ithaca, New York.
 141. Nov 2009: Image Alignment: Theory and Application, Computer Science Department Seminar, State University of New York at Albany, Albany, New York.
 142. Nov 2009: Image Alignment: Theory and Application, Naval Research Laboratory, Washington DC.
 143. Sep 2009: Image Alignment: Theory and Application, Artificial Intelligence Lab., Zhejiang University, Hangzhou, P. R. China.
 144. 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.
 145. May 2008: Discriminate Image Alignment, Digital Video and Multimedia (DVMM) Lab, Columbia University, New York City, New York.
 146. May 2008: Discriminate Image Alignment, Robotics Institute, Carnegie Mellon University, Pittsburgh, Pennsylvania.
 147. Feb 2008: Face Alignment: Algorithms and Applications, National Sensor, Surveillance and Biometric Technologies Center Of Excellence, New York City, New York.
 148. Sep 2007: What are Customers Looking at? IEEE International Conference on Advanced Video and Signal-Based Surveillance (AVSS) 2007, London, UK.
 149. Aug 2007: Generative and Discriminative Face Alignment, Electrical, Computer, & Systems Engineering (ECSE) Department, Rensselaer Polytechnic Institute, Troy, New York.
 150. Jun 2007: Generic Face Alignment using Boosted Appearance Model, IEEE Conference on Computer Vision Pattern Recognition (CVPR) 2007, Minneapolis, Minnesota.
 151. Jun 2007: Intelligent Video for Security (with Fred Wheeler), Northeast Technology and Product Assessment Committee (NTPAC) Corrections Conference, Sturbridge, Massachusetts.
 152. Apr 2007: Intelligent Video at GE, Artificial Intelligence Lab., Zhejiang University, Hangzhou, P.R.China.
 153. Feb 2007: Multi-view Face Enhancement and Forensic Face Recognition (with Fred Wheeler), Identix Inc., Jersey City, New Jersey.
 154. Aug 2005: Towards Intelligent Video Solutions (with Nils Krahnstoeber and Jens Rittscher), Robotics Institute, Carnegie Mellon University, Pittsburgh, Pennsylvania.
 155. Sep 2004: Pose Robust Video-Based Face Recognition, Siemens Corporate Research, Princeton, New Jersey.
 156. Sep 2004: Pose Robust Video-Based Face Recognition, GE Global Research, Niskayuna, New York.
 157. Aug 2004: Pose Robust Video-Based Face Recognition, Epson Palo Alto Lab, Palo Alto, California.
 158. May 2002: Shot Boundary Detection Using Temporal Statistics Modeling, IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2002, Orlando, Florida.
 159. Feb 2001: Face Authentication with Tolerance to Expression Variations and Registration Errors, Media Site Inc., Pittsburgh, Pennsylvania.

TUTORIALS/LECTURES

1. Yaojie Liu and **Xiaoming Liu**, Face Anti-Spoofing: Past, Present and the Future, half-day tutorial in BTAS 2019 conference, Sep. 2019.
2. Yaojie Liu and **Xiaoming Liu**, Face Anti-Spoofing and Anti-Deepfake: Recent progress, half-day tutorial in IJCB 2020 conference, Sep. 2020.
3. **Xiaoming Liu**, Face Presentation Attacks: Physical and Digital, The 5th IAPR/IEEE Winter School on Biometrics 2021, Shenzhen, China, January 24-28, 2021.
4. **Xiaoming Liu**, Trustworthy Face Recognition, The 6th IAPR/IEEE Winter School on Biometrics 2022, Shenzhen, China, January 9-13 2022.
5. **Xiaoming Liu**, Deep Learning for Trustworthy Biometrics, The 6th International School on Deep Learning (DeepLearn 2022 Spring), Guimaraes, Portugal, April 18-22, 2022.
6. **Xiaoming Liu**, Face recognition at a distance, The 7th IAPR/IEEE Winter School on Biometrics 2023, Shenzhen, China, January 9-13 2023.
7. **Xiaoming Liu**, Biometrics recognition at a distance, The 8th International School on Deep Learning (DeepLearn 2023 Spring), Bari, Italy, April 3-7, 2023.
8. Sijia Liu, Xue Lin, and **Xiaoming Liu**, Reverse Engineering of Deception (RED): Foundations and Applications, tutorial in CVPR 2023 conference, Jun. 2023.
9. **Xiaoming Liu**, Biometrics recognition at a distance, The 8th IAPR/IEEE Winter School on Biometrics 2024, Shenzhen, China, January 21-25, 2024.

