# Curriculum Vitae of Yi Ma

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## 1 EDUCATION

- **Ph.D.** in Electrical Engineering and Computer Sciences, University of California at Berkeley, 2000.
- **Master of Arts** in Mathematics, University of California at Berkeley, 2000.
- **Master of Science** in Electrical Engineering and Computer Sciences, University of California at Berkeley, 1997.
- **Bachelor Degree** in Automatic Control with a supplementary second degree in Applied Mathematics, Tsinghua University, Beijing, China, 1995.

## 2 ACADEMIC EXPERIENCES

- **Inaugural Director** of the School of Computing and Data Science, the University of Hong Kong, since July 2024.
- **Inaugural Director** of the Institute of Data Science, the University of Hong Kong, since January 2023.
- **Head** of the Computer Science Department, the University of Hong Kong, June 2023 - July 2024.
- **Professor in residence** of Department of the Electrical Engineering and Computer Sciences, the University of California at Berkeley, since January 2018.
- **Affiliate Professor** and co-director of the Imaging Science Lab of the Tsinghua Berkeley Shenzhen Institute (TBSI), since March 2018.
- **Chief Scientist** of Berkeley FHL Vive Center for Enhanced Reality, since February 2018.
- **Professor** of School of Information Science and Technology, ShanghaiTech University, China, February 2014 – November 2017.
- **Executive Dean** of School of Information Science and Technology, ShanghaiTech University, China, September 2014 – March 2017.
- **Adjunct Associate Professor** of the Electrical & Computer Engineering Department, University of Illinois at Urbana-Champaign, since January 2012.
- **Associate Professor** (with tenure) of the Electrical & Computer Engineering Department, University of Illinois at Urbana-Champaign, August 2006 – December 2011.
- **Affiliate Associate Professor** of the Computer Science Department, University of Illinois at Urbana-Champaign, since August 2009.
- **Research Associate Professor** of the Coordinated Science Laboratory, and of the Beckman Institute, University of Illinois at Urbana-Champaign, since August 2006.
- **Visiting Professor** at Department of Electrical Engineering and Computer Sciences, University of California at Berkeley, Spring 2007.
- **Visiting Senior Researcher** of the Director at Microsoft Research Asia, Beijing, China, Summer and Fall 2006.
- **Assistant Professor** (tenure track) of the Electrical & Computer Engineering Department, University of Illinois at Urbana-Champaign, August 2000 – August 2006.

# 3 INDUSTRIAL EXPERIENCES

- **Member of the Technical Advisory Board** (TAB) of *Malong Inc.*, Shenzhen, China, since June 2018.
- **Independent Director** of the Board of Directors of *Cheetah Mobile Inc.* (NYSE: CMCM), since March 2018.
- **Senior Advisor** of Bytedance Research Lab in Silicon Valley, December 2017 - December 2019.
- **Cofounder** of the startup *Plex-VR Digital Technology Co. Ltd* (now known as *DGene*), 2016 - 2017.
- **Senior Consultant** to HTC/VIA, January 2014 to November 2017.
- **Group Manager** and **Principal Researcher** of the Visual Computing Group, *Microsoft Research Asia*, Beijing, China, July 2009 – February 2014.
- **Senior Visiting Researcher** of the Visual Computing Group, *Microsoft Research Asia*, Beijing, China, Fall 2006.

# 4 HONORS AND AWARDS

- **SIAM Fellow** 2020, **ACM Fellow** 2017, **IEEE Fellow** 2013.
- **The World's Highly Cited Researchers**, ranked by Clarivate Analytics of Thomson Reuters, since 2016.
- **Top 50 of the World's Most Influential Authors in Computer Science**, ranked by Semantic Scholar, reported by Science Magazine, April 2016.
- **The Second Prize of the Inaugural Best Paper Award** of the Journal on Information and Inference, Institute of Mathematics and its Applications, 2015.
- **Shanghai Academic Leaders Program** Award, 2014-2017.
- **National 1000 People Plan Distinguished Scholar of China**, 2015-2017.
- **Shanghai 1000 People Plan Distinguished Scholar**, 2014-2017.
- **Distinguished Speaker of the Year**, China Computer Federation (CCF), 2014.
- **Guest Professorships** held at the University of Electronic Science and Technology of China, Shanghai Jiaotong University, and the University of Science and Technology of China.
- **Research Team of the Year Award**, Microsoft Research Asia, 2012.
- **Gold Star Award**, Microsoft Corporate, 2011.
- **Sang Uk Lee Best Student Paper Award** at Asian Conference on Computer Vision, Xi'an, China, September 2009.
- **Incomplete List of Teachers Ranked as Excellent** (voted by the students), University of Illinois at Urbana-Champaign, Spring 2001, Fall 2002, and Spring 2006.
- **Young Investigator Program** Award (two recipients nation-wide in the division of Mathematical, Computer and Information Sciences), Office of Naval Research, 2005.
- **Longuet-Higgins Best Paper Award** (honorable mention) of the European Conference on Computer Vision (one prize winner and one honorable mention out of over 700 papers submitted), 2004.
- **Young Faculty CAREER Award**, National Science Foundation, 2003.
- **David Marr Best Paper Award** of the International Conference on Computer Vision (one of two prize winners out of over 600 papers submitted), 1999.
- **Regents Fellowship**, University of California at Berkeley, 1995–1996.
- **Excellent Student Scholarship – First Prize**, Tsinghua University, P. R. China, 1994.
- **Champion** of the First Mathematical and Computer Modeling Contest, Tsinghua University, P. R. China, 1994.

# 5 KEYNOTES AND DISTINGUISHED LECTURES

- **Keynote Speech**, the 2024 Future Science Prize Symposium, Hong Kong, November 2, 2024.
- **Keynote Speech**, the 7th Chinese Conference on Pattern Recognition and Computer Vision (PRCV), Urumqi, China, October 18-20, 2024.
- **Plenary Talk**, Hong Kong China Friendship Association Forum, August 28, 2024.
- **Plenary Talk**, CCF BigData, Qingdao, China, August 10, 2024.
- **Plenary Talk**, the International Conference on Mathematical Theory of Deep Learning, Academy of Mathematics and Systems Science of the Chinese Academy of Sciences, Beijing, China, August 5-9, 2024.
- **Keynote Speech**, Basic Science and Artificial Intelligence Forum, International Congress of Basic Science, Beijing, China, July 21, 2024.
- **A Distinguished Lecture** at the Masters Forum of the Chinese University of Hong Kong, Shenzhen, January 16, 2024.
- **Keynote Speech** at 12th International Workshop on Mathematical Issues in Information Sciences (MIIS'2023), CUHK Shenzhen, December 17, 2023.
- **Su Buqing Distinguished Lecture** at Fudan University University, Shanghai, December 7, 2023.
- **Keynote Speech** at the Shanghai AI Lab and HKU joint seminar, Shanghai, December 6, 2023.
- **Distinguished Seminar** at Hong Kong University of Science and Technology (HKUST), September 15, 2023.
- **Keynote Speech** at the Workshop on Mathematical Theory for Emergent Intelligence, July 17, 2023.
- **Plenary Talk** at the Chinese SIAM Conference on Big Data and AI (CSIAM-BDAI), China, July 8, 2023.
- **Keynote Speech** at Tsinghua Alumni Academia Club of North America annual meeting, July 7, 2023.
- **Keynote Speech** International Workshop on Learning and Information Theory, Shenzhen & Hong Kong, China, July 3, 2023.
- **Keynote Speech** at IEEE Fellow Forum of the Global AI Product & Application Expo, Shuzhou, China, June 26, 2023.
- **Plenary Lectures** at Advanced Course on Data Science and Machine Learning (ACDL), Tuscany, Italy, June 10-14, 2023.
- **Keynote Speech** at the Construction Industry Council of Hong Kong, May 30, 2023.
- **Keynote Speech** at the Asian Engineering Deans' Summit, Hong Kong University, May 17, 2023.
- **Keynote Speech** at the International School on Deep Learning (DeepLearn 2023 Winter), Bournemouth, United Kingdom, January 16-20, 2023.
- **Distinguished Lecture** at CS Department, UIUC, December 14, 2022.
- **Plenary Talk** at the Chinese SIAM Conference on Big Data and AI (CSIAM-BDAI), China, 2022.
- **Distinguished Speaker Series** of the Data Science Institute, Hong Kong University, November 25, 2022.
- **Plenary Talk** at CMSE Data Science Student Conference, Michigan State University, November 11, 2022.
- **ESE Department Colloquium**, University of Pennsylvania, November 7, 2022.
- **Distinguished Seminar** at ECE Department Seminar, UC Davis, October 7, 2022.
- **Keynote Speech** at the 4th International Conference on Robotics and Computer Vision (ICRCV), Wuhan, China, September 25-27, 2022.
- **Keynote Speech** at the Forum of Cognitive Intelligence, World Artificial Intelligence Conference, Shanghai, China, September 2, 2022.

- **Distinguished Lecture** of the IAS of the Hong Kong University of Science and Technology, August 5, 2022.
- **Keynote Speech** at the Hong Kong Tech Forum on Grand Challenges in Data Science and Artificial Intelligence, Hong Kong, July 26-27, 2022.
- **Keynote Speech** at the 17th biennial Canadian Workshop on Information Theory (CWIT) of the Canadian Society of Information Theory, Ottawa, Canada, June 7, 2022.
- **Plenary Talk** at the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Singapore, May 22-27, 2022.
- **Keynote Speech** at the International School on Deep Learning (DeepLearn 2022), United Kingdom, January 17-21, 2022.
- **Digital Futures Distinguished Lecture** at KTH Royal Institute of Technology, Sweden, September 15, 2021.
- **Keynote Speech** at the International Conference on Image, Vision and Computing, Qingdao, China, July 23-25, 2021.
- **Math-Science Literature Lecture Series**, Center of Mathematical Sciences and Applications (CMSA), Harvard University, April 16, 2021.
- **Keynote Speech** at Computational Imaging Conference, January 2021.
- **Distinguished Lecture** at the ECE Department, Northwestern University, November 18, 2020.
- **Keynote Speech** at the TBSI Workshop on Learning Theory, July 16, 2019.
- **Keynote Speech** at IEEE International Conference on Visual Communications and Image Processing (VCIP), Taichung, Taiwan, December 9-12, 2018.
- **Keynote Speech** at Global Artificial Intelligence and Robotics Summit (CCF-GAIR2018), Shenzhen, China, June 29 - July 1, 2018.
- **Distinguished Lecture** at the Global Frontiers in Science and Technology forum, the Berkeley Global Science Institute, June 11, 2018.
- **Keynote Speech** at the 1st Forum on Frontiers of Science and Engineering, organized by Tsinghua Alumni Academia Club (TAAC), Seattle, May 28-30, 2018
- **Plenary Talk** at Dutch Mathematical Congress, Netherlands, April 3-4, 2018.
- **Keynote Speech** at United Nation 12th Internet Governance Forum (IGF), Geneva, Switzerland, December 18, 2017.
- **Keynote Speech** at China Workshops on Machine Learning and Applications (MLA), Beijing, China, November 3-5, 2017.
- **Plenary Speech** at Imaging Summit 2017, Seoul, Korea, July 10, 2017.
- **Keynote Speech** at the Huawei Inc. 4th Wireless Algorithm Festival, Shanghai, China, April 22, 2017.
- **Keynote Lecture** at Humanware International Symposium, Osaka, January 26, 2017.
- **Keynote Speech** at Symposium of National Deans' Association in Electronics and Information, Beijing, China, November 12, 2016.
- **Plenary Talk** at IEEE Information Theory Workshop, Jeju Island, Korea, October 11-15, 2015.
- **Plenary Talk** at IEEE International Conference on Multimedia and Expo (ICME), Torino, Italy, June 29 - July 3, 2015.
- **Keynote Speech** at the 10th International Conference on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR), Hong Kong, China, January 13-16, 2015.
- **Plenary Talk** at the Foundations of Computational Mathematics (FoCM) Conference, Montevideo, Uruguay, December 11-14, 2014.

