Zicheng Liu

Education:

09/91 - 06/96 Ph.D. Computer Science, Princeton University.
09/87 - 10/89 M.S. Operational Research, Institute of Applied Mathematics, Chinese Academy of Sciences, Beijing, China.
09/80 - 06/84 B.S. Mathematics, Huazhong Normal University, Wuhan, China.

Professional Experience:

03/21- present Microsoft Cloud & AI, Redmond, WA
Partner Research Manager: manage a computer vision science team to develop computer vision models for Microsoft Cognitive Services including image captioning, image tagging, people detection, tracking, etc.
03/18- 02/21 Microsoft Cloud & AI, Redmond, WA
Principal Research Manager: manage a computer vision science team to develop computer vision models for Microsoft Cognitive Services. Developed a model for IR-based 3D human pose estimation and part segmentation, and shipped Azure Kinect Body Tracking SDK.
11/97- 03/18 Microsoft Research, Redmond, WA
Started as a researcher and became a Principal Research Manager.
09/95 - 10/97 Silicon Graphics Computer Systems, CA
Member of Technical Staff: Developed a new algorithm for trimmed NURBS tessellation. It was shipped in SGI products: OpenGL, OpenGL Optimizer, and OpenGL Performer.
11/89 - 08/91 Institute of Applied Mathematics, Chinese Academy of Sciences, China.
Research Assistant: engaged in funded research on combinatorial optimization and computational complexity.
07/84 - 08/87 Department of Mathematics, Huazhong Normal University, Wuhan, China. Teaching Assistant.

Professional Activities:

- IEEE Fellow 2015
- IEEE CAS Distinguished Lecturer 2015-2016
- Editor in Chief: Journal of Visual Communication and Image Representation (2015--present)
- Steering Committee voting member of IEEE Transactions on Multimedia (2016-2018)
- Area Chair: CVPR2017, CVPR2019, CVPR2022, ECCV2022, ACMMM2010, 2016, FG2017, FG2018
- Associate Editor: Machine Vision and Applications journal.
- Associate Editor: Journal of Visual Communication and Image Representation (retired in 2015)
- Guest editor: IEEE Transactions on Multimedia (2010)
- Chair of IEEE CAS Multimedia Signal Processing and Applications Technical Committee (2015-2017)
- Secretary of IEEE CAS Multimedia Signal Processing and Applications Technical Committee (2013-2015)

- IEEE ICME Steering Committee member

- Technical Program Co-Chair (leading role): 2014 IEEE International Conference on Multimedia and Expo
- General Co-Chair: 2022 Visual Communication and Image Processing
- General Co-Chair: 2012 Visual Communication and Image Processing
- Co-Organizer: IEEE CVPR Workshop on Human Activity Understanding from 3D Data, 2011, 2012, 2013
- Technical Program Co-Chair: 2010 IEEE International Conference on Multimedia and Expo.
- Technical Program Co-Chair: 2006 IEEE International Workshop on Multimedia Signal Processing (MMSP'06).
- Co-Organizer: IEEE International workshop on multimedia technologies in E-Learning and collaboration, 2003.

Grand Challenges:
- 1st Place TextCaps challenge, 2021
- 1st Place MOT20 challenge on people tracking, 2021
- 1st place, nocaps challenge on image captioning, achieving human parity, 2020
- 1st place, FreiHand challenge on 3D hand pose estimation, 2020
- 1st place MOT17 challenge on people tracking, 2020

Awards:
- Best paper award, 8th ACM Symposium on Eye Tracking Research and Applications, 2014.
- Best paper award, 2010 IEEE International Workshop on Analysis and Modeling of Faces and Gestures.
- Best paper award, 2007 IEEE International Conference on Multimedia and Expo.

Talks:
- Keynote at 2021 CVPR Workshop on Dynamic Neural Networks meets Computer Vision
- Tutorial on Human Pose Estimation and Action Recognition, ICIP2019
- Invited talk on Azure Kinect Body Tracking SDK, ICIP 2019 Industry Workshop.
- Invited talk on 3D Skeletal Tracking on Azure Kinect, CVPR2019 workshop on 3D Computer Vision in Medical Environments.
- Keynote on Visual Understanding from RGB-D Sensors and Its Applications in a Collaborative Environment, 30th Conference on Graphics, Patterns and Images, 2017, Brazil.
- Invited tutorial on action recognition at the 6th Iberian Conference on Pattern Recognition and Image Analysis, 2013.
- Tutorial on 2D and 3D action recognition at Face and Gesture 2013.
- Tutorial on 3D action recognition at APSIPA Annual Conference 2012.
- Tutorial on action recognition at ICME2012.
- Keynote on activity recognition at 17th Iberoamerican Congress on Pattern Recognition.
- Invited talk on action recognition at the Summer School on Vision and Learning in Xi'an China, 2012.