CURRENT PH.D
STUDENTS

Shengjie Zhu (2018-)
Andrew Hou (2019-)
Abhinav Kumar (2020-)
Vishal Asnani (2021-)
Xiao Guo (2021-)
Minchul Kim (2021-)
Yiyang Su (2021-)
Zhiyuan Ren (2022-)

CURRENT POST-DOC

Feng Liu (Oct 2018-)

VISITING SCHOLARS

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)
Lanqing Hu, Chinese Academy of Science (Fall 2019-Summer 2020)
Chang Chen, University of Science and Technology of China (Fall 2019-Spring 2020)
Xiaohong Liu, McMaster University (Summer-Fall 2020)
Haochen Wallace Sui, University of Michigan at Ann Arbor (Summer-Fall 2020)

UNDERGRAD STUDENTS
ADVISED

Yevgeny Khessin (Fall 2012)
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)
Xiaohan Zhang (Summer 2017)
Weilin Liang (Summer 2018)
Ziyuan Zhang (Summer 2017- Fall 2019)
Ethan Rylko (Fall 2020- Summer 2021)
Kilosho Mike Kamwana (Fall 2019- Spring 2021)
Hank Murdock (Fall 2022-)

Apar Mohabansi (Fall 2022-)
Manh Tran (Fall 2022-)
ZiAng Gu (Fall 2022-)
Yigit Gunduc (Fall 2022-)

HIGH SCHOOL
STUDENTS ADVISED

Kyle Milka (Summer 2013)
William Ren (Summer 2016, 2017)
Eric Cui (Summer 2021)
Zoaib Sihorwala of HSHSP (Summer 2023)

GRADUATED

Ph.D. students

1. Joseph Roth (Aug 2012 - Aug 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 Research in Pittsburgh.
2. Muhammad Jamal Afridi (Aug 2012 - Jan 2017, 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.
3. Morteza Safdarnejad (Aug 2013 - May 2017, ECE), “Robust Global Motion Compensation and its Applications”. Co-advised with Lalita Udpa. First job at Adobe Systems Incorporated, San Jose, CA.
4. Yousef Atoum (Aug 2013 - Jan 2018, ECE), “Detecting Objects under Challenging Illumination Conditions”. First job as an Assistant Professor at Department of Computer Engineering, Hijjawi Faculty For Engineering Technology, Yarmouk University, Jordan. Now at General Motors (GM) Company.
5. Xi Yin (Aug 2013 - Aug 2018, CSE), “Representation Learning and Image Synthesis for Deep Face Recognition”. Recipient of the **2018 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 2018 graduating PhD students in the College of Engineering at MSU. First job as Research Scientist at Microsoft AI & Research. Now at Facebook AI Research.
6. Amin Jourabloo (Aug 2014 - Apr 2019, CSE), “Designing Convolutional Neural Networks for Face Alignment and Anti-spoofing”. Recipient of the **First Place of Fitch H. Beach Awards** - the highest honor among all the 2019 graduating PhD students in the College of Engineering at MSU. First job as Postdoctoral Research Scientist at Facebook Reality Lab (Oculus Research). Now at Facebook.
7. Luan Tran (Aug 2015 - Dec 2019, CSE) “Learning 3D Model From In-The-Wild 2D Images”. First job as Research Scientist at Facebook Reality Lab (Oculus Research).
8. Yaojie Liu (Aug 2016 - May 2021, CSE) “Face Anti-Spoofing: Detection, Generalization, and Visualization,” Recipient of **2021 Outstanding Graduate Student Award** in the CSE Department at MSU; recipient of the **Fitch H. Beach Awards** Honorable Mention - the highest honor among all the 2021 graduating PhD students in the College of Engineering at MSU. First job as Research Scientist at Google Research.
9. Garrick Brazil (Aug 2016 - May 2021, CSE) “Object Detection from 2D to 3D,” First job as Postdoctoral Research Scientist at Facebook AI Research (FAIR).