- **Keynote Talk** at China Workshop on Machine Learning and Applications (MLA), Xi'an, November 8-9, 2014.
- **Plenary Talk** at the National Conference on Image and Graphics Technology and Applications, Chinese Institute of Electronics, Beijing, November 1-3, 2014.
- **Keynote Talk** at Computer Vision Task Forces Forum, China Computer Federation, Beijing, September 13-14, 2014.
- **Plenary Talk** China Computer Federation Young Elite Forum, Nanjing, June 1, 2014.
- **Plenary Talk** at the SIAM Conference on Imaging Science (SIAM-IS14), Hong Kong, May 12-14, 2014.
- **Plenary talk** at the French-German Conference on Mathematical Image Analysis, Institut Henri Poincare, Paris, France, January 13-15, 2014.
- **Guest Professorship Inauguration Distinguished Lecture** at the College of Information Science, University of Science and Technology of China, April 18, 2013.
- **Plenary Talk** at International Conference on Pattern Recognition (ICPR), Japan, November 2012.
- **Plenary Talk** at International Conference on Distributed Smart Camera, October 2012.
- **Keynote Speech** at International Conference on Biometrics (BTAS) , Washington DC, September 2012.
- **Keynote Speech** at Digital Image Computing: Techniques and Applications, Queensland, Australia, December 2011.
- **Keynote Speech** at the 3rd International Conference on Awareness Science and Technology, Dalian, China, September 2011.
- **Plenary Talk** at Signal Processing with Adaptive Sparse Structured Representations (SPARS), Edinburg, June 27-30, 2011.
- **Distinguished Lecture** at Technion Computer Engineering Inauguration Conference, Israel, June 1-6, 2011.
- **Keynote Speech** at AAAI Symposium on Manifold Learning and its Applications, Arlington, VA. Nov. 11, 2010.
- **Plenary Speaker** at Visual Communications and Image Processing (VCIP), Huang Shan, China, July 2010.
- **Keynote Speaker** at ACCV workshop on Community Based 3D Content and its Applications in Mobile Internet Environment, September 24, 2009.
- **Plenary Speaker** at the 22nd IPPR Conference on Computer Vision, Graphics, and Image Processing, Taiwan, August 2009.
- **Keynote Speaker** at International Workshop on Local and Non-Local Approximation (LNLA) in Image Processing, Helsinki, August 2009.
- **Plenary Speaker** at Picture Coding Symposium (PCS), Chicago, May 2009.
- **Fessenden Lecture** at ECE Department, the University of Pittsburgh, February 2007.

# 6 PUBLICATIONS

**Google Scholar Citations:** over 75,600 as of September 2024, with H-index at 84, with *three papers once ranked No.1 as the most cited papers* (of the Journal of ACM, IEEE Trans. on Pattern Analysis and Machine Intelligence, and IEEE Trans. on Image Processing respectively) within five years of their publication by Google Scholar Metrics. Among *the World's Highly Cited Researchers* ranked by Clarivate Analytics of Thomson Reuters since 2016, and among *Top 50 of the World's Most Influential Authors in Computer Science*, ranked by Semantic Scholar, reported by Science Magazine, April 2016.

- **Textbooks:**

1. *High-Dimensional Data Analysis with Low-Dimensional Models: Principles, Computation, and Applications*, John Wright and Yi Ma, 718 pages, Cambridge University Press, 2022. https://book-wright-ma.github.io. (Translated and Published in Chinese, 2024).
2. *Generalized Principal Component Analysis*, René Vidal, Yi Ma, and Shankar Sastry, Springer Series on Interdisciplinary Applied Mathematics (IAM #40), 566 pages/121 illustrations, Springer, New York, 2016. http://www.vision.jhu.edu/gpca/.
3. *An Invitation to 3-D Vision: From Images to Geometric Models*, Yi Ma, Stefano Soatto, Jana Košecká, and Shankar Sastry, Springer Series on Interdisciplinary Applied Mathematics (IAM #26), 526 pages/170 illustrations, Springer, New York, 2004.

- **Edited Book and Journal Special Issues**

1. *Dynamical Vision*, edited by Rene Vidal, Anders Heyden, and Yi Ma, Lecture Notes in Computer Science (LNCS #4358), 329 pages, Springer, 2007.
2. Special issue on *Real-World Face Recognition*, edited with Hua Gang, Eric Learned-Miller, Thomas Huang, and David Kriegman, IEEE Transactions on Pattern Analysis and Machine Intelligence, 2011.
3. Special issue on *Dimensionality Reduction via Subspace and Manifold Learning*, edited by Yi Ma, Partha Niyogi, Guillermo Sapiro, and René Vidal, IEEE Signal Processing Magazine, March 2011.
4. Special issue on *Applications of Sparse Representation and Compressive Sensing*, edited by Richard Baraniuk, Emmanuel Candes, Michael Elad, and Yi Ma, Proceedings of IEEE, June 2010.

- **Refereed Journal Papers:**

1. "White-Box Transformers via Sparse Rate Reduction: Compression Is All There Is?" Yaodong Yu, Sam Buchanan, Druv Pai, Tianzhe Chu, Ziyang Wu, Shengbang Tong, Hao Bai, Yuexiang Zhai, Benjamin D. Haeffele, and Yi Ma, arXiv:2311.13110, accepted by JMLR, 2024.
2. "Representation Learning via Manifold Flattening and Reconstruction," Michael Psenka, Druv Pai, Vishal Raman, Shankar Sastry, Yi Ma, arXiv:2305.01777, accepted by JMLR, February 2024.
3. "Pursuit of a Discriminative Representation for Multiple Subspaces via Sequential Games," Druv Pai, Michael Psenka, Chih-Yuan Chiu, Manxi Wu, Edgar Dobriban, and Yi Ma, arXiv:2206.09120, Journal of the Franklin Institute, 2023.
4. "On the Principles of Parsimony and Self-Consistency for the Emergence of Intelligence," Yi Ma and Doris Tsao and Heung-Yeung Shum, arXiv:2207.04630, FITEE, 2022.
5. "Fully Convolutional Line Parsing," Xili Dai, Xiaojun Yuan, Haigang Gong, and Yi Ma, arXiv:2104.11207, Neurocomputing, 2022.
6. "ReduNet: A White-box Deep Network from the Principle of Maximizing Rate Reduction," Kwan Ho Ryan Chan, Yaodong Yu, Chong You, Haozhi Qi, John Wright, and Yi Ma, arXiv:2104.10446, Journal of Machine Learning Research, 2022.
7. "CTRL: Closed-Loop Transcription to an LDR via Minimaxing Rate Reduction," Xili Dai, Shengbang Tong, Mingyang Li, Ziyang Wu, et. al. and Yi Ma, first released as arXiv:2111.06636, Entropy (special issue on Information Theory and Machine Learning), March 2022.
8. "Computational Benefits of Intermediate Rewards for Hierarchical Planning," Yuexiang Zhai, Christina Baek, Zhengyuan Zhou, Jiantao Jiao, and Yi Ma, arXiv:2107.03961, Journal of Artificial Intelligence Research, 2022.
9. "Learning and Meshing from Deep Implicit Surface Networks Using an Efficient Implementation of Analytic Marching," Jiabao Lei, Kui Jia, and Yi Ma, IEEE Transactions to Pattern Analysis and Machine Intelligence, 2021.
10. "Towards Unified Acceleration of High-Order Algorithms under Holder Continuity and Uniform Convexity," Chaobing Song and Yi Ma, arXiv:1906.00582, SIAM Journal on Optimization (SIOPT), 2021.
11. "Complete Dictionary Learning via L4-Norm Maximization over the Orthogonal Group," Yuexiang Zhai, Zitong Yang, Zhenyu Liao, John Wright, and Yi Ma, arXiv:1906.02435, Journal of Machine Learning Research, 2020.
12. "TARM: A Turbo-type Algorithm for Affine Rank Minimization," Zhipeng Xue, Xiaojun Yuan, Junjie Ma, and Yi Ma, arXiv:1802.03704, IEEE Transactions on Signal Processing, September, 2019.
13. "Robust Low-Rank Tensor Recovery with Rectification and Alignment," Xiaoqin Zhang, Di Wang, Zhengyuan Zhou, and Yi Ma, IEEE Transactions on Pattern Analysis and Machine Intelligence, July 2019.

14. "Parameter-free Gaussian PSF Model for Extended Depth of Field in Brightfield Microscopy," Xu Zhou, Rafael Molina, Yi Ma , Tianfu Wang, and Dong Ni, IEEE Transactions on Image Processing, November, 2019.
15. "Robust Tensor Approximation with Laplacian Scale Mixture Modeling for Multiframe Image and Video Denoising," Weisheng Dong, Tao Huang, Guangming Shi, Yi Ma and Xin Li, IEEE Journal of Special Topics on Signal Processing, Volume: 12, Issue: 6, Pages: 1435 - 1448, Dec. 2018.
16. "Label Information Guided Graph Construction for Semi-Supervised Learning," Liansheng Zhuang, Zihan Zhou, Shenghua Gao, Jingwen Yin, Zhouchen Lin, and Yi Ma, IEEE Transactions on Image Processing, Volume: 26, Issue: 9, Pages: 4182 - 4192, Sept. 2017.
17. "Texture Repairing by Unified Low Rank Optimization," Xiao Liang, Xiang Ren, Zhengdong Zhang, Yi Ma, 31 (3), pages 525-546, Journal of Computer Science and Technology, 2016.
18. "ROML: A Robust Feature Correspondence Approach for Matching Objects in a Set of Images," Kui Jia, Tsung-Han Chan, Zinan Zeng, and Yi Ma, Vol. 117, issue 2, pages 173-197, the *International Journal of Computer Vision* (IJCV), 2016.
19. "PCANet: A Simple Deep Learning Baseline for Image Classification?" Tsung-Han Chan, Kui Jia, Shenghua Gao, Jiwen Lu, Zinan Zeng, and Yi Ma, 24 (12), pages 5017-5032, *IEEE Transactions on Image Processing*, 2015.
20. "Constructing a Non-Negative Low-Rank and Sparse Graph with Data-Adaptive Features," Liansheng Zhuang, Shenghua Gao, Jinhui Tang, Jingjing Wang, Zhouchen Lin, Yi Ma, and Nenghai Yu, 24 (11), pages 3717-3728, *IEEE Transactions on Image Processing* (TIP), 2015.
21. "Image Restoration via Simultaneous Sparse Coding: Where Structured Sparsity Meets Gaussian Scale Mixture," Weisheng Dong, Xin Li, Guangming Shi, and Yi Ma, 114 (2-3), pages 217-232, *International Journal of Computer Vision* (IJCV), 2015.
22. "Sparse Illumination Learning and Transfer for Single-Sample Face Recognition with Image Corruption and Misalignment," Liangsheng Zhuang, Tsung-Han Chan, Allen Y. Yang, S. Shankar Sastry, and Yi Ma, 114 (2-3), pages 272-287, *International Journal of Computer Vision* (IJCV), 2014.
23. "Nonlocal Sparse and Low-rank Regularization for Optical Flow Estimation," Weisheng Dong, Guangming Shi, Xiaocheng Hu, Yi Ma, 23(10), *IEEE Transactions on Image Processing* (TIP), 2014.
24. "Compressive Sensing via Non-local Low-rank Regularization," Weisheng Dong, Guangming Shi, Xin Li, Yi Ma, and Feng Huang, 23(8): 3618-3632, *IEEE Transactions on Signal Processing*, August 2014.
25. "Fast Low-Rank Subspace Segmentation," Xin Zhang, Guangcan Liu, and Yi Ma, 26(5) 1293-1297, *IEEE Transactions on Knowledge and Data Engineering*, May 2014.
26. "MMSE Design of Time and Color Multiplexing Codes," Tsung-Han Chan, Kui Jia, Eliot Wycoff, and Yi Ma, 62(5): 1157-1170, *IEEE Transactions on Signal Processing*, March 2014.
27. "Robust Subspace Discovery via Relaxed Rank Minimization," Xinggang Wang, Zhengdong Zhang, Yi Ma, Xiang Bai, Wenyu Liu, and Zhuowen Tu, 26(3): 611-635, *Neural Computation*, March 2014.
28. "Learning Category-Specific Dictionary and Shared Dictionary for Fine-Grained Image Categorization," Shenghua Gao, Yi Ma, 23(2): 623-634, *IEEE Transactions on Image Processing*, February 2014.
29. "A New View-Invariant Feature for Cross-View Gait Recognition," Worapan Kusakunniran, Liang Wang, Jian Zhang, Yi Ma et. al., 8(10) 1642-1653, *IEEE Transactions on Information Forensics & Security*, October 2013.
30. "Rotation-invariant Features for Multi-oriented Text Detection in Natural Images," Cong Yao, Xin Zhang, Xiang Bai, Wenyu Liu, Yi Ma, and Zhuowen Tu, PlOS One, August 5, 2013.
31. "Fast l1-Minimization Algorithms for Robust Face Recognition," Allen Yang, Zihan Zhou, Arvind Ganesh, Shankar Sastry, and Yi Ma, 22(8): 3234-3246, *IEEE Transactions on Image Processing*, August 2013.
32. "Compressive Principal Component Pursuit," John Wright, Arvind Ganesh, Kerui Min, and Yi Ma, 2(1): 32-68, *Information and Inference (a journal of the IMA)*, June 2013. **IMA IAI Journal Inaugural Best Paper Prize, 2015.**
33. "Robust Recovery of Subspace Structures by Low-Rank Representation," Guangcan Liu, Zhouchen Lin, Shuicheng Yan, Ju Sun, Yong Yu, and Yi Ma, vol. 35, issue 1, page 171-184, *the IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, January 2013.
34. "RASL: Robust Alignment by Sparse and Low-rank Decomposition for Linearly Correlated Images," Yigang Peng, Arvind Ganesh, John Wright, Wenli Xu, and Yi Ma, vol. 34, no. 11, page 2233-2246, *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, December 2012. (Conference version published in CVPR 2010.)

35. "TILT: Transform-Invariant Low-rank Textures," Zhengdong Zhang, Arvind Ganesh, Xiao Liang, and Yi Ma, volume 99, number 1, page 1-24, *International Journal of Computer Vision (IJCV)*, August 2012. (Conference version published in ACCV 2010.)
36. "Towards a Practical Face Recognition System: Robust Alignment and Illumination by Sparse Representation," Andrew Wagner, John Wright, Arvind Ganesh, Zihan Zhou, Hossein Mobahi, and Yi Ma, Volume 34, Issue 2, page 372-386, *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, February 2012. (Conference version published in CVPR 2009.)
37. "Segmentation of Natural Images by Texture and Boundary Compression," Hossein Mobahi, Shankar Rao, Allen Yang, Shankar Sastry, and Yi Ma, Volume 95, Number 1, page 86-98, *International Journal of Computer Vision (IJCV)*, October 2011. (Conference version published in ACCV 2009.)
38. "Robust Principal Component Analysis?" Emmanuel Candés, Xiaodong Li, Yi Ma, and John Wright, vol. 58, issue 3, article 11, *the Journal of the ACM*, May 2011. **(Ranked No. 1 as the most cited papers of JACM within the past five years by Google Scholar Metrics.)**
39. "Image Super-Resolution via Sparse Representation," Jianchao Yang, John Wright, Thomas Huang, and Yi Ma, *IEEE Transactions on Image Processing* (TIP), vol. 19, page 2861-2873, November 2010. **(Ranked No. 3 as the most cited papers of TIP within the past five years by Google Scholar Metrics.)**
40. "Motion Segmentation in the Presence of Outlying, Incomplete, and Corrupted Trajectories," Shankar Rao, Roberto Tron, Rene Vidal, and Yi Ma, *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 32, no. 10, October 2010.
41. "Dense Error Correction via $\ell^1$ Minimization," John Wright and Yi Ma, *IEEE Transactions on Information Theory*, vol. 56, no. 7, July 2010.
42. "Sparse Representation for Computer Vision and Pattern Recognition," John Wright, Yi Ma, Guillermo Sapiro, Shuicheng Yan, and Thomas Huang, *the Proceedings of IEEE*, vol. 98, issue 6, June 2010.
43. "On the Role of Sparse and Redundant Representations in Image Processing," Michael Elad, Mario Figueiredo, and Yi Ma, *the Proceedings of IEEE*, vol. 98, issue 6, June 2010.
44. "Robust Algebraic Segmentation of Mixed Rigid-Body and Planar Motions," Shankar Rao, Allen Yang, Shankar Sastry, and Yi Ma, *International Journal of Computer Vision*, vol. 88, page 425-446, January 2010.
45. "Classification via Minimum Incremental Coding Length (MICL)," John Wright, Yi Ma, Yangyu Tao, Zhouchen Lin, and Heung-Yeung Shum, *SIAM Journal on Imaging Science*, vol. 2, issue 2, page 367-395, April 2009.
46. "Robust Face Recognition via Sparse Representation," John Wright, Allen Yang, Arvind Ganesh, Shankar Sastry, and Yi Ma, *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, vol. 31, no. 2, February 2009. **(Ranked No. 1 as the most cited papers of TPAMI within the past five years by Google Scholar Metrics.)**
47. "Estimation of Subspace Arrangements with Applications in Modeling and Segmenting Mixed Data," Yi Ma, Allen Yang, Harm Derksen, and Robert Fossum, *SIAM Review*, vol. 50, no. 3, August 2008.
48. "Unsupervised Segmentation of Natural Images via Lossy Data Compression," Allen Yang, John Wright, Yi Ma, and Shankar Sastry, *Computer Vision and Image Understanding (CVIU)*, vol. 110, no. 2, May 2008.
49. "Segmentation of Multivariate Mixed Data via Lossy Data Coding and Compression," Yi Ma, Harm Derksen, Wei Hong, and John Wright, *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 29, no. 9, pages 1546-1562, September 2007.
50. "Multi-Scale Hybrid Linear Models for Lossy Image Representation," Wei Hong, John Wright, Yi Ma, and Kun Huang, *IEEE Transactions on Image Processing*, vol. 15, no. 12, pages 3655-3671, December 2006.
51. "A Unified Algebraic Approach to 2-D and 3-D Motion Segmentation and Estimation," Yi Ma and Rene Vidal, *Journal Mathematical Imaging and Vision*, vol. 25, pages 403-421, November 2006.
52. "Two-View Multibody Structure from Motion," René Vidal, Yi Ma, Stefano Soatto, and Shankar Sastry, *International Journal of Computer Vision*, special issue on *Dynamical Vision*, vol. 68, no. 1, pages 7-25, June 2006.
53. "Generalized Principal Component Analysis (GPCA)," René Vidal, Yi Ma, and Shankar Sastry, IEEE Transactions on *Pattern Analysis and Machine Intelligence*, vol. 27, no. 12, pages 1945-1959, December 2005.

54. "Symmetry-Based 3-D Reconstruction from Perspective Images," Allen Yang, Kun Huang, Shankar Rao, and Yi Ma, *Computer Vision and Image Understanding*, vol.99, issue 2, pages 210-240, August 2005.
55. "Symmetry Based Photo Editing," Kun Huang, Wei Hong, and Yi Ma, the special issue on image understanding for digital photos of *Pattern Recognition*, vol. 38, no. 6, pages 825-834, 2005.
56. "A Survey of Geometric Vision," Kun Huang and Yi Ma, book chapter of *Robotics and Automation Handbook,* edited by Thomas Kurfess, chapter 22, pages 1-25, CRC press, 2005.
57. "On Symmetry and Multiple View Geometry: Structure, Pose and Calibration from a Single Image," Wei Hong, Yang Yang, and Yi Ma, *International Journal of Computer Vision*, vol. 60, no. 3, pages 241-265, December, 2004.
58. "Rank Conditions on the Multiple View Matrix," Yi Ma, Kun Huang, René Vidal, Jana Košecká, and Shankar S. Sastry, *International Journal of Computer Vision*, vol. 59, no. 2, pages 115-137, September 2004.
59. "A Differential Geometric Approach to Multiple View Geometry in Spaces of Constant Curvature," Yi Ma, *International Journal of Computer Vision*, vol. 58, no. 1, pages 37-53, 2004.
60. "Optimization Criteria and Geometric Algorithms for Motion and Structure Estimation," Yi Ma, Jana Košecká, and Shankar S. Sastry, *International Journal of Computer Vision* vol. 44, no. 3, pages 219-249, 2001.
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131. "Optimal Motion Estimation from Multiview Normalized Epipolar Constraint," René Vidal, Yi Ma, Jana Košecká, and Shankar Sastry, oral presentation at International Conference on Computer Vision (ICCV, 45 out of 596 paper submitted), Vancuver, Canada, July 2001.

132. "Kruppa Equation Revisited: its Degeneracy and Renormalization," Yi Ma, René Vidal, Jana Košecká, and Shankar Sastry, in Proceedings of the 6th European Conference on Computer Vision (ECCV), June 2000.

133. "Optimization Criteria, Sensitivity and Robustness of Motion and Structure Estimation," Yi Ma, Jana Košecká, and Shankar Sastry, in Proceedings of IEEE 7th International Conference on Computer Vision (ICCV) workshop on Vision Theory and Algorithms, Corfu, Greece, September 1999.

134. "Euclidean Reconstruction and Reprojection Up to Subgroups," Yi Ma, Stefano Soatto, Jana Košecká and Shankar Sastry, the **David Marr Best Paper Award**, in Proceedings of the 7th IEEE International Conference on Computer Vision (ICCV), 1999.

135. "Vision Guided Landing of an Unmanned Aerial Vehicle," Omid Shakernia, Yi Ma, John Koo, Joao Hespanha, and Shankar Sastry, in Proceedings of IEEE Conference on Decision & Control (CDC), Phoenix, Arizona, December 1999.

136. "A Lie Theoretic Approach to Structure and Motion in Computer Vision," Yi Ma, Omid Shakernia, Jana Košecká, and Shankar Sastry, in Proceedings of the 14th World Congress of International Federation of Automatic Control (IFAC), Beijing, China, July 1999.

137. "Motion Recovery from Image Sequences: Discrete Viewpoint vs. Differential Viewpoint," Yi Ma, Jana Košecká, and Shankar Sastry, in Proceedings of European Conference on Computer Vision (ECCV), Freiburg, Germany, June 1998, vol.2, page 337-53.

138. "Motion Estimation from Two Frames as Optimization on Stiefel Manifolds," Yi Ma, Jana Košecká, and Shankar Sastry, in Proceedings of the 37th IEEE Conferences on Decision & Control (CDC), Tampa, Florida, December 1998.

139. "Free Flight in 2000: Games on Lie Groups," Claire Tomlin, Yi Ma, and Shankar Sastry, in Proceedings of the 37th IEEE Conferences on Decision & Control (CDC), Tampa, Florida, December 1998.
140. "Hierarchical Hybrid System Design on Berkeley Unmanned Autonomous Aerial Vehicle," John Koo, David Shim, Omid Shakernia, Bruno Sinopoli, Yi Ma, Frank Hoffmann, and Shankar Sastry, International Aerial Robotics Competition, Richland, Washington, August 1998.
141. "Optimal Motion From Image Sequences: A Riemannian Viewpoint," Yi Ma, Jana Košecká, and Shankar Sastry, in Proceedings of Mathematical Theory of Networks and Systems (MTNS), Padova, Italy, July 1998, page 1047-50.
142. "SmartATMS: A Simulator for Air Traffic Management Systems," John Koo, Yi Ma, George Pappas, and Claire Tomlin, in Proceedings of Winter Simulation Conference (WSC), Atlanta, Georgia, December 1997, page 1199-205.
143. "Vision Guided Navigation for a Nonholonomic Mobile Robot," Yi Ma, Jana Košecká, and Shankar Sastry, in Proceedings of the 36th IEEE Conferences on Decision & Control (CDC), San Diego, California, December 1997, vol.3, page 3069-74.

- **Patents Granted:**

1. "Camera Calibration with Lens Distortion from Low-rank Textures," filed through Microsoft, US Patent No. 8,818,132, August 26, 2014.
2. "Rectification of Chinese Characters as Transform Invariant Low-Rank Textures," filed through Microsoft, US Patent No. 8,774,558, July 8, 2014.
3. "Transform Invariant Low-rank Textures," filed through Microsoft, US Patent No. 8,463,073, Date of Patent, June 11, 2013.
4. "Recognition via High-Dimensional Data Classification," filed through UIUC, US Patent No. 8,406,525, Date of Patent: March 26, 2013.

# 7 ACADEMIC ACTIVITIES AND SERVICES

- **Invited Lectures:**

1. Keynote Speech, the 2024 Future Science Prize Symposium, Hong Kong, November 2, 2024.
2. Keynote Speech, the 7th Chinese Conference on Pattern Recognition and Computer Vision (PRCV), Urumqi, China, October 18-20, 2024.
3. Plenary Talk, Hong Kong China Friendship Association Forum, August 28, 2024.
4. Plenary Talk, CCF BigData, Qingdao, China, August 10, 2024.
5. Plenary Talk, the International Conference on Mathematical Theory of Deep Learning, Academy of Mathematics and Systems Science of the Chinese Academy of Sciences, Beijing, China, August 5-9, 2024.
6. Keynote speech, Basic Science and Artificial Intelligence Forum, International Congress of Basic Science, Beijing, China, July 21, 2024.
7. Tutorial "Learning Deep Low-Dim Models from High-Dim Data: From Theory to Practice", CVPR, Seattle, June 17-21, 2024.
8. BIRS Workshop "Mathematics of Deep Learning", the Casa Matematica Oaxaca (CMO), Mexico, June 9-14, 2024.
9. Keynote, Huawei Strategic Forum, Shenzhen, May 21, 2024.
10. APAC Keynote, Goldman Sachs Engineering Conference, May 13, 2024.
11. Invited talk at San-Ya-Po Forum, Huawei, Shenzhen, May 11, 2024.
12. Invited talk at the HKU Business School Global CEO program, May 10, 2024.
13. Invited talk on "Transparent and Consistent Deep Representation Learning" at Alibaba Cloud, Hong Kong, May 7, 2024.
14. Tutorial "Building White-Box Deep Neural Networks", ICASSP, Seoul, Korea, April 14-19, 2024.
15. Guest of Honor and Speaker at the 2024 Annual Joint High Table dinner, by the HKU student residence, April 12, 2024.

16. Talk on "Transparent and Consistent Deep Representation Learning" at the College of Engineering and Computer Science, VinUniversity, Hanoi, Vietnam, April 8th, 2024.
17. Talk on "Transparent and Consistent Deep Representation Learning" at the Department of Statistics, Stanford University, March 7th, 2024.
18. Talk on "Transparent and Consistent Deep Representation Learning" at the Department of Mathematics, UC Davis, March 6th, 2024.
19. A Distinguished Lecture at the Masters Forum of the Chinese University of Hong Kong, Shenzhen, January 16, 2024.
20. A Tutorial Lecture on ReduNet at the International Conference on Parsimony and Learning, Hong Kong, January 6, 2024.
21. General Chair of the International Conference on Parsimony and Learning, Hong Kong, January 3-6, 2024.
22. Guest Lecture for the ICC Program of HKU Business School, Sanya, December 23, 2023.
23. Keynote Speech at 12th International Workshop on Mathematical Issues in Information Sciences (MIIS'2023), CUHK Shenzhen, December 17, 2023.
24. Invited Talk at the Zhengge Venture Capital Fund annual event, Beijing, December 14, 2023.
25. Su Buqing Distinguished Lecture at Fudan University, Shanghai, December 7, 2023.
26. Invited Talk at Shanghai Jiaotong University, Shanghai, December 6, 2023.
27. Keynote Speech at the Shanghai AI Lab and HKU joint seminar, Shanghai, December 6, 2023.
28. Invited Talk at the 25th Anniversary of Microsoft Research Asia, November 10, 2023.
29. AI Seminar of the EECS Department, Oregon State University, October 13, 2023.
30. Distinguished Seminar at Hong Kong University of Science and Technology (HKUST), September 15, 2023.
31. Keynote at ICT Workshop, Huawei, Shenzhen, July 28, 2023.
32. Summer Course at TBSI on Computational Principles for High-Dimensional Data Analysis, July 11 - July 27, 2022.
33. Keynote Talk at the Workshop on Mathematical Theory for Emergent Intelligence, July 17, 2023.
34. Plenary Talk at the Chinese SIAM Conference on Big Data and AI (CSIAM-BDAI), China, July 8, 2023.
35. Keynote Speech at Tsinghua Alumni Academia Club of North America annual meeting, July 7, 2023.
36. Keynote Speech International Workshop on Learning and Information Theory, Shen Zhen & Hong Kong, China, July 3, 2023.
37. Invited talk on deep networks as white boxes in Professor Alan Yuille's lab at Johns Hopkins University, June 30, 2023.
38. Keynote Speech at IEEE Fellow Forum of the Global AI Product & Application Expo, Shuzhou, China, June 26, 2023.
39. Plenary Lectures at Advanced Course on Data Science and Machine Learning (ACDL), Tuscany, Italy, June 10-14, 2023.
40. ICASSP 2023 Short Course on Low-dimensional Models and Deep Networks, Rhodes Island, Greece, June 1-7, 2023.
41. Keynote Speech at the Construction Industry Council of Hong Kong, May 30, 2023.
42. Keynote Speech at the Asian Engineering Deans' Summit, Hong Kong University, May 17, 2023.
43. Berkeley Semiautonomous Seminar, April 21, 2023.
44. Invited Lecture at the HKU Global CEO Program, Beijing, April 8, 2023.
45. Invited Talk and Panels at NSF-IEEE Machine Learning Workshop, March 20, 2023.
46. Invited Lecture at Harvard University Chinese Academic Saloon, in Mandarin (with Slides), March 10, 2023.
47. Invited Talk at the Institute for China Business of the University of Hong Kong, March 8, 2023.
48. Invited Talk at the 1st Presidential Scholars Symposium of the University of Hong Kong, March 7, 2023.
49. Berkeley EECS Seminar, February 16, 2023.
50. Keynote Speech at the International School on Deep Learning (DeepLearn 2023 Winter), Bournemouth, United Kingdom, January 16-20, 2023.

51. Tutorial on Low-Dim Models for High-Dim Data (a seven-lecture short course presented at SLowDNN'23), Januray, 2023.
52. The Third Workshop on Seeking Low-Dimensionality in Deep Neural Networks (SLowDNN), MBZUAI, Abu Dhabi, January 3-7, 2023.
53. Plenary Talk at the Chinese SIAM Conference on Big Data and AI (CSIAM-BDAI), China, 2022.
54. Distinguished Lecture at CS Department, UIUC, December 14, 2022.
55. Invited talk at NeurIPS workshop on Trustworthy and Socially Responsible Machine Learning, December 9, 2022.
56. Distinguished Speaker Series of the Data Science Institute, Hong Kong University, November 25, 2022.
57. Invited talk at Data Science Student Research Conference, Michigan State University, November 11, 2022.
58. ESE Department Colloquium, University of Pennsylvania, November 7, 2022.
59. Invited Talk at TSMC Limited, November 2, 2022.
60. Distinguished Seminar at ECE Department Seminar, UC Davis, October 7, 2022.
61. Keynote Speech at the 4th International Conference on Robotics and Computer Vision (ICRCV), Wuhan, China, September 25-27, 2022.
62. Talk and Round Table on Fundamentals of Intelligence, Beijing Academy of Artificial Intelligence, September 21, 2022.
63. Talk at Microsoft Research Alumni Saloon, September 16, 2022.
64. Keynote Speech at IEEE Fellow Forum of the Global AI Product & Application Expo, Shuzhou, China, September 15, 2022.
65. Keynote Speech at the Forum of Cognitive Intelligence, World Artificial Intelligence Conference, Shanghai, China, September 2, 2022.
66. AI Panel at the WLSI Annual Meeting, Stanford, August 23, 2022.
67. Keynote Talk at the annual research symposium of Chandar Lab, MILA, Canada, August 12, 2022.
68. Invited talk at Bytedance summer camp, August 9, 2022.
69. Distinguished Lecture of the IAS of the Hong Kong University of Science and Technology, August 5, 2022.
70. Keynote Speech at the Hong Kong Tech Forum on Grand Challenges in Data Science and Artificial Intelligence, Hong Kong, July 26-27, 2022.
71. Invited talk at Google Sample-Efficient Learning seminar, July 27, 2022.
72. Invited talk a China Operation Research forum, July 15, 2022.
73. Visit and talk at MBZUAI, Abu Dhabi, June 20-25, 2022.
74. Invited talk at the Challenges and Prospects of ML for the Physical Sciences Workshop in NYC, Flatiron Institute, June 12-15, 2022.
75. Keynote Speech at the biennial Canadian Workshop on Information Theory (CWIT) 2022, Ottawa, Canada, June 5-8, 2022.
76. Plenary Talk at the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Singapore, May 22-27, 2022.
77. Distinguished Colloquium, Department of Electrical and Computer Engineering, University of Maryland, January 28, 2022.
78. Plenary Talk at International Workshop on Mathematical Issues in Information Sciences, Shenzhen, China, December 18-19, 2021.
79. Keynote Speech at Microsoft Faculty Summit, October 19-21, 2021.
80. Invited Talk at Baidu Research, October 12, 2021.
81. Invited Talk at School of Data Science, City University of Hong Kong, October 5, 2021.
82. Digital Futures Distinguished Lecture at KTH Royal Institute of Technology, Sweden, September 15, 2021.
83. Invited Talk at Department of Mathematics, RWTH Aachen University, Germany, August 23, 2021.
84. Invited Talk at Theoretically Inclined Machine Learning (TML) seminar, Department of EECS and Mathematics, University of Ottawa, Canada, August 17, 2021.

85. Keynote Speech at the International Conference on Image, Vision and Computing, Qingdao, China, July 23-25, 2021.
86. Invited Talk at the MAD Seminar of Center for Data Science and Courant Institute, NYU, May 14, 2021.
87. Invited Talk at the Data Science Institute (DSI) Seminar at Lawrence Livermore National Laboratory, May 10, 2021.
88. Invited Talk at the Communications and Signal Processing Seminar of EECS Department, University of Michigan, April 29, 2021.
89. Math-Science Literature Lecture Series, Center of Mathematical Sciences and Applications (CMSA), Harvard University, April 16, 2021.
90. Invited talk at MADD seminar, Institute of Data Science, UC Davis, April 13, 2021.
91. Guest Lecture at Berkeley Stat 212A, Information Theory and Statistics, April 13, 2021.
92. Invited Talk at the Technion Computer Vision Colloquium, the Pixel Club of Technion, Israel Institute of Technology, April 6, 2021.
93. Invited Talk at One World Mathematics of INformation, Data, and Signals (1W-MINDS) Seminar, April 1st, 2021.
94. Deep Networks from First Principles, Seminar at Redwood Center for Theoretical Neuroscience, UC Berkeley, March 12, 2021.
95. Deep Networks from First Principles, Semiautonomous Seminar, UC Berkeley February 19, 2021.
96. Deep Networks from First Principles, Keynote Speech at Computational Imaging Conference, January 21, 2021.
97. Invited talk at HTC and VIA, January 19, 2021.
98. Invited talk at CSML and EE Seminar, Princeton University, January 15, 2021.
99. Talk at Compvision Seminar, UC Berkeley, December 2, 2020.
100. Invited talk at CSL SINE Seminar, UIUC, November 30, 2020.
101. Northwestern ECE Distinguished Lecture, November 18, 2020.
102. Invited talk at Asilomar2019 workshop on Theory of Machine Learning, Pacific Grove, Nov. 3-6, 2019.
103. Invited talk at ICCV2019 workshop on Statistical Deep Learning in Computer Vision, Seoul, Korea, Oct. 27, 2019.
104. Keynote at TBSI Workshop on Learning Theory, Shenzhen, China, July 15-16, 2019.
105. Invited talk at Berkeley Math Department, Nonlinear Algebra Seminar: "Algebraic Problems in Modeling High-Dimensional Imagery Data", March 7th, 2019.
106. Invited talk at Berkeley Assured Autonomy Seminar, January 28th, 2019.
107. Keynote Speech at IEEE International Conference on Visual Communications and Image Processing (VCIP), Taichung, Taiwan, December 9-12, 2018.
108. Keynote Speech at the 1st Forum on Frontiers of Science and Engineering, organized by Tsinghua Alumni Academia Club (TAAC), Seattle, May 28-30, 2018.
109. Invited talk at the Information Systems Laboratory (ISL) Colloquium, Stanford, May 3, 2018.
110. Invited talk at the 2nd Annual Berkeley AR/VR Symposium, April 20, 2018.
111. Plenary Talk at Dutch Mathematical Congress, Netherlands, April 3-4, 2018.
112. Invited talk at the Berkeley AI Research (BAIR) lab retreat, March 25, 2018.
113. Invited talk at the Berkeley AI Research (BAIR) lab seminar, March 9, 2018.
114. Keynote Speech at China Workshops on Machine Learning and Applications (MLA), Beijing, China, November 3-5, 2017.
115. Plenary Speech at the 9th International Conference on Image and Graphics (ICIG), Shanghai, China, September 15, 2017.
116. Plenary Speech, Imaging Summit 2017, Seoul, Korea, July 10, 2017.
117. Keynote Speech, Huawei Inc. 4th Wireless Algorithm Festival, Shanghai, China, April 22, 2017.
118. Invited talk at CS department, National Taiwan University, April 11, 2017.
119. Invited talk at VIA Inc., Taipei, Taiwan, April 10, 2017.

120. Invited talk at HTC Inc., Taipei, Taiwan, April 10, 2017.
121. Invited talk at ECE department, HKUST, Hong Kong, April 7, 2017.
122. Invited talk at CMS department, Caltech, March 14, 2017.
123. Invited talk at EECS department, UC Berkeley, February 10, 2017.
124. Invited talk at EE and CS departments, UC Davis, February 9, 2017.
125. Keynote Lecture at Humanware International Symposium, Osaka, Japan, January 26, 2017.
126. Keynote Speech at Symposium of National Deans' Association in Electronics and Information, Beijing, China, November 12, 2016.
127. Plenary talk at the Chinese Automation Conference (CAC2015), Wuhan, China, November 27-29, 2015.
128. Plenary talk at the IEEE Information Theory Workshop (ITW), Jeju Island, Korea, October 11-15, 2015.
129. Plenary Talk at IEEE International Conference on Multimedia and Expo (ICME), Torino, Italy, June 29 - July 3, 2015.
130. Keynote Speech at the 10th International Conference on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR), Hong Kong, China, January 13-16, 2015.
131. Plenary talk at the Foundations of Computational Mathematics (FoCM) Conference, Montevideo, Uruguay, December 11-14, 2014.
132. Keynote talk at China Workshop on Machine Learning and Applications, Xi'an, November 8, 2014.
133. Invited Talk at the Data Science Forum, Shanghai Mathematical Center and College of Mathematics of Fudan University, Shanghai, China, November 5, 2014.
134. Plenary talk at the National Conference on Image and Graphics Technology and Applications, Chinese Institute of Electronics, Beijing, November 1-3, 2014.
135. Invited talk at Microsoft Research Asia, Beijing, China, September 15, 2014.
136. Invited talk at Peking University, School of Mathematics, China, September 15, 2014.
137. Keynote talk at Computer Vision Task Forces Forum, China Computer Federation, Beijing, September 13, 2014.
138. Invited talk at Tsinghua University, Tsinghua Information Forum, China, September 12, 2014.
139. Invited talk at University of Electronic Science and Technology of China, Chengdu, July 14, 2014.
140. Invited talk at University of Electronic Science and Technology at Xi'an, July 11, 2014.
141. Invited Trend/Overview Talk at ChinaSIP2014, Xi'an, China, July 12, 2014.
142. Invited talk at TongJi University, Shanghai, July 8, 2014.
143. Invited talk, Forum on Scientific and Engineering Computing, June 9-10, Beijing, 2014.
144. Plenary talk, China Computer Federation Young Elite Forum, Nanjing, June 1, 2014.
145. Invited talk at Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences, May 19, 2014.
146. Invited talk at the Hong Kong Polytechnic University, CS Department, Hong Kong, May 15, 2014.
147. Plenary talk at the SIAM Conference on Imaging Science (SIAM-IS14), Hong Kong, May 12-14, 2014.
148. Plenary talk at the French-German Conference on Mathematical Image Analysis, Institut Henri Poincare, Paris, France, January 13-15, 2014.
149. Guest professorship distinguished lecture at the College of Information Science, University of Science and Technology of China, April 18, 2013.
150. Invited talk at the Electrical Engineering Department, Shanghai Jiao Tong University, April 1, 2013.
151. Invited talk at the Computer Science Department, Nanjing University, March 27, 2013.
152. Invited talk at the DSP Seminar, ECE Department, University of Illinois at Urbana Champaign, February 29, 2013.
153. Invited talk at the DSP Seminar, University of California, Berkeley, February 25, 2013.
154. Invited talk at the workshop on "Mathematics and Statistics for Computer Vision," Tsinghua Sanya International Mathematics Forum, Organized by the Mathematical Sciences Center of Tsinghua University, China, Jan 4, 2013.

155. Invited talk at the International Workshop on "Data Science and Information Technology," Beijing International Center for Mathematical Research, Peking University, November 18, 2012.
156. Plenary talk at International Conference on Pattern Recognition (ICPR), Japan, November 13, 2012.
157. Plenary talk at International Conference on Distributed Smart Camera, Hong Kong, October 31, 2012.
158. "Compressive Principal Component Pursuit," talk at the Technical Advisory Board Review for Microsoft Research Asia, October 23, 2012.
159. Keynote speech at International Conference on Biometrics (BTAS), Washington DC, September 2012.
160. Invited talk at Workshop on Algorithms for Modern Massive Data Sets (MMDS), Stanford, July 13, 2012.
161. Invited talk at Sparse and Low-rank Modeling Mini-Symposium at SIAM Annual Meeting, Minnesota, July 11, 2012.
162. Invited talk at Microsoft Research India, July 6, 2012.
163. Invited talk at Indian Institute of Science, Bangalore, India, July 6, 2012.
164. "The Pursuit of Low-dimensional Structures in High-dimensional Visual Data," International Workshop on Computer Vision, Siracusa, Italy, May 22, 2012.
165. "Transformed and Compressed Principal Component Pursuit," invited talk at National University of Singapore, April 5, 2012.
166. "Transformed and Compressed Principal Component Pursuit," invited talk at Nanyang Technology University, Singapore, April 2, 2012.
167. "Transformed and Compressed Principal Component Pursuit," invited talk at Key Laboratory of Machine Perception, Peking University, March 23, 2012.
168. "Transformed and Compressed Principal Component Pursuit," invited talk at Statistics Department, Stanford, March 2, 2012.
169. "Transformed and Compressed Principal Component Pursuit," invited talk at EECS Department, Berkeley, March 1, 2012.
170. Invited talk at MSRA-NTT joint workshop on speech recognition, Beijing, January 19, 2012.
171. Invited talk at NIPS workshop on "Low-rank Methods for Large-scale Machine Learning," Sierra Nevada, Spain, December 17, 2011.
172. "Sparse Representation and Low-rank Recovery for High Dimensional Data," invited talk at University of Technology, Sydney, Australia, December 4, 2011.
173. Keynote speech at Digital Image Computing: Techniques and Applications, Queensland, Australia, December 6-8, 2011.
174. Keynote speech at the 3rd International Conference on Awareness Science and Technology, Dalian, China, September 2011.
175. Plenary talk at Signal Processing with Adaptive Sparse Structured Representations (SPARS), Edinburgh, UK, June 2011.
176. Distinguished lecture at 1st Technion Computer Engineering Conference, Technion, Israel, June 2011.
177. Presentation at Craig Mundie's Machine Learning Review, May 4, 2011.
178. "For Low-rank Structures in Images and Data," invited talk at international workshop on Information Theory and Applications, San Diego, February 9th, 2011.
179. "For Low-rank Structures in Images and Data," computer vision seminar, UCLA, February 7, 2011.
180. "TILT and RASL: For Low-rank Structures in Images and Videos," Seminar at Dalian Institute of Science and Technology, January 7, 2011.
181. Keynote speech at AAAI Symposium on Manifold Learning and its Applications, Arlington, VA. Nov. 11, 2010.
182. "For Low-rank Structures in Images and Data," UIUC DSP Seminar, November 3, 2010.
183. "TILT and RASL: For Low-rank Structures in Images and Videos," Seminar at National University of Singapore, October 4, 2010.
184. "TILT and RASL: For Low-rank Structures in Images and Videos," Seminar at Nanyang Technological University, September 30, 2010.
185. "Microsoft Research Asia Research Overview," Summer school on Vision, Learning and Pattern Recognition (VLPR), Xi'an China, July 25, 2010.

186. "Robust Principal Component Analysis and its Applications," Invited talk at Pao-Lu Hsu Conference, Xi'an, China, July 20, 2010.

187. "Robust Principal Component Analysis and its Applications," Plenary talk at Visual Communications and Image Processing (VCIP), Huang Shan, China, July 13, 2010.

188. "Robust Principal Component Analysis and its Applications," NGA and DARPA Workshops in Washington DC, June 22 and 23, 2010.

189. "Robust Principal Component Analysis and its Applications," Invited talk at CAD&CG Lab, Zhejiang Univ., March 31st, 2010.

190. "Robust Principal Component Analysis and its Applications," Andrew Yao's Class, CS Department, Tsinghua University, March 26th, 2010.

191. "Robust Principal Component Analysis and its Applications," UIUC DSP Seminar, March 10th, 2010.

192. "Robust Principal Component Analysis and its Applications," Microsoft Research Techfest Lecture, March 3rd, 2010.

193. "Robust Principal Component Analysis via Convex Optimization," Invited talk at Singapore Management University, January 29, 2010.

194. "Confluence of Computer Vision and Sparse Representation," Invited talk at Nanyang Technology University, Singapore, January 28, 2010.

195. "Robust Principal Component Analysis via Convex Optimization," Invited talk at Fusionopolis, Singapore, January 27, 2010.

196. "Confluence of Computer Vision and Sparse Representation," Invited talk at National University of Singapore, Singapore, January 25, 2010.

197. "Robust Principal Component Analysis via Convex Optimization," Invited talk at Department of Information Engineering, Chinese University of Hong Kong, January 8, 2010.

198. "Robust Principal Component Analysis via Convex Optimization," Invited talk at Computer Science Department, Hong Kong University of Science and Technology, Hong Kong, January 6, 2010. Year 2009:

199. "Face Recognition via Sparse Representation," Invited talk at the Third Research Institute of the Department of Public Safety, Shanghai, China, December 19, 2009.

200. "Confluence of Computer Vision and Sparse Representation," Invited talk at University of Science and Technology of China, Hefei, China, December 14, 2009.

201. "Fast Convex Optimization Algorithms for Exact Recovery of a Low-Rank Matrix," Invited talk at the International Workshop on Computational Advances in Multi-Sensor Adaptive Processing, Aruba, Dutch Antilles, December 13-16, 2009.

202. "Robust Principal Component Analysis via Convex Optimization," talk at MSRA Technical Advisory Board Review, China, November 2, 2009.

203. "Confluence of Computer Vision and Sparse Representation," Invited talk at CAD & CG state key lab, Zhejiang University, China, October 22, 2009.

204. "Multiple-View Geometry and Symmetry for Image-Based 3D Reconstruction," Keynote speech at ACCV workshop on Community Based 3D Content and its Applications in Mobile Internet Environment, September 24, 2009.

205. "Confluence of Computer Vision and Sparse Representation," Invited talk National Taiwan University, Taiwan, August 28, 2009.

206. "Robust Principal Component Analysis via Convex Optimization," Invited talk Academia Sinica, Institute of Information Science, Taiwan, August 27, 2009.

207. "Robust Principal Component Analysis via Convex Optimization," Invited talk at National Tsinghua University, Taiwan, August 26, 2009.

208. "Confluence of Computer Vision and Sparse Representation," Keynote speech at the 22nd IPPR Conference on Computer Vision, Graphics, and Image Processing, Taiwan, August 24, 2009.

209. Keynote speech at International Workshop on Local and Non-Local Approximation in Image Processing, Finland, August 19-21, 2009.

210. Invited talk at Intl. Conference Sampling Theory and Applications, Marseille, France, May 18-22, 2009.

211. Plenary talk at Picture Coding Symposium, Chicago, USA, May 6-8, 2009.

212. "Subspace Arrangements and Manifold Learning," invited talk at Workshop on Multi-Manifold Data Modeling and Applications, Institute for Mathematics and Its Applications, October 27-30 2008.

213. "Compressed Sensing and Its Applications in Pattern Recognition and Computer Vision," mini-course at Microsoft Research Asia, Beijing, August, 2008.

214. "Subspace Segmentation via Lossy Data Compression," invited talk at SIAM Conference on Imaging Science, Minisymposium on Hybrid Linear and Nonlinear Modeling and its Applications, July 7-9, 2008.

215. "Sparse Representation-based Classification and its Applications," invited talk at SIAM Conference on Imaging Science, Minisymposium on Locally Adaptive Patch-based Image and Video Restoration, July 7-9, 2008.

216. "Robust Face Recognition via Sparse Representation," invited talk at Microsoft Research, Redmond, March 11, 2008.

217. "Sparse Representation-based Classification and its Applications," invited talk at Systems Seminar, Department of Electrical and Computer Engineering, University of Wisconsin at Madison, February 27, 2008.

218. "Face Recognition via Sparse Representation," invited talk at von Neumann Symposium of Applied Mathematics, Snowbird, Utah, July 8, 2007.

219. "Clustering and Classification via Lossy Data Compression," Computer Science Department, Stanford University, May 17, 2007.

220. "Face Recognition via Sparse Representation," Computer Vision Seminar, EECS Department, University of California at Berkeley, May 8, 2007.

221. "Face Recognition via Sparse Representation," Computer Vision Seminar, Computer Science Department, University of California at San Diego, May 4, 2007.

222. "Clustering and Classification via Lossy Data Compression," Computer Vision Group Seminar, Electrical Engineering Department, California Institute of Technology, May 2, 2007.

223. "Clustering and Classification via Lossy Data Compression," Computer Science Department Seminar, University of California at Los Angeles, May 1, 2007.

224. "Face Recognition via Sparse Representation," CSAIL Computer Vision Seminar, EECS Department, Massachusetts Institute of Technology, April 25, 2007.

225. "Clustering and Classification via Lossy Data Compression," LIDS Special Seminar, EECS Department, Massachusetts Institute of Technology, April 25, 2007.

226. "Clustering and Classification via Lossy Data Compression," GRASP Laboratory Seminar, University of Pennsylvania, March 23, 2007.

227. "Clustering and Classification via Lossy Data Compression," Center for Imaging Science Seminar, Johns Hopkins University, March 20, 2007.

228. "Clustering and Classification via Lossy Data Compression," Computer Vision Seminar, EECS Department, University of California at Berkeley, March 7, 2007.

229. "Clustering and Classification via Lossy Data Compression," Fessenden Lecture and Graduate Seminar, Electrical & Computer Engineering Department, IEEE EMB Society Pittsburgh Chapter, University of Pittsburgh, February 28, 2007.

230. "Clustering and Classification via Lossy Data Compression," Machine Vision Seminar, Computer Science Department, Carnegie Mellon University, February 26, 2007.

231. "Clustering and Classification via Lossy Data Compression," Mathematics Department, University of Michigan, February 6, 2007.

232. "Clustering and Classification via Lossy Data Compression," Electrical Engineering and Computer Science Department, University of Michigan, February 5, 2007.

233. "Clustering and Classification via Lossy Data Compression," Electrical Engineering and Computer Science Department, Northwestern University, January 25, 2007.

234. "How Did I Learn to Do Research, or Did I?" Intern Training Seminar, Microsoft Research Asia, Beijing, China, December 8, 2006.

235. "Segmentation of Multivariate Mixed Data via Lossy Data Compression," Department of Automation, Tsinghua University, China, September 22, 2006.

236. "Segmentation of Multivariate Mixed Data via Lossy Data Compression," School of Electronics Engineering and Computer Science, Beijing University, China, September 18, 2006.

237. "Segmentation of Multivariate Mixed Data via Lossy Data Compression," Department of Electronics, Tsinghua University, China, August 31, 2006.

238. "Image, Geometry and Symmetry," international workshop on Current Trends in Computer Vision, panel on "Geometric Vision," Lhasa of Tibet, China, August 10, 2006.
239. "Video Segmentation via Lossy Data Compression," international workshop on Current Trends in Computer Vision, panel on "Dynamical Vision," Lhasa of Tibet, China, August 10, 2006.
240. "Segmentation of Multivariate Mixed Data," Computer Science Department, Zhejiang University, Hangzhou, China, July 12, 2006.
241. "Segmentation of Multivariate Mixed Data," Microsoft Research Asia, Beijing China, June 24, 2006.
242. "Modeling and Segmentation of Multivariate Mixed Data," EECS Department Colloquium, UC Berkeley, April 12, 2006.
243. "Segmentation of Multivariate Mixed Data," Mathematics Department Graduate Seminar, University of Illinois at Urbana-Champaign, April 5, 2006.
244. "Segmentation of Multivariate Mixed Data," Nonlinear Control Seminar, Coordinated Science Laboratory, University of Illinois at Urbana-Champaign, March 29, 2006.
245. "Segmentation of Multivariate Mixed Data," Statistics Department Seminar, University of Illinois at Urbana-Champaign, March 9, 2006.
246. "Multi-Scale Hybrid Linear Models for Image Representation," Robotics Lab Seminar, EECS Department, University of California at Berkeley, June 14, 2005.
247. "Vision, Geometry, and Symmetry," Institute of Computer Science, Sichuan University, Chendu, China, May 30, 2005.
248. "Multi-Scale Hybrid Linear Models for Lossy Image Representation," Automation Department Seminar, Tsinghua University, Beijing, China, May 19, 2005.
249. "Motion-Based Image Segmentation," Microsoft Research in Asia, Beijing, China, May 19, 2005.
250. "Multi-Scale Hybrid Linear Models for Lossy Image Representation," Microsoft Research inAsia, Beijing, China, May 18, 2005.
251. "Generalized Principal Component Analysis and Its Applications," Computer Science Department, Tsinghua University, Beijing, China, May 17, 2005.
252. "Motion-Based Image Segmentation," Human/Computer Vision Symposium, Beckman Institute, May 13, 2005.
253. "Multi-Scale Hybrid Linear Models for Lossy Image Representation," vision/graphics/HCI day, Computer Science Department, University of Illinois, April 15, 2005.
254. "Identification of Hybrid ARX Systems," Control Seminar, Coordinated Science Laboratory, University of Illinois, February 2, 2005.
255. "Vision, Geometry, and Symmetry," the Center for Imaging Science, Johns Hopkins University, November 16, 2004.
256. "Generalized Principal Component Analysis and its Applications," the ITG forum of Beckman Institute, UIUC, September 21, 2004.
257. "Generalized Principal Component Analysis and its Applications," Control and Robotics Seminar, EECS, UC Berkeley, August 2004.
258. "Geometric Vision," invited one-day lectures, World Congress on Intelligent Control and Automation, Hangzhou, China, June 14-18, 2004.
259. "Generalized Principal Component Analysis," DSP seminar, ECE UIUC, April 2004.
260. "Vision, Geometry, and Symmetry," the Center for Automation Research, University of Maryland, May 9th, 2003.
261. "Image and Geometry," the Applied Mathematics Seminar, Mathematics Department, UIUC, March 3, 2003.
262. "Image and Geometry," the DSP seminar, UIUC, December 11, 2002.
263. "Group Symmetry and Multiple View Geometry," Berkeley AI/ Robotics/Vision Seminar, Robotics Group, September 19, 2002.
264. "Multiple-View Multibody Structure from Motion," Center for Intelligent and Networked Systems, Automation Department, Tsinghua University, Beijing (China), May 24, 2002.
265. "Multiple-View Multibody Structure from Motion," Microsoft Research in Asia, Beijing (China), May 22, 2002.
266. "Multiple-View Multibody Structure from Motion," Microsoft Research, Redmond, May 17, 2002.

267. "Multiple-View Multibody Structure from Motion," Special computer vision seminar, UIUC, May 8, 2002.
268. "Computer and Robot Vision," ECE Department Explorations Seminar, UIUC, February 20th, 2002.
269. "Rank Conditions in Multiple View Geometry," Visual Computation Group Seminar, Microsoft Research in Asia, Beijing, February 4th, 2002.
270. "Recognition of Human Gait," Image Formation and Processing Group, Beckman Institute, January 18, 2002.
271. "Overview of Multiple View Geometry," Math & ECE RAP program, Beckman Institute, UIUC, January 18, 2002.
272. "Rank Conditions in Multiple View Geometry," GRASP Lab Seminar, University of Pennsylvania, November 2, 2001.
273. "Rank Conditions in Multiple View Geometry," EECS Department, AI Lab Colloquium, MIT, November 1, 2001.
274. "Rank Conditions in Multiple View Geometry," Robotics Lab, DEAS, Harvard University, November 1, 2001.
275. "Multiple View Geometry Unified," EE Department, Stanford University, May 17, 2001.31.
276. "Multiple View Geometry Unified," EECS Department Computer Vision Seminar, UC Berkeley, May 16, 2001.
277. "Multiple View Geometry Unified," CSL Nonlinear Control Seminar, UIUC, May 10, 2001.
278. "Vision Based Control," ECE Department Graduate Seminar, UIUC, November 2, 2000.

- **Workshops, Tutorials, Seminars, and Projects (as Organizer):**

1. Tutorial "Learning Deep Low-Dim Models from High-Dim Data: From Theory to Practice", CVPR, Seattle, June 17-21, 2024.
2. Tutorial "Building White-Box Deep Neural Networks", ICASSP, Seoul, Korea, April 14-19, 2024.
3. A Tutorial Lecture on ReduNet at the International Conference on Parsimony and Learning, Hong Kong, January 6, 2024.
4. General Chair of the International Conference on Parsimony and Learning, Hong Kong, January 3-6, 2024.
5. General Chair for the Third Workshop on Seeking Low-Dimensionality in Deep Neural Networks, MBZUAI, Abu Dhabi, Jan. 3-7, 2023.
6. Summer Course at TBSI on Computational Principles for High-Dimensional Data Analysis, June 27 - July 8, 2022.
7. A Five-Day Short Course on Low-Dim Models for High-Dim Data ICASSP, Singapore, May 22-27, 2022.
8. Organizer and Speaker of the 2nd Workshop on Seeking Low-dimensionality in Deep Neural Networks (SLowDNN), November 22-23, 2021.
9. Organizer of ICCV 2021 Workshop on Holistic Structure for 3D Vision, October 11, 2021.
10. TBSI Summer Course on Geometry and Learning for 3D Vision, Shenzhen, China, 2021.
11. Organizer and Speaker of the 1st Workshop on Seeking Low-dimensionality in Deep Neural Networks (SLowDNN), November 23-24, 2020.
12. Organizer and Speaker of CDTI Workshop on the Analytical Foundation of Deep Learning, October 19-23 2020.
13. Organizer of ECCV Workshop on Holistic Scene Structures for 3D Vision, Glasgow, Scotland, August 23, 2020.
14. TBSI Summer Course on High-Dimensional Data Analysis, Shenzhen, China, 2020.
15. Organizer of ICCV2019 tutorial: Learning to Reconstruct Holistic 3D Structures from Sensorial Data, Seoul, Korea, Oct. 28, 2019.
16. TBSI Summer Course on High-Dimensional Data Analysis, Shenzhen, China, 2019.
17. TBSI Summer Course on High-Dimensional Data Analysis, Shenzhen, China, 2018.
18. Invited lectures at Bytedance Inc., Beijing, June 24, 2019.
19. Tutorial on "Sparse and Low-rank Modeling: Theory, Algorithm, and Applications," with John Wright, IPAM Computer Vision Summer School, UCLA, August 5-6, 2013.

20. Lecturer of a half-day tutorial on "Sparse and Low-rank Modeling," Microsoft Research Asia, January 30, 2013.
21. Organizer of a half-day tutorial on "Sparse and Low-rank Modeling," European Conference on Computer Vision, Firenze, Italy, October 2012.
22. Lecturer for a half-day tutorial on "The Pursuit of Low-dimensional Structures in High-dimensional Data," ADSC summer school, Singapore, July 2, 2012.
23. Lecturer for a half-day tutorial on "Low-rank Models: Theory, Algorithm, and Applications," CCF ADL27, China, May 18, 2012.
24. Organizer and lecturer for a half-day tutorial on "Low-rank Methods for Computer Vision," with Zhouchen Lin and John Wright, ICIG, Hefei, China, August 11, 2011.
25. Organizer and lecturer for a half-day tutorial on "Sparse and Low-rank Methods for Computer Vision and Image Processing," VLPR summer school, Chendu, China, August 9, 2011.
26. Organizer of a half-day tutorial on *Low-Rank Matrix Recovery*, with Allen Yang and John Wright, ICIP, Hong Kong, Sept. 26, 2010.
27. Organizer of a half-day tutorial on *Subspace Learning* at CVPR, with Rene Vidal, San Francisco, June 14, 2010.
28. Organizer of a one-day workshop on *Dynamical Vision* at International Conference on Computer Vision, Kyoto, Japan, September 29, 2009.
29. Organizer of a half-day tutorial on *Sparse Representation and Its Applications in High-Dimensional Pattern Recognition* at International Conference on Computer Vision and Pattern Recognition, Miami, USA, June 20, 2009.
30. Organizer of a half-day tutorial on *Generalized Principal Component Analysis* at the International Conference on Computer Vision and Pattern Recognition, June 23, 2008.
31. Organizer of a half-day tutorial on *Computational Symmetry* at the International Conference on Computer Vision and Pattern Recognition, June 23, 2008.
32. Organizer of a one-day workshop on *Dynamical Vision* at the International Conference on Computer Vision, October 2007.
33. Organizer of a half-day tutorial on *Generalized Principal Component Analysis* at IEEE International Conference on Computer Vision and Pattern Recognition, Minneapolis, June 18, 2007.
34. Co-organizer of a three-day workshop on *the Current Trends in Computer Vision*, Tibet, China, August 2006.
35. Organizer of a one-day workshop on *Dynamical Vision* at the European Conference on Computer Vision, May 2006.
36. Organizer of a one-day workshop on *Dynamical Vision* at the International Conference on Computer Vision, October 2005.
37. Organizer of a half-day tutorial on *Multiple-View Geometry for Image-Based Modeling* at the International Conference on Image Processing, September 11, 2005.
38. Co-organizer of the invited session: *Hybrid Systems Identification* at the IEEE Conference on Decision & Control, Bahamas, December 2004.
39. Organizer of a one-day course: *Multiple-View Geometry for Image-Based Modeling* at SIGGRAPH'03, San Diego, July 2003, and at SIGGRAPH'04, Los Angeles, August 2004.
40. Co-organizer (with Jana Košecká) of a one-day course: *3-D Reconstruction and Motion Analysis* at ICRA'03, Taipei, Taiwan, September 2003, and at ICRA'04, New Orleans, April 2004.
41. Co-chair of *Geometry and Algebra of Computer Vision*, the *Research Among Peers* (RAP) program with Professor Robert Fossum, Mathematics Department, UIUC, 2002–Present.
42. Organizer and chair of the invited session: *Dynamical Vision and Control* at the Allerton Conference, Illinois, October 2002.
43. Co-organizer and co-chair of the invited session: *Feedback and Control in Biological Systems* at the Allerton Conference, Illinois, October 2001.
44. Co-organizer of the tutorial: *A Geometric Viewpoint to Recovery of Structure and Motion from Image Sequences* at IEEE International Conference on Robotics and Automation (ICRA), San Francisco, April 2000.

- **Research Grants**

1. NSF CISE Collaborative Research: Principled Approaches to Deep Learning for Low-dimensional Structures, $1.2M, 2024-2027.
2. HKU: Institute of Data Science, Director, $20M, 2023 - 2033.
3. Tsinghua-Berkeley Shenzhen Institute Research Fund, Phase II, $750K, 2022-2027.
4. ONR, PI, $500K, 2022-2024.
5. NSF-Simons Foundation, PI, $10M, 2020-2025.
6. ONR MURI, co-PI, $2.5M, 2020 – 2023.
7. Industrial Support: Sony, Adobe, HTC, and Bytedance etc.
8. Tsinghua-Berkeley Shenzhen Institute Research Fund, 2018 - 2010.
9. Berkeley EECS Faculty Startup Fund, 2018.
10. ShanghaiTech: Data Science Research Center, Director and PI, $3M, 2014 - 2019.
11. NSF IIS: A Holistic Approach to Reconstructing Urban Scenes, PI, $400,000, 2011 - 2014.
12. DARPA KECoM: Scene and Task Aware Knowledge Enhanced Compressive Sensing, co-PI, $300,000, DARPA, 2011-2013.
13. NSF CCF: Advances in the Theory and Practice of Low-Rank Matrix Recovery and Modeling, PI, $950,000, National Science Foundation, 2010-2014.
14. ONR: Harnessing Sparse and Low-Dimensional Structures for Robust Clustering of Visual Data, PI, $600,000, Office of Naval Research, 2009-2012.
15. NSF IIS: SGER: Explorations of Robust Image Classification, PI, $100,000, National Science Foundation, 2008-2009.
16. NSF CISE: PHYSNET: Physical Interaction Using the Internet, co-PI, $150,000, National Science Foundation, 2007-2010.
17. NSF ECCS: Control and Sensing under Limited Information, co-PI, $270,000, National Science Foundation, 2007-2010.
18. ONR YIP: Estimation of Hybrid Models in Computer Vision, PI $300,000, Office of Naval Research, 2005-2008.
19. NSF CRS-EHS: Collaborative Research: An Algebraic Geometric Approach to Hybrid Systems Identification, PI, $350,000, National Science Foundation, 2005-2008.
20. NSF CCF-TF: Estimation of Hybrid Models as Algebraic Sets, PI, $230,000, National Science Foundation, 2005-2008.
21. NSF CAREER IIS: Identifying Spatial and Dynamical Patterns from Images, PI, $400,000, National Science Foundation, 2004-2008.
22. Vision Based Control, PI, $23,000, UIUC Research Board, 2000.
23. Co-founder of the BErkeley Aerial Robot (BEAR) project, funded by DARPA, ONR, and NSF. EECS Department, U. C. Berkeley, 1997–2000.

- **Professional Services & Activities:**
  - Founding Associate Editor of SIAM Journal on Mathematics of Data Science (SIMODS), since 2018.
  - Founding Associate Editor of Information and Inference: a Journal of the IMA (Institute of Mathematics and Applications), since 2011.
  - Senior Editorial Board of IEEE Signal Processing Magazine, 2015 – 2017.
  - Associate Editor of IEEE Transactions on Information Theory, 2013 – 2017.
  - Associate Editor of SIAM Journal on Imaging Sciences, since 2012 – 2016.
  - Associate Editor of International Journal of Computer Vision, 2010 – 2014.
  - Associate Editor of IEEE Transactions on Pattern Analysis and Machine Intelligence, 2007 – 2011.
  - Guest Editor for a special issue on *Real-World Face Recognition*, with Hua Gang et. al., IEEE Transactions on Pattern Analysis and Machine Intelligence, to appear in 2011.
  - Chief Guest Editor for a special issue on *Dimensionality Reduction via Subspace and Manifold Learning*, with Partha Niyogi, Guillermo Sapiro, and René Vidal, IEEE Signal Processing Magazine, March 2011.
  - Chief Guest Editor for a special issue on *Sparse Representation and Compressive Sensing*, with Emmanuel Candes, Richard Baraniuk, and Michael Elad, the Proceedings of IEEE, June 2010.

- Journal Paper Reviews: *CVIU, JMIV, IJCV, Automatica, IEEE Transactions on Information Theory, Image Processing, TPAMI, and Robotics & Automation.*

- Area Chair, Neural Information Processing Systems (NeurIPS), 2021.
- Area Chair, International Conference on Machine Learning (ICML), 2021.
- Area Chair, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2019.
- General Chair, ShanghaiTech SIST Annual Symposium, 2017.
- General Chair, ShanghaiTech SIST Annual Symposium, 2016.
- Program Chair, ShanghaiTech SIST Annual Symposium, 2015.
- Area Chair, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2016.
- General Chair, International Conference on Computer Vision, 2015.
- Award Committee, International Conference on Multimedia and Expo, 2014.
- Area Chair, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2014.
- Program Chair, International Conference on Computer Vision, 2013.
- Award Committee, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2012.
- Award Committee, International Conference on Computer Vision (ICCV), 2011.
- Area Chair, International Conference on Computer Vision (ICCV), 2011.
- Area Chair, Neural Information Processing Systems (NIPS), 2011.
- Associate Editor of IEEE Control Systems Society Conference Editorial Board (CEB), 2000 – 2004.

- Chinese National 1000 People Program panel, 2015.
- Chinese NSF major grants panel, 2015.
- NSF CISE III panel review, 2008.
- NSF CISE CNS panel review, 2008.
- NSF ECCS PCAN panel review, June 2007.
- NSF CISE IIS panel review, March 2007.
- NSF CISE CRI panel review, November 2, 2005.
- NSF-IIS CAREER award panel review, November 12, 2004.

- Affiliated with the *Applied Mathematics Program*, Mathematics Department, University of Illinois at Urbana-Champaign, 2002 – 2011.
- Affiliated with the Computer Science Department, University of Illinois at Urbana-Champaign, 2008 – 2011.
- Visiting Researcher at Microsoft Research Asia, Beijing, China, summer of 2002 and 2005.
- Visiting Senior Researcher at Microsoft Research Asia, Beijing, China, fall 2006.

- Vice Chair, Chinese Computer Federation (CCF), Academic Committee, 2016 – 2017.
- Member, Chinese Computer Federation, Best Doctoral Award Committee, 2016 – 2017.
- Member of the Board of Trustees, China Society of Image and Graphics, 2016 – 2017.

- **Professional Societies:**

1. Fellow of Association for Computing Machinery (ACM), since 2017.
2. Fellow of the Institute of Electrical and Electronics Engineers (IEEE), since 2013.
3. Fellow of Society of Industrial and Applied Mathematics (SIAM), since 2020.

- **Teaching Activities:**

1. At the Institute of Data Science, University of Hong Kong, since 2023.
   *(a) DATA8014: Principles of Deep Representation Learning, Fall 2024.*
   *(b) DATA8001: High-Dimensional Data Analysis, Fall 2023.*

2. At the Department of Electrical Engineering and Computer Science, University of California, Berkeley, since 2018. Courses Taught:
   (a) *EECS16B: Designing Information Devices and Systems II, Fall 2022.*
   (b) *EECS106/206B: Robotic Manipulation and Interaction, Spring 2022.*
   (c) *EECS208: Computational Principles for High-Dimensional Data Analysis, Fall 2021.*
   (d) *EECS106A: Introduction to Robotics, Fall 2021.*
   (e) *EECS290: Integrated Perception, Learning, and Control, co-teach with Prof. Jitendra Malik, Shankar Sastry, and Claire Tomlin, Spring 2021.*
   (f) *EECS106B/206B: Robotic Manipulation and Interaction, co-teach with Prof. Shankar Sastry, Spring 2021.*
   (g) *EE290: High-Dimensional Data Analysis with Low-Dimensional Models (Fall 2020)*
   (h) *CS294: Geometry and Learning for 3D Vision (Spring 2020)*
   (i) *EE290: High-Dimensional Data Analysis with Low-Dimensional Models (Fall 2019)*
   (j) *EE290: High-Dimensional Data Analysis with Low-Dimensional Models (Fall 2018)*
   (k) *EE221: Linear Systems (Fall 2018)*
3. At the Tsinghua-Berkeley Shenzhen Institute:
   (a) *TBSI Summer Course on High-Dimensional Data Analysis, Shenzhen, China, 2023.*
   (b) *TBSI Summer Course on High-Dimensional Data Analysis, Shenzhen, China, 2022.*
   (c) *TBSI Summer Course on Geometry and Learning for 3D Vision, China, 2021.*
   (d) *TBSI Summer Course on High-Dimensional Data Analysis, Shenzhen, China, 2020.*
   (e) *TBSI Summer Course on High-Dimensional Data Analysis, Shenzhen, China, 2019.*
   (f) *TBSI Summer Course on High-Dimensional Data Analysis, Shenzhen, China, 2018.*
4. At the School of Information Science and Technology, ShanghaiTech University, 2014-2017. Courses Taught:
   (a) *Introduction to Information Science and Technology*
   (b) *Deep Learning*
   (c) *Computer Vision*
   (d) *Compressive Sensing: High-Dimensional Data Analysis with Sparse and Low-Dimensional Models*
   (e) *Generalized Principal Component Analysis: High-Dimensional Data Modeling with Mixed Models*
5. At the Department of Electrical & Computer Engineering, University of Illinois at Urbana-Champaign, 2000-2011. Courses Taught:
   (a) *Sparse Representation and High-Dimensional Geometry*
   (b) *Estimation and Segmentation of Hybrid Models*
   (c) *Advanced Geometric Approach to Computer Vision*
   (d) *Control Systems Theory and Design*
   (e) *Nonlinear System Analysis and Control*
   (f) *Optimum Control Systems*
   (g) *Random and Stochastic Processes*
   (h) *Analogue Signal Processing*

   Three times on *the Incomplete List of Teachers Ranked as Excellent* (voted by the students) of the University of Illinois at Urbana-Champaign, Spring 2001, Fall 2002, and Spring 2006.
6. Teaching Associate, *Advanced Topics in Robotics: Computer Vision*, EECS, University of California at Berkeley, Spring 1999.
7. Teaching Assistant, *Stochastic and Random Process Systems*, EECS, University of California at Berkeley, Fall 1997.
8. Teaching Assistant, *Electronic Techniques for Engineering*, EECS, University of California at Berkeley, Spring 1997.

- **Doctoral Students:**

1. Kun Huang, PhD in Electrical and Computer Engineering, UIUC, Thesis: *Geometric Principles of Multiple Visual Sensors,* August 2004. Now a Professor, Associate Dean for Genome Informatics, College of Medicine of the Ohio State University.

2. Wei Hong, PhD in Electrical and Computer Engineering, UIUC, Thesis: *Hybrid Models for Representation of Imagery Data,* May 2006. Now an engineer and researcher at Google.
3. Allen Yang Yang, PhD in Electrical and Computer Engineering, UIUC, Thesis: *Estimation of Subspace Arrangements: Its Algebra and Statistics,* May 2006. Now Chief Scientist, Fung Institute for Engineering Leadership, University of California at Berkeley.
4. Shankar Rao, PhD in Electrical and Computer Engineering, UIUC, Thesis: *Harnessing Low-Dimensional and Sparse Structures for High-Dimensional Data Clustering,* May 2009. Now a senior researcher at HRL Laboratories, LLC, Malibu, California.
5. John Wright, Ph.D. in Electrical and Computer Engineering, UIUC, Thesis: *Error Correction for High-Dimensional Data via Convex Optimization,* May 2009, now an Associate Professor of the Electrical Engineering Department at Columbia University.
6. Yoav Sharon, Ph.D. in Electrical and Computer Engineering, UIUC, Thesis: *Vision Based Control with Limited and Quantized Information,* May 2010, now a postdoc researcher at MIT.
7. Andrew Wagner, Ph.D. in Electrical and Computer Engineering, UIUC, Thesis: *Fast and Robust Face Recognition via Parallelized L1 Minimization,* August 2011, now a postdoc researcher in Belgium.
8. Arvind Ganesh Balasubramanian, Ph.D. in Electrical and Computer Engineering, UIUC, Thesis: *Low-rank Matrix Recovery and Its Applications in Computer Vision*, May 2012, co-founder of Baazor Inc. and purchased by Google.
9. Zihan Zhou, Ph.D. in Electrical and Computer Engineering, UIUC, Thesis: *Exploring Structural Regularities for Robust 3D Reconstruction of Urban Scenes*, December 2012, now an Assistant Professor at Pennsylvania State University.
10. Hossein Mobahi, Ph.D. in Computer Science, UIUC, Thesis: *Optimization by Gaussian Smoothing with Applications to Geometric Alignment*, December 2012, now a researcher at Google.
11. Kerui Min, Ph.D. Candidate in Electrical and Computer Engineering, UIUC, ABT, and on leave for startups: former founder and CTO of Bosonlp Inc. and currently founder and CEO of MetaSOTA Inc.
12. Chaobing Song, Ph.D. in Computer Science and Technology, Tsinghua-Berkeley Shenzhen Institute, Tsinghua University, Thesis: *Optimization Algorithm Acceleration for Large Scale Machine Learning*, November 2020, now a postdoc at University of Wisconsin.
13. Yichao Zhou, Ph.D. in Computer Science, UC Berkeley, Thesis: *Learning to Detect Geometric Structures from Images for 3D Parsing*, December 2020, now a research scientist at Apple.
14. Yaodong Yu, Ph.D. in Computer Science, UC Berkeley, Thesis: *Reliable Representation Learning: Theory and Practice*, May 2024, now assistant professor at the University of Maryland.