• Invited lecture on activity recognition at the China Machine Intelligence Summer School in Chengdu, 2012.

Patents: 76 granted patents, 90 more pending.
Publications: 4 books, 5 book chapters, 40+ journal papers, 100+ conference papers.
Google Scholar: Citations=25,000, H-index=77.
Publication List:

Books:

- Zhe Gan, Linjie Li, Chunyuan Li, Lijuan Wang, Zicheng Liu, Jianfeng Gao, *Vision-language pre-training: Basics, recent advances, and future trends*, Foundations and Trends® in Computer Graphics and Vision, Now Publishers, Inc., 2022.
- Jiang Wang, Zicheng Liu, Ying Wu, *Human Action Recognition with Depth Cameras*, Springer Brief Series, 2014.
- Gang Yu, Junsong Yuan, Zicheng Liu, Human Action Analysis with Randomized Trees, Springer Brief Series, 2014.
- Zicheng Liu, Zhengyou Zhang, *Face Geometry and Appearance Modeling: Concepts and Applications,* Cambridge University Press, 2011.

Book Chapters:

1. Yingli Tian, Liangliang Cao, Zicheng Liu, Zhengyou Zhang, *Action Detection by Fusing Hierarchically Filtered Motion with Spatiotemporal Interest Point Features*, in "Human Behavior Recognition Technologies: Intelligent Applications for Monitoring and Security", Hans W. Huesgen, Stephen Marsland (eds), IGI Global, 2013.
2. Wanqing Li, Zhengyou Zhang, Zicheng Liu, Philip Ogunbona, *Human action recognition with expandable graphical models*, in "Machine learning for human motion analysis: theory and practice", Liang Wang, Guoying Zhao, Li Cheng (eds), IGI Global, 2010.
3. Zhengyou Zhang, Zicheng Liu and Ruigang Yang, *Model-Based Face Modeling and Tracking with Application to Videoconferencing*, in "Face Processing", W. Zhao and R. Chellappa (eds), Academic Press, 2006.
4. Zicheng Liu and Baining Guo, *Face Synthesi*", in "Handbook of Face Recognition", Z. Li and . K. Jain (eds), Springer-Verlag, 2004.
5. Bo Zhang, Zicheng Liu, and Baining Guo, *Photo-realistic Conversation Agent", in "Integrated Image and Graphics Technologies*, D. Zhang, M. Kamel, and G. Baciu (eds.), Kluwer Academic Press, Sept., 2003.

arXiv papers:

1. Zhengyuan Yang, Linjie Li, Jianfeng Wang, Kevin Lin, Ehsan Azarnasab, Faisal Ahmed, Zicheng Liu, Ce Liu, Michael Zeng, Lijuan Wang, *MM-REACT: Prompting ChatGPT for Multimodal Reasoning and Action, arXiv:2303.11381, 2023*
2. Andre Abrantes, Jiang Wang, Peng Chu, Quanzeng You, Zicheng Liu, *RefineVIS: Video Instance Segmentation with Temporal Attention Refinement, arXiv:2306.04774, 2023*

Conference papers:

1. *Shengming Yin, Chenfei Wu, Huan Yang, Jianfeng Wang, Xiaodong Wang, Minheng Ni, Zhengyuan Yang, Linjie Li, Shuguang Liu, Fan Yang, Jianlong Fu, Gong Ming, Lijuan Wang, Zicheng Liu, Houqiang Li, Nan Duan, DoD: Diffusion over Diffusion for Extremely Long Video Generation* ACL 2023

2. *Xiaodong Wang, Chenfei Wu, Shengming Yin, Minheng Ni, Jianfeng Wang, Linjie Li, Zhengyuan Yang, Fan Yang, Lijuan Wang, Zicheng Liu, Yuejian Fang, Nan Duan, Learning 3D Photography Videos via Self-supervised Diffusion on Single Images, IJCAI 2023*

3. *Tsu-Jui Fu, Linjie Li, Zhe Gan, Kevin Lin, William Yang Wang, Lijuan Wang, Zicheng Liu, An Empirical Study of End-to-End Video-Language Transformers with Masked Visual Modeling*, CVPR 2023

4. Ze Wang, Jiang Wang, Zicheng Liu, Qiang Qiu, *Binary Latent Diffusion*, CVPR 2023

5. Zhengyuan Yang, Jianfeng Wang, Zhe Gan, Linjie Li, Kevin Lin, Chenfei Wu, Nan Duan, Zicheng Liu, Ce Liu, Michael Zeng, Lijuan Wang, *ReCo: Region-Controlled Text-to-Image Generation*, CVPR 2023