M.S. students

1. Lingyi Wu (Fall 2012-Summer 2014, CSE), First job at Med-Care Diabetic and Medical Supplies, Inc., Boca Raton, FL.
2. Liping Chen (Fall 2013-Spring 2016, CSE), First job at Amazon.com, Inc., Seattle, WA.
3. Bangjie Yin (Fall 2017-Spring 2019, CSE), First job at Tencent Youtu Lab, Shanghai, P.R. China.
4. Joel Stehouwer (Fall 2017-Spring 2020, CSE)
5. Masa Hu (Fall 2018-Fall 2022, CSE)

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.**

PROFESSIONAL
ACTIVITIES

Fellow of IAPR
Fellow of IEEE
Member of ACM
Member of AAAI
Program Committee

- 7th Asian Conference on Computer Vision (ACCV) 2006, Hyderabad, India, Jan. 13-16, 2006.
- IEEE workshop on Beyond Patches (in conjunction with CVPR 2006), New York, NY, Jun. 17, 2006.
- Workshop on Non-rigid registration and tracking through learning (in conjunction with ICCV 2007), Rio de Janeiro, Brazil, Oct. 14, 2007.
- IEEE Workshop on Motion and Video Computing (WMVC), Copper Mountain, Colorado, Jan. 8-9, 2008.
- International Workshop on Instinctive computing, Carnegie Mellon University, Pittsburgh, PA, Jun. 15-16, 2009.
- 1st ACM International Workshop on Interactive Multimedia for Consumer Electronics (IMCE 2009), Beijing, China, Oct. 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), Jun. 14, 2010.
- IEEE International Conference on Multimedia and Expo (ICME 2010), Jul. 19-23, 2010.
- The 10th Asian Conference of Computer Vision (ACCV 2010), Nov. 8-12, 2010.
- IEEE Workshop on Motion and Video Computing (WMVC), Kona, Hawaii, Jan. 6, 2011.
- The 9th IEEE Conference on Automatic Face and Gesture Recognition (FG 2011), Mar. 21-23, 2011.
- IEEE International Conference on Multimedia and Expo (ICME 2011) Jul. 11-15, 2011.
- The 13th International Conference on Computer Vision (ICCV 2011), Nov. 6-13, 2011.
- The International Workshop on Interactive Multimedia on Mobile and Portable Devices (IMMPD'11, in conjunction with ACM Multimedia 2011), Nov. 28, 2011.
- The 1st International Conference on Pattern Recognition Applications and Methods (ICPRAM 2012), Feb. 6-8, 2012.
- The 25th IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2012), Jun. 18-20, 2012.
- IEEE International Conference on Multimedia and Expo (ICME 2012), Jul. 9-13, 2012.
- The IEEE Fifth International Conference on Biometrics: Theory, Applications and Systems (BTAS 2012), Sep. 23-27, 2012.
- The 9th IEEE Conference on Advanced Video and Signal-based Surveillance (AVSS 2012), Sep. 18-21, 2012.
- The 2012 International Conference on Advanced Vehicle Technologies and Integration (VTI 2012), Jul. 16-19, 2012.
- The 11th Asian Conference of Computer Vision (ACCV 2012), Nov. 5-9, 2012.
- The IEEE Workshop on Applications of Computer Vision 2013 (WACV 2013), Jan. 16-18, 2013.
- The 2nd International Conference on Pattern Recognition Applications and Methods (ICPRAM 2013), Feb. 15-18, 2013.
- The 5th IEEE International Workshop on Analysis and Modeling of Faces and Gestures (AMFG2013), in conjunction with CVPR 2013, Jun. 28, 2013.
- The IEEE Fifth International Conference on Biometrics: Theory, Applications and Systems (BTAS 2013), Sep. 29-Oct. 2, 2013.
- The 1st International Workshop on Multimedia Affective Computing, in conjunction with ICME 2014, Jul. 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.

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- 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, Jul. 21, 2017.
 - The CVPR 2017 workshop on DeepVision: Temporal Deep Learning, Jul. 26, 2017.
 - SmartAg International Symposium, Dec. 3-6, 2017.
 - IEEE FG 2018 Workshop on Dense 3D Reconstruction of 2D Face Images in the Wild, May 2018.
 - IEEE FG 2018 Doctoral Consortium, May 2018.
 - IEEE International Conference on Visual Communications and Image Processing (VCIP 2018), Dec. 9-12, 2018.
 - The CVPR 2019 Workshop on Precognition: Seeing through the Future, Jun. 2019.
 - Intelligent Biometrics and Smart Sensors Workshop in conjunction with AVSS 2019, Sep.18, 2019.

Advisory Board Member

- Advisory board member for Human-centric Trustworthy Computer Vision From Research to Applications, in conjunction with ICCV 2021.
- Steering Committee of IEEE International Conference on Connected and Autonomous Driving (MetroCAD).

Program Chair

- IEEE Winter Conference on Applications of Computer Vision (WACV 2018), Mar. 12-15, 2018.
- 9th IEEE International Conference on Biometrics: Theory, Applications and Systems (BTAS 2018), Oct. 22-25, 2018.
- IEEE Advanced Video and Signal-based Surveillance (AVSS-2022) conference, 2022.
- IEEE International Joint Conference on Biometrics (IJCB 2022), Oct. 24-27, 2022.

General Chair

- 17th IEEE Conference on Automatic Face and Gesture Recognition (FG), May 13-17, 2023.

Workshop Chair

- ICCV Workshop on Human Behavior Understanding (HBU), Oct. 2019.
- The International Workshop on 3D Human Understanding (3DHU), in conjunction with IEEE ICPR 2020, Sep. 2020.
- AG-ReID2023: Aerial-Ground Person ReID Challenge, in conjunction with IJCB 2023, Sep. 2023.

Area Chair/Co-Chair

- The 21st International Conference on Pattern Recognition (ICPR 2012), Nov. 11-15, 2012.
- The 6th IAPR International Conference on Biometrics (ICB 2013), Jun. 4-7, 2013.
- Doctoral Consortium of 10th IEEE Conference on Automatic Face and Gesture Recognition (FG 2013), Apr. 23, 2013.
- IEEE Winter Conference on Applications of Computer Vision (WACV 2014), Mar. 24-26, 2014.
- The 11th IEEE International Conference on Advanced video and Signal-based Surveillance (AVSS 2014), Aug. 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), Mar. 7-9, 2016.
- The 23rd International Conference on Pattern Recognition (ICPR 2016), Dec. 4-8, 2016.

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- 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), Jun. 24-30, 2017.
 - Tutorial Chair, IEEE Winter Conference on Applications of Computer Vision (WACV 2017), Mar. 24-31, 2017.
 - Corporate Relations Chair, International Joint Conference on Biometrics (IJCB 2017), Oct. 1-4, 2017.
 - The 19th IEEE International Conference on Image Processing (ICIP 2017), Sep. 17-20, 2017.
 - Doctoral Consortium Co-Chair, 2018 IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2018), Jun. 18-23, 2018.
 - The 13th IEEE Conference on Automatic Face and Gesture Recognition (FG 2018), May 15- 19, 2018.
 - 2019 IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2019), Jun. 15-21, 2019.
 - 2019 International Conference on Computer Vision (ICCV 2019), Oct. 27-Nov. 3, 2019.
 - Senior Program Committee member of the 28th International Joint Conference on Artificial Intelligence (IJCAI) 2019, Aug. 10-16 2019.
 - The 15th IEEE Conference on Automatic Face and Gesture Recognition (FG 2020), May 18-22, 2020.
 - The International Conference on Learning Representations (ICLR 2020), Apr. 26-30, 2020.
 - The 16th European Conference on Computer Vision (ECCV 2020), Aug. 23-28, 2020.
 - The 28th ACM International Conference on Multimedia (ACM MM) 2020, Oct. 12-16, 2020.
 - The 25th International Conference on Pattern Recognition (ICPR) 2020, Jan. 10-15, 2021.
 - The Conference on Neural Information Processing Systems (NeurIPS) 2020, Dec. 6-12, 2020.
 - The International Conference on Learning Representations (ICLR 2021), May, 2021.
 - 2021 IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2021), Jun, 2021.
 - 2021 International Conference on Computer Vision (ICCV 2021), Oct. 11, 2021.
 - The 38th International Conference on Machine Learning (ICML 2021) Jul. 18-24, 2021.
 - The International Conference on Learning Representations (ICLR 2022), May, 2022.
 - The 17th European Conference on Computer Vision (ECCV 2022), Oct. 24-28 , 2022.

Award Committee

- VALSE 2019 Best Paper Selection Committee, Apr. 2019.
- International Conference on Computer Vision (ICCV) 2021 Marr Paper Prize Panel, Sep. 2021.
- CCF-CV (10 years) Most Impact Work Award Selection Committee, Oct. 2022.

Panelist

- NSF Panel on IIS-Robust Intelligence (RI) small program, Mar. 2012.
- Technology Innovation panel on NIJ Conference, Jun. 2012.
- NSF Panel on IIS-Robust Intelligence (RI) small program, May 29-30 2014.
- ICPR 2014 Special Panel on Industry Related Research, Aug. 26 2014.
- “Recent Advances in Biometrics” session in the 13th Annual Smart Card Alliance Government Conference, Oct. 30, 2014.
- NSF Panel on IIS-Research Initiation Initiative (CRII) program, Nov. 17-18 2016.
- CVPR 2018 Biometrics Workshop Panel on “Impact of deep learning on biometrics and trends”, Jun. 18, 2018.
- CVPR 2018 Disguised Faces in the Wild Workshop Panel on “Attacks on Face Recognition”, Jun. 18, 2018.
- NSF Panel on IIS-Robust Intelligence (RI) small program, Mar. 28-29 2019.
- The 7th Annual U.S. Border Security and Intelligence Summit, Panel on “Developing New Biometric Identification Technologies for National Security, Apr. 11, 2019.
- Discussion Panel in CVPR Workshop on autonomous driving - Beyond Single-Frame Perception (WAD), Jun. 16, 2019.
- ICCV 2021 China pre-conference Panel, Aug. 27, 2021.
- DSI 3rd Annual Digital Forensics for National Security Symposium, National Harbor, MD, Jul. 27-28, 2022.
- Transforming our world: conversations with MSU Chinese scholars, Inaugural event on Autonomous driving, Zoom Webinar, Mar. 16, 2023.
- Panel Discussion on Impact of Generative AI on Media Security and Privacy, at the 11th ACM Workshop on Information Hiding and Multimedia Security, Chicago, IL, Jun. 30, 2023.
- ICIP 2023 Industrial Forum on “Future Smart Manufacturing: Trustworthiness, ESG, and Privacy”, Oct. 9, 2023.

Grant Review

- DARPA 2013.
- NIJ 2013, 2015, 2020.
- 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.
- Atra Akandeh, Michigan State University.
- Elham Tabassi, Michigan State University.
- Xi Peng, Rutgers University.
- Melissa Dale, Michigan State University.
- Renu Sharma, Michigan State University.
- Biyi Fang, Michigan State University.
- Josh Engelsma, Michigan State University.
- Debayan Deb, Michigan State University.
- Yichun Shi, Michigan State University.
- Sixue Gong, Michigan State University.
- Hayam Abdelrahman, Michigan State University.
- Xiaoyang Guo, The Chinese University of Hong Kong.
- Yuguang (Tony) Yao, Michigan State University.
- Guangyue Xu, Michigan State University.
- Ryan Ashbaugh, Michigan State University.
- Yimeng Zhang, Michigan State University.
- Zhiyuan Xie, The Chinese University of Hong Kong.

External Examiner for Ph.D. thesis

- Ashton Fagg, Queensland University of Technology
- Hilton Bristow, Queensland University of Technology
- Kelvin Cheuk Kit Chan, Nanyang Technological University, Singapore
- Jingtan Piao, The Chinese University of Hong Kong
- Xinzhu Ma, University of Sydney, USYD

Associate Editor

- Neurocomputing journal (Dec. 2016-Dec. 2019).
- Pattern Recognition Letters (Feb. 2019-Aug 2022).
- Pattern Recognition (Apr. 2019-Apr 2023).
- IEEE Transaction on Image Processing (Nov. 2019-).
- IEEE Transactions on Pattern Analysis and Machine Intelligence (Apr. 2023-)

Guest Editor

- International Journal of Computer Vision Special Issue on Deep Learning for Face Analysis (Oct. 2017-Nov. 2018).
- ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM) Special Issue on Face Analysis for Applications (Jun. 2018-Apr. 2019).
- Machine Vision and Applications Special Issue on 2018 IEEE Winter Conference on Applications of Computer Vision (Jan. 2018 - Dec. 2018).
- Pattern Recognition Letter Special Issue on Biometric Presentation Attacks: handcrafted features versus deep learning approaches (Nov. 2019-Dec. 2020).
- Corresponding expert of Frontiers of Information Technology & Electronic Engineering (Jul. 2019-Dec. 2022).
- IEEE Transactions on Biometrics, Behavior, and Identity Science (T-BIOM) Special Issue on Trustworthy Biometrics (Dec. 2020 - Jan. 2022).
- Engineering Journal special issue on Artificial Intelligence 2021 (Jan. 2021 - Dec. 2021).
- IEEE Transactions on Biometrics, Behavior, and Identity Science (T-BIOM) Special Issue on IJCB 2022 (June 2023 - Feb 2024).

Services

- Campus Curriculum Committee, MSU CSE Department, Fall 2020.
- Reappointment, Tenure Promotion Committee, MSU CSE Department, Fall 2020.
- Graduate Studies and Research Committee Chair, MSU CSE Department, Fall 2017, Spring 2018.
- 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.
- Faculty Search Committee Member, MSU CSE Department, Fall 2019-Spring 2020.
- Chair of Faculty Search Committee, MSU CSE Department, Fall 2021-Spring 2022.
- Mobility Faculty Search Committee Member, MSU College of Engineering, Fall 2017-Spring 2018.
- University Council/Faculty Senate representative, MSU, Fall 2014-Spring 2016.
- Faculty mentor for Autonomous Ground Vehicle Research Club, Michigan State University, Fall 2016-Spring 2018.
- Mentor of the CVPR 2017 Doctoral Consortium (DC), Jul. 24, 2017.
- Mentor of the IJCB 2017 Doctoral Consortium (DC), Oct. 3, 2017.
- Mentor of the ICCV 2019 Doctoral Consortium (DC), Oct. 30, 2019.
- Mentor of the WACV 2022 Doctoral Consortium (DC), Jan. 10, 2022.
- Mentor of the CVPR 2022 Doctoral Consortium (DC), Jun. 22, 2022.
- Mentor of the FG 2023 Doctoral Consortium (DC), Jan. 8, 2023.
- Mentor of the CVPR 2023 speed mentoring session, Jun. 22, 2023.

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

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- Initiate “Rosenblum Undergraduate Research Opportunity Award (RUROA)” at MSU CSE Department, Fall 2013.
 - Member of the advisory committee of the 5-year AI flagship project in South Korea titled “Intelligent interaction based on context awareness and intention understanding”, Apr. 2017-Mar. 2022.
 - Technical Activities Committee member of IEEE Biometrics Council, Jun. 2017-May 2022.
 - Co-organizer of the MSU-Notre Dame Workshops on Biometrics/Computer Vision, Sep. 2019 and Apr. 2023.
 - Biometrics Podcast episode on Global Payments [website](#).