XIAOGANG WANG

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Research Interests

Computer vision, machine learning and medical vision.

Professional Experience

Department of Electronic Engineering, the Chinese University of Hong Kong, Hong Kong
Associate Professor (2015 – present)

Department of Electronic Engineering, the Chinese University of Hong Kong, Hong Kong
Assistant Professor (2009 – 2015)

NIVIDIA CUDA Research Center at CUHK
Director (2014 - present)

Institute of Space and Earth Information Science (ISEIS)
Executive Council Member (2014 - present)

Education

MASSACHUSETTS INSTITUTE OF TECHNOLOGY **Cambridge, MA**
Ph.D. Candidate in Computer Science (2009)
Computer vision group, Computer Science and Artificial Intelligence Lab (CSAIL)
Thesis: *Hierarchical Bayesian Approaches for Unsupervised Activity Analysis and Scene Modeling*
Advisor: Professor W. Eric L. Grimson
Minor: Statistics

THE CHINESE UNIVERSITY OF HONG KONG **Hong Kong**
M. Phil. in Information Engineering (2004)
Thesis: *A Unified Framework for Subspace Face Recognition*
Advisor: Professor Xiaoou Tang

UNIVERSITY OF SCIENCE AND TECHNOLOGY OF CHINA **Hefei, China**
B. S. in Electrical Engineering and Information Science (2001)
Graduated from the Special Class for Gifted Young
Ranked Number one in GPA over five years undergraduate study
Thesis: *Integration of Remote Sensing and Geographic Information System*
Advisor: Professor Nenghai Yu

Internships in Industry

MICROSOFT RESEARCH (**summer 2008**) **Redmond, WA**
- Developed a system for identifying faces of celebrities from images and videos on the web.

Generic Electric (GE) Global Research Center **(summer 2006)** **Niskayuna, NY**
- Person re-identification over distributed camera networks.
- Generalized integral image technique which efficiently computes statistics over arbitrary domains.

Teaching

1. ENGG1110: Problem Solving by Programming
2. ENGG1100: Introduction to Engineering Design I
3. ELEG1110C: Basic Circuit Theory
4. ELEG5410: Pattern Recognition
5. ELEG5742: Image Processing and Video Technology
6. BMEG4320: Biomedical Imaging Applications

Grants

- **Secured 27 million HKD grants as principal investigators (PIs) after joining CUHK for five years. It includes four RGC grants (more than 3 million HKD in total) as PI, and one ITF grant (4 million HKD) as PI.**

1. Hong Kong Innovation and Technology Support Programme (Collaborative Research Projects), *Deep Learning-based Face Recognition on Cloud Computing Platform*, HK$12,646K, Nov. 2015 – Oct. 2017.
2. Hong Kong Research Grant Council General Research Fund (RGC/GRF), *Highly Efficient Forward- and Backward-Propagation of Deep Convolutional Neural Networks for Pixelwise Classification*, Principal Investigator, HK$329K, Jan 2016 – Dec 2017.
3. Large Equipment Grant from the Chinese University of Hong Kong, *High-Performance GPU Parallel Computing Cluster*, HK$504k, Principal Investigator, July 2014 – February 2015.
4. Research Grant from Huawei Technologies Co. LTD, *General Purpose Feature Learning by Deep Networks*, Principal Investigator, HK$1,200K, Jan 2014 – Dec 2016.
5. Hong Kong Research Grant Council General Research Fund (RGC/GRF), *Deep Learning for Person Re-identification and Attribute Recognition*, Principal Investigator, HK$875K, Jan 2015 – Dec 2017.
6. Hong Kong Research Grant Council General Research Fund (RGC/GRF), *Human pose estimation and social interaction recognition with deep neural networks*, Co-Investigator, HK$500K, Jan 2014 – Dec 2016.
7. Hong Kong Innovation and Technology Support Programme (Platform and Collaborative Research Projects), Intelligent Video Analysis for Crowd Management, Principal Investigator, HK$4,400,000, May 2014 – April 2016.
8. Research Grant from the Chinese University of Hong Kong, *A Multidisciplinary Approach to Elucidating, Monitoring and Enhancing Cognitive and Motor Recovery in Chinese Stroke Patients*, Principal Investigators, HK$134k, March 2014 – March 2016.
9. Shenzhen Strategic Emerging Industrial Development Funds, Research on Key Technologies and Applications for Hybrid Collaborative Intelligent Video Surveillance in Complicated Scenes, Principal Investigator, RMB$500,000, August 2013 – August 2015.
10. Research Grant from Hong Kong Applied Science and Technology Research Institute Company Ltd (ASTRI), *3D Mobile Interactive Device*, Principal Investigator, HK$600K, December 2012 – November 2013.
11. Microsoft Hong Kong Ltd. Seeding Grant, *Human Parsing, Tracking and Identification Using Kinect*, HK$78k, Principal Investigator, Sept. 2012 – August 2013.

12. Hong Kong Research Grant Council Early Career Scheme (RGC/ECS), *Automatic Human Behavior Analysis in Crowds Using a Dynamic Agent-based Model*, HK$988K, Principal Investigator, Jan 2013 – Dec 2015.
13. Hong Kong Research Grant Council General Research Fund (RGC/GRF), *Scene-specific Pedestrian and Vehicle Detectors in Video Surveillance for Traffic Management*, Principal Investigator, HK$681K, Jan 2012 – Dec 2014.
14. Hong Kong Research Grant Council General Research Fund (RGC/GRF), *Large Crowded Scenes Visual Surveillance with a Distributed Network of Cameras*, Principal Investigator, HK$640K, Jan 2011 – Dec 2013.
15. National Natural Science Foundation of China (NSFC), *Develop a New Intelligent Video Surveillance System for Traffic Control and Driving Safety*, Principal Investigator, RMB¥ 210K, 2010-2012.
16. Shun Hing Institute of Advanced Engineering Research Fund #BME-p3-10, *Diffusion Tensor MRI Predictors of Cognitive Impairment in Confluent White Matter Lesion*, Principal Investigator, HK$630k, July 2010 – June 2012.
17. Research Grant from Hong Kong Applied Science and Technology Research Institute Company Ltd (ASTRI), *Human Detection and Re-Identification Technology Research*, Principal Investigator, HK$900K, May 2011 – April 2012.
18. CUHK Research Fellowship Scheme, a half support for a postdoctoral fellow for 12 months working on the project of "*Scene-specific Pedestrian and Vehicle Detectors in Video Surveillance for Traffic Management*", HK$141k, July 1, 2012 – June 30, 2013.
19. Direct Grant for Research from the Chinese University of Hong Kong, *Video Surveillance Based on Large Scale Camera Networks*, Principal Investigator, HK$150k, Nov. 2009 – Nov. 2011.
20. Large Equipment Grant from the Chinese University of Hong Kong, *A Large Scale Video Surveillance System*, HK$1,000k, Principal Investigator, Dec. 2009 – April 2010.

Professional Service

- IEEE Member
- Consultant for Hong Kong Applied Science and Technology Research Institute Company Limited (ASTRI) on *Environment Adaptive Object Detection and Tracking*, May 2011 – April 2012
- Organizer of ACCV International Workshop of *Deep Learning on Visual Data* 2014
- Associate Editor of IEEE Transactions on Circuits and Systems for Video Technology
- Associate Editor of Image and Visual Computing Journal
- Aare chair of Asian Conference on Computer Vision 2014
- Aare chair of European Conference on Computer Vision 2014
- Area chair of IEEE International Conference on Computer Vision 2011
- Program committee member for the first IEEE workshop on modeling, simulation, and visual analysis of large crowds, 2011
- Program committee member for the third Chinese Conference on Intelligent Visual Surveillance, 2011
- Program committee member for the 2011 Workshop on Behavior Informatics

- **Referee – Journals**

  IEEE Transactions on Pattern Analysis and Machine Intelligence
  IEEE Transactions on Image Processing
  IEEE Transactions on Multimedia
  IEEE Transactions on Medical Imaging
  IEEE Transactions on Circuits and Systems for Video Technology
  IEEE Transactions on Systems, Man and Cybernetics – Part B
  IEEE Transactions on Biomedical Engineering
  Elsevier Computer Vision and Image Understanding
  Elsevier Image and Vision Computing
  Elsevier Neurocomputing
  Elsevier Signal Processing
  Springer International Journal of Computer Vision
  Springer Machine Learning
  Springer Pattern Recognition Letters
  Springer Journal of Computer Science and Technology
  International Journal of Image and Graphics

- **Referee – Conferences**

  European Conference on Computer vision 2012
  European Conference on Computer vision 2010
  IEEE Computer Society Conference on Computer Vision and Pattern Recognition 2012
  IEEE Computer Society Conference on Computer Vision and Pattern Recognition 2011
  IEEE Computer Society Conference on Computer Vision and Pattern Recognition 2010
  IEEE Computer Society Conference on Computer Vision and Pattern Recognition 2009
  IEEE Computer Society Conference on Computer Vision and Pattern Recognition 2008
  IEEE Computer Society Conference on Computer Vision and Pattern Recognition 2007
  IEEE International Conference on Computer Vision 2009
  IEEE International Conference on Computer Vision 2007
  Asian Conference on Computer Vision 2007

- **Referee – Funding Agencies**

  Hong Kong Research Grant Council General Research Fund (RGC/GRF)
  Referee with the Australian Research Council (ARC)
  National Natural Science Foundation of China (NFSC)

Highlight Achievements on Deep Learning

- DeepID team led by Xiaogang Wang and Xiaoou Tang achieved the highest face verification accuracy (99.47%) on the most well known face recognition benchmark Labeled Faces in the Wild (LFW), which was the first time to surpass human performance (99.20%) on this benchmark.

- The DeepID-Net team led by Wanli Ouyang, Xiaogang Wang, Chen Chagne Loy and Xiaoou Tang participated in ImageNet Large Scale Visual Recognition Challenge (ILSVRC) 2014, one the most important grand challenges in vision, and ranked NO.2 in the object detection task (GoogLeNet was the winner) among 38 top vision groups [2]. This challenge requires detecting objects of 200 categories from 40,000 web images. DeepID-Net significantly improved the mean Average Precision (mAP) from 22.6% (best result of ILSVRC 2013) to 40.7%. A few months later, DeepID-Net largely enhanced the state-of-the-art to 50.3% [3], outperforming GoogLeNet (43.9%).

- The CUvideo team led by Wanli Ouyang and Xiaogang Wang participated in ILSVRC 2015 and won the challenge of object detection from video. They achieved the mAP of 67.8%, while the team in the second place only obtained the mAP of 35.9%. The challenge required detecting 30 object categories from one thousand videos and CUvideo won 28 out of them.

Invited Keynote Speeches, Tutorials and Talks

1. Keynote speech at Frontiers in Computer Vision 2014, *From unified subspace analysis to unified deep learning: ten years journey for face recognition*, Beijing, September 2014.
2. Keynote speech at Chinese Conference on Biometric Recognition 2014, *Deep Learning in Face Recognition,* Shenyang, November 2014.
3. Tutorial at IEEE International Conference on Image Processing (ICIP), *Deep Learning in Object Detection, Segmentation, and Recognition*, Paris, October 2014.
4. Tutorial at IEEE International Conference on Multimedia & Expo (ICME), *Deep Learning in Image and Video Understanding*, Chengdu, July 2014.
5. Workshop at International Conference on Neural Information Processing, *Deep Learning in Image Understanding*, Kuala Lumpur, Malaysia, October 2014.
6. Invited talk at Zhejing University, *Deep Learning in Detection and Recognition*, Hangzhou, September 2014.
7. Invited talk at Industry Forum at IEEE International Conference on Multimedia & Expo (ICME), *Big Visual Data for Intelligent Surveillance*, Chengdu, July 2014.
8. Invited talked at Chinese Conference on Pattern Recognition 2014, *Introduction to Deep Learning and its applications in Computer Vision*, Changsha, November 2014
9. Invited talk at Dalian University of Technology, *Deep Learning in Detection and Recognition*, Dalian, August 2014.
10. Invited talk at Columbia University, *From unified subspace analysis to unified deep learning: ten years journey for face recognition*, New York City, July 2014.
11. Invited talk at Princeton University, Joint Deep Learning in Human Detection and Recognition, Princeton, July 2014.
12. Invited talk at Carnegie Mellon University, Joint Deep Learning in Human Detection and Recognition, Pittsburgh, July 2014.
13. Invited talk at IBM T J Watson Research, *Deep Learning in Detection and Recognition*, Watson, July 2014.
14. Invited talk at Tsinghua University, *Deep Learning in Object Detection, Segmentation, and Recognition*, Beijing, May 2014.
15. Invited talk at Microsoft Research Asia, *Deep Learning in Detection and Recognition*, Beijing, May 2014.

16. Invited talk at International Symposium on Computer Vision and Application, Deep Learning in Computer Vision, Beijing, May 2014.
17. Invited talk at Big Data Workshop, *Deep Learning from Big Visual Data*, Hong Kong, April 2014.
18. Invited talk at Huawei Technologies Co. Ltd, *Deep Learning in Object Detection, Segmentation, and Recognition*, Shenzhen, January 2014.
19. Invited talk at Institute of Deep Learning at Baidu, *Deep Learning in Object Detection, Segmentation, and Recognition*, Beijing, January 2014.
20. Invited talk at the Graphic and Image Processing Conference of Guangdong, *Deep Learning in Object Detection, Segmentation, and Recognition*, Guangzhou, December 2014.
21. Invited talk at Institute of Computing Technology, Chinese Academy of Sciences, *Deep Learning in Object Detection, Segmentation, and Recognition*, Beijing, December 2014.
22. Invited talk at Sydney University, *Deep Learning in Object Detection, Segmentation, and Recognition*, Sydney, December 2014.
23. Invited talk at Sydney University of Technology, *Deep Learning in Object Detection, Segmentation, and Recognition*, Sydney, December 2014.
24. Invited talk at Zhejiang University, *Deep Learning in Object Detection, Segmentation, and Recognition*, Hangzhou, November 2013.
25. Invited talk at Nanjing University, *Deep Learning in Object Detection, Segmentation, and Recognition*, Nanjing, November 2013.
26. Invited talk at Southeast University, *Deep Learning in Object Detection, Segmentation, and Recognition*, Nanjing, November 2013.
27. Invited talk at Nanjing University of Information Science and Technology, *Deep Learning in Object Detection, Segmentation, and Recognition*, Nanjing, November 2013.
28. Invited talk at Vision And Learning Seminar (VALS) 2013, *Crowd Video Surveillance*, Nanjing, April 2013.
29. Invited talk at Shanghai Jiaotong University, Crowd Belaviour Analysis, Shanghai, August, 2012.
30. Invited talk China Computer Society Advanced Disciplines Lectures on visual pattern recognition, *Human Behavior Analysis in Crowded Environment*, Beijing, May 2012.
31. Invited talk at Empirical College London, Crowd Behaviour Analysis, London, April 2012.

Award

- Hong Kong RGC Early Career Award 2012.
- The Chinese University of Hong Kong Young Researcher Award 2012.

- Outstanding Young Researcher in Automatic Human Behaviour Analysis award in 2011. The Award is sponsored by the European Research Council Starting Grant agreement no. ERC-2007-StG-203143 (MAHNOB) and is administered by the Awards Committee of the CVPR4HB Workshop Organization.

Patents

1. **Xiaogang Wang**, Xiaoou Tang, and Wei Zhang, "System and Method for Synthesizing Portrait Sketch from Photo," WO Patent WO/2012/027, 904, 2012.

2. Gianfranco Doretto, **Xiaogang Wang**, Thomas Sebastian, Jens Rittscher, and Peter Tu, "Decivce and Methods for Fast Computation of Region Based Image Features," application number: 11/987785, USA, August 07, 2008.

3. Gianfranco Doretto, **Xiaogang Wang**, Thomas Sebastian, Jens Rittscher, and Peter Tu, "Image Processing for Person and Object Re-Identification," application number: 11/987777, USA, Dec, 04, 2007.

Publications

6700+ citations in Google Scholar with an H-index of 45.

Profile at Google Scholar: http://scholar.google.com/citations?user=-B5JgjsAAAAJ&hl=en

Book Chapters

1. **X. Wang** and R. Zhao, "Person Re-identification: System Design and Evaluation Overview," in the book of "Person Re-Identification," edited by Shaogang Gong, Marco Cristani, Shuicheng Yan, and Chen Change Loy, 2013.
2. **X. Wang**, "Face Identification," Encyclopedia of Computer Vision, Springer, 2013.
3. **X. Wang**, "Action Recognition Using Topic Models," in the book of "Visual Analysis of Humans: Looking at People," edited by Thomas B. Moeslund, Adrian Hilton, Volker Kruger, and Leonid Sigal, published by Springer, 2011.
4. **X. Wang**, "Semantic Object Segmentation," in the book of "Video Segmentation and Its Applications", edited by King N. Ngan and Hongliang Li, published by Springer, 2011.

Journals

5. Y. Sun, **X. Wang**, and X. Tang, "Hybrid Deep Learning for Face Verification," accepted to *IEEE Transactions on Pattern Analysis and Machine Intelligence* (*TPAMI*), 2016.
6. Z. Wu, Y. Huang, L. Wang, **X. Wang**, and T. Tan, ""A Comprehensive Study on Cross-View Gait Based Human Identification with Deep CNNs," accepted to *IEEE Transactions on Pattern Analysis and Machine Intelligence* (*TPAMI*), 2016.
7. J. Shao, Chen Change Loy, and **X. Wang**, "Learning Scene-Independent Group Descriptors for Crowd Understanding," accepted to *IEEE Transactions on Circuits and Systems for Video Technology* (*TCSVT*), 2015.
8. L. Liu, S. Lao, P. Fieguth, Y. Guo, **X. Wang**, M. Pietikainen, "Median Robust Extended Local Binary Pattern for Texture Classification," accepted to *IEEE Transactions on Image Processing* (*TIP*), 2015.
9. W. Ouyang, X. Zeng, and **X, Wang**, "Single-Pedestrian Detection Aided by 2-Pedestrian Detection," *IEEE Transactions on Pattern Analysis and Machine Intelligence* (*TPAMI*), Vol. 37, pp. 1875-1889, 2015.
10. W. Ouyang, X. Zeng, and **X, Wang**, "Partial Occlusion Handling in Pedestrian Detection with a Deep Model," accepted to IEEE Transactions and Circuits and Systems for Video Technology 2015.
11. B. Zhou, X. Tang, and **X. Wang**, "Learning Collective Crowd Behaviors with Dynamic Pedestrian-Agents," *International Journal of Computer Vision* (*IJCV*), 2014.
12. B. Zhou, X. Tang, H. Zhang and **X. Wang**, "Measuring Crowd Collectiveness," *IEEE Transactions on Pattern Analysis and Machine Intelligence* (*TPAMI*), Vol 36, pp. 1586-1599, 2014.

13. Y. Song, W. Cai, H. Huang, **X. Wang**, Y. Zhou, M. J. Fulham, D. D. Feng, "Lesion Detection and Characterization with Context Driven Approximation in Thoracic FDG PET-CT Images of NSCLC Studies," *IEEE Transactions on Medical Imaging* (*TMI*), Vol. 33, pp. 408-421, 2014.
14. Q. Gao, F. Gao, H. Zhang, X. Hao, and **X. Wang**, "Two-dimensional Maximum Local Variation based on Image Euclidean Distance for Face Recognition," *IEEE Transactions on Image Processing* (*TIP*), 2013. (Impact factor: 3.042)
15. **X. Wang**, M. Wang, and W. Li, "Scene-Specific Pedestrian Detection for Static Video Surveillance," *IEEE Transactions on Pattern Analysis and Machine Intelligence* (*TPAMI*), Vol. 36, pp. 361-374, 2014. (Impact factor: 5.960)
16. **X. Wang**, S. Qiu, K. Liu, and X. Tang, "Web Image Re-ranking Using Query-Specific Semantic Signatures," *IEEE Transactions on Pattern Analysis and Machine Intelligence* (*TPAMI*), Vol. 36, pp. 810-823, 2014. (Impact factor: 5.960)
17. W. Zhang, D. Zhao, and **X. Wang**, "Agglomerative Clustering via Maximum Incremental Path Integral," *Pattern Recognition* (*PR*), Vol. 36, pp. 3056-3065, 2013. (Impact factor: 2.292)
18. X. Tang, W. Luo and **X. Wang**, "Content-Based Photo Quality Assessment," *IEEE Transactions on Multimedia* (*TMM*), Vol. 15, pp. 1930-1943, 2013. (Impact factor: 1.935)
19. R. Zhao and **X. Wang**, "Counting Vehicles from Semantic Regions," *IEEE Transactions on Intelligent Transportation Systems (TITS)*, Vol. 14, pp. 1016-1022, 2013. (Impact factor: 3.452)
20. B. Gong, J. Liu, **X. Wang**, and X. Tang, "Learning Semantic Signatures for 3D Object Retrieval," *IEEE Transactions on Multimedia (TMM)*, Vol. 15, pp. 369-377, 2013.
21. **X. Wang**, "Intelligent Multi-Camera Video Surveillance: A Review," *Pattern Recognition Letters,* Vol. 34, pp. 3-19, 2013.
22. K. Jia, **X. Wang**, and X. Tang, "Image Transformation based on Learning Dictionaries across Image Spaces," *IEEE Transactions on Pattern Analysis and Machine Intelligence* (PAMI), Vol. 35, pp. 367-380, 2013. (Impact factor: 5.960).
23. X. Tang, K. Liu, J. Cui, F. Wen and **X. Wang**, "IntentSearch: Capturing User Intention for One-Click Internet Image Search," *IEEE Transactions on Pattern Analysis and Machine Intelligence* (PAMI), Vol. 34, pp. 1342-1353, 2012. (Impact factor: 5.960)
24. **X. Wang**, E. Grimson and C. F. Westin, "Tractography Segmentation Using a Hierarchical Dirichlet Processes Mixture Model," *NeuroImage*, Vol. 54, pp. 290-302, 2011. (Impact factor: 5.739)
25. **X. Wang**, K. Ma, G. Ng, and E. Grimsion, "Trajectory Analysis and Semantic Region Modeling Using Nonparametric Hierarchical Bayesian Models," *International Journal of Computer Vision*, Vol. 96, pp. 287-321, 2011. (Impact factor: 5.35)
26. C. Zhao, **X. Wang** and W. Cham, "Background Subtraction via Robust Dictionary Learning," *EURASIP Journal on Image and Video Processing*, 2011.
27. **X. Wang**, K. Tieu, and W. E. L. Grimson, "Correspondence-Free Activity Analysis and Scene Modeling in Multiple Camera Views," *IEEE Transactions on Pattern Analysis and Machine Intelligence* (PAMI), Vol. 32, pp. 56-71, 2010. (Impact factor: 5.960)
28. **X. Wang** and X. Tang, "Face Photo-Sketch Synthesis and Recognition Using Multiscale Markov Random Fields," *IEEE Transactions on Pattern Analysis and Machine Intelligence* (PAMI), Vol. 31, pp. 1955-1967, 2009. (Impact factor: 5.960)
29. **X. Wang**, X. Ma, and W. E. L. Grimson, "Unsupervised Activity Perception in Crowded and Complicated Scenes Using Hierarchical Bayesian Models," *IEEE Transactions on Pattern Analysis and Machine Intelligence* (PAMI), Vol. 31, pp. 539-555, 2009. (Impact factor: 5.960)
30. **X. Wang**, and X. Tang, "Random Sampling for Subspace Face Recognition," *International Journal of Computer Vision* (IJCV)*,* Vol. 70, No. 1, pp 91-104, 2006. (Impact factor: 5.35)
31. **X. Wang**, and X. Tang, "A Unified Framework for Subspace Face Recognition," *IEEE Transactions on Pattern Analysis and Machine Intelligence* (PAMI), Vol. 26, No.9, pp. 1222-1228, 2004. (Impact factor: 5.960)
32. **X. Wang**, and X. Tang, "Hallucinating Face by Eigentransformation," *IEEE Trans. on System Man and Cybernetics*, Part C, Vol. 35, No. 3, pp. 425-434, 2005. (Impact factor: 2.016)

33. X. Tang, and **X. Wang**, "Face Sketch Recognition," *IEEE Transactions on Circuits and Systems for Video Technology* (CSVT), Special Issue on Image- and Video- Based Biometrics, Vol. 14, No. 1, pp. 50-57, January, 2004. (Impact factor: 2.548)

Refereed Conferences

34. T. Cheng, X. Xiao, W. E, and X. Wang, "Convolutional Neural Networks With Low-rank Regularization," *International Conference on Learning Representations* (*ICLR*), 2016
35. X. Chu, W. Ouyang, W. Yang, and **X. Wang**, "Multi-task Recurrent Neural Network for Immediacy Prediction," *in Proceedings of IEEE International Conference on Computer Vision* (*ICCV*), oral, 2015.
36. W. Ouyang, H. Li, X. Zeng, and **X. Wang**, "Learning Deep Representation with Large-scale Attributes," *in Proceedings of IEEE International Conference on Computer Vision* (*ICCV*), 2015.
37. Y. Tian, P. Luo, **X. Wang**, and X. Tang, "Deep Learning Strong Parts for Pedestrian Detection," *in Proceedings of IEEE International Conference on Computer Vision* (*ICCV*), 2015.
38. Z. Liu, P. Luo, **X. Wang**, and X. Tang, "Deep Learning Face Attributes in the Wild," *in Proceedings of IEEE International Conference on Computer Vision* (*ICCV*), 2015.
39. L. Wang, W. Ouyang, **X. Wang**, and H. Lu, "Visual Tracking with Fully Convolutional Networks," *in Proceedings of IEEE International Conference on Computer Vision* (*ICCV*), 2015.
40. S. Yi, H. Li, and **X. Wang**, "Pedestrian Travel Time Estimation in Crowded Scenes," *in Proceedings of IEEE International Conference on Computer Vision* (*ICCV*), 2015.
41. C. Zhang, H. Li, **X. Wang**, and X. Yang, "Cross-scene Crowd via Deep Convolutional Neural Networks," *in Proceedings of IEEE Computer Society Conference on Computer Vision and Patter Recognition* (CVPR), 2015.
42. S. Yi, H. Li, and **X. Wang**, "Understanding Pedestrian Behaviors from Stationary Crowd Groups," *in Proceedings of IEEE Computer Society Conference on Computer Vision and Patter Recognition* (CVPR), 2015.
43. R. Zhao, W. Ouyang, H. Li, and **X. Wang**, "Saliency Detection by Multi-Context Deep Learning," *in Proceedings of IEEE Computer Society Conference on Computer Vision and Patter Recognition* (CVPR), 2015.
44. J. Shao, K. Kang, C. C. Loy, and X. Wang, "Deeply Learned Attributes for Crowded Scene Understanding," *in Proceedings of IEEE Computer Society Conference on Computer Vision and Patter Recognition* (CVPR), 2015.
45. T. Xiao, T. Xia, Y. Yang, C. Huang, and **X. Wang**, "Learning from Massive Noisy Labeled Data for Image Classification," *in Proceedings of IEEE Computer Society Conference on Computer Vision and Patter Recognition* (CVPR), 2015.
46. Y. Tian, P. Luo, X. Wang, and X. Tang "Pedestrian Detection aided by Deep Learning Semantic Tasks," *in Proceedings of IEEE Computer Society Conference on Computer Vision and Patter Recognition* (CVPR), 2015.
47. W. Ouyang, X. Wang, X. Zeng, S. Qiu, P. Luo, Y. Tian, H. Li, S. Yang, Z. Wang, C. Loy, X. Tang, "DeepID-Net: Deformable Deep Convolutional Neural Networks for Object Detection," *in Proceedings of IEEE Computer Society Conference on Computer Vision and Patter Recognition* (CVPR), 2015.
48. Y. Sun, X. Wang, and X. Tang, "Deeply learned face representations are sparse, selective, and robust," *in Proceedings of IEEE Computer Society Conference on Computer Vision and Patter Recognition* (CVPR), 2015.
49. Y. Sun, **X. Wang**, and X. Tang, "Deep Learning Face Representation by Joint Identification-Verification," *in Proceedings of Neural Information Processing Systems* (NIPS), 2014.
50. P. Luo, Z. Zhu, **X. Wang**, and X. Tang, "Deep Learning Multi-View Representation for Face Recognition," *in Proceedings of Neural Information Processing Systems* (NIPS), 2014.
51. B. Xu, **X. Wang**, and X. Tang, "Deep Learning Multi-Timescale Shared Representations for Music and Video Fusion," *in Proceedings of AC Multimedia*, 2014
52. X. Zeng, W. Ouyang, M. Meng, and **X. Wang**, "Deep Learning of Scene-Specific Classifier for Pedestrian Detection," *in Proceedings of European Conference on Computer Vision* (ECCV), 2014.
53. F. Zhu, **X. Wang**, and N. Yu, "Crowd Tracking with Dynamic Evolution of Group Structures," *in Proceedings of European Conference on Computer Vision* (ECCV), 2014.

54. Z. Wang, W. Qin, J. Yuan, and **X. Wang**, "MRF Denoising with Compressed Sensing and Adaptive Filtering," *in Proceedings of IEEE International Symposium on Biomedical Imaging* (ISBI), 2014
55. S. Yi and **X. Wang**, "Profiling Stationary Crowd Groups," in Proceedings of IEEE International Conference on Multimedia and Expo. (ICME), 2014. (Oral)
56. S. Yi, C. Lu, **X. Wang**, and J. Jia, "L0 Regularized Stationary Time Estimation for Crowd Group Analysis," *in Proceedings of IEEE Computer Society Conference on Computer Vision and Patter Recognition* (CVPR), 2014. (Oral)
57. J. Shao, C. Loy, and **X. Wang**, "Scene-Independent Group Profiling in Crowd," *in Proceedings of IEEE Computer Society Conference on Computer Vision and Patter Recognition* (CVPR), 2014. (Oral)
58. W. Li, R. Zhao, T. Xiao, and **X. Wang**, "DeepReid: Deep Filter Pairing Neural Network for Person Re-identification," *in Proceedings of IEEE Computer Society Conference on Computer Vision and Patter Recognition* (CVPR), 2014.
59. Y. Sun, **X. Wang**, and X. Tang, "Deep Learning Face Representation from Predicting 10,000 Classes," *in Proceedings of IEEE Computer Society Conference on Computer Vision and Patter Recognition* (CVPR), 2014.
60. P. Luo, Y. Tian, **X. Wang**, and X. Tang, "Switchable Deep Network for Pedestrian Detection," *in Proceedings of IEEE Computer Society Conference on Computer Vision and Patter Recognition* (CVPR), 2014.
61. W. Ouyang, X. Chu, and **X. Wang**, "Multi-source Deep Learning for Human Pose Estimation," *in Proceedings of IEEE Computer Society Conference on Computer Vision and Patter Recognition* (CVPR), 2014.
62. R. Zhao, W. Ouyang, and **X. Wang**, "Learning Mid-level Filters for Person Re-identification," *in Proceedings of IEEE Computer Society Conference on Computer Vision and Patter Recognition* (CVPR), 2014.
63. W. Ouyang and **X. Wang**, "Joint Deep Learning for Pedestrian Detection," *in Proceedings of IEEE International Conference on Computer Vision* (*ICCV*), 2013.
64. X. Zeng, W. Ouyang, and **X. Wang**, "Multi-Stage Contextual Deep Learning for Pedestrian Detection," *in Proceedings of IEEE International Conference on Computer Vision* (*ICCV*), 2013.
65. R. Zhao, W. Ouyang, and **X. Wang**, "Person Re-identification by Salience Matching," *in Proceedings of IEEE International Conference on Computer Vision* (*ICCV*), 2013.
66. Y. Sun, **X. Wang**, and X. Tang, "Hybrid Deep Learning for Computing Face Similarities," *in Proceedings of IEEE International Conference on Computer Vision* (*ICCV*), 2013.
67. Z. Zhu, P. Luo, **X. Wang**, and X. Tang, "Deep Learning Identity Preserving Face Space," *in Proceedings of IEEE International Conference on Computer Vision* (*ICCV*), 2013.
68. P. Luo, **X. Wang**, and X. Tang, "A Deep Sum-Product Architecture for Robust Facial Attributes Analysis," *in Proceedings of IEEE International Conference on Computer Vision* (*ICCV*), 2013.
69. P. Luo, **X. Wang**, and X. Tang, "Pedestrian Parsing via Deep Decompositional Neural Network," *in Proceedings of IEEE International Conference on Computer Vision* (*ICCV*), 2013.
70. S. Qiu, **X. Wang**, X. Tang, "Visual Semantic Complex Network for Web Images," *in Proceedings of IEEE International Conference on Computer Vision* (*ICCV*), 2013.
71. S. Qiu, **X. Wang**, and X. Tang, "Anchor Concept Graph Distance for Web Image Re-ranking," ACM Multimedia 2013.
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