6. Lin Huang, Chung-Ching Lin, Kevin Lin, Lin Liang, Lijuan Wang, Junsong Yuan, Zicheng Liu, *Neural Voting Field for Camera-Space 3D Hand Pose Estimation*, CVPR 2023

7. Linjie Li, Zhe Gan, Kevin Lin, Chung-Ching Lin, Zicheng Liu, Ce Liu, Lijuan Wang, *LAVENDER: Unifying Video-Language Understanding as Masked Language Modeling*, CVPR 2023

8. Chung-Ching Lin, Jiang Wang, Kun Luo, Kevin Lin, Linjie Li, Lijuan Wang, Zicheng Liu, *Adaptive Matting for Dynamic Videos*, CVPR 2023

9. Shiqi Lin, Zhizheng Zhang, Zhipeng Huang, Yan Lu, Cuiling Lan, Peng Chu, Quanzeng You, Jiang Wang, Zicheng Liu, Viraj Navkal, Amey Parulkar, Zhibo Chen, *Deep Frequency Filtering for Domain Generalization*, CVPR 2023

10. Ze Wang, Jiang Wang, Zicheng Liu, Qiang Qiu, *Energy-Inspired Self-Supervised Pretraining for Vision Models*, ICLR 2023

11. Ziyu Jiang, Yinpeng Chen, Mengchen Liu, Dongdong Chen, Xiyang Dai, Lu Yuan, Zicheng Liu, Zhangyang Wang, *Layer Grafted Pre-training: Bridging Contrastive Learning And Masked Image Modeling For Better Representations*, ICLR 2023

12. Xiaotian Han, Quanzeng You, Chunyu Wang, Zhizheng Zhang, Peng Chu, Houdong Hu, Jiang Wang, Zicheng Liu, *Mmptrack: Large-scale densely annotated multi-camera multiple people tracking benchmark*, WACV 2023

13. Peng Chu, Jiang Wang, Quanzeng You, Haibin Ling, Zicheng Liu, *Transmot: Spatial-temporal graph transformer for multiple object tracking*, WACV 2023

14. Yinan Feng, Yinpeng Chen, Shihang Feng, Peng Jin, Zicheng Liu, Youzuo Lin, *An intriguing property of geophysics inversion*, ICML 2022

15. Chenfei Wu, Jian Liang, Xiaowei Hu, Zhe Gan, Jianfeng Wang, Lijuan Wang, Zicheng Liu, Yuejian Fang, Nan Duan, *NUWA-Infinity: Autoregressive over Autoregressive Generation for Infinite Visual Synthesis*, NeurIPS 2022

16. Chunyuan Li, Haotian Liu, Liunian Harold Li, Pengchuan Zhang, Jyoti Aneja, Jianwei Yang, Ping Jin, Houdong Hu, Zicheng Liu, Yong Jae Lee, Jianfeng Gao, *ELEVATER: A Benchmark and Toolkit for Evaluating Language-Augmented Visual Models*, NeurIPS 2022

17. Zi-Yi Dou, Aishwarya Kamath, Zhe Gan, Pengchuan Zhang, Jianfeng Wang, Linjie Li, Zicheng Liu, Ce Liu, Yann LeCun, Nanyun Peng, Jianfeng Gao, Lijuan Wang, *Coarse-to-Fine Vision-Language Pre-training with Fusion in the Backbone*, NeurIPS 2022

18. Yunsheng Li, Yinpeng Chen, Xiyang Dai, Dongdong Chen, Mengchen Liu, Pei Yu, Ying Jin, Lu Yuan, Zicheng Liu, Nuno Vasconcelos, *Should All Proposals Be Treated Equally in Object Detection?*, ECCV 2022

19. Zhengyuan Yang, Zhe Gan, Jianfeng Wang, Xiaowei Hu, Faisal Ahmed, Zicheng Liu, Yumao Lu, Lijuan Wang, *Unitab: Unifying text and box outputs for grounded vision-language modeling*, ECCV 2022

20. Yutong Lin, Chen Li, Yue Cao, Zheng Zhang, Jianfeng Wang, Lijuan Wang, Zicheng Liu, Han Hu, *A Simple Approach and Benchmark for 21,000-Category Object Detection*, CVPR 2022

21. Zi-Yi Dou, Yichong Xu, Zhe Gan, Jianfeng Wang, Shuohang Wang, Lijuan Wang, Chenguang Zhu, Pengchuan Zhang, Lu Yuan, Nanyun Peng, Zicheng Liu, Michael Zeng, *An empirical study of training end-to-end vision-and-language transformers*, CVPR 2022

22. Chung-Ching Lin, Kevin Lin, Lijuan Wang, Zicheng Liu, Linjie Li, *Cross-modal representation learning for zero-shot action recognition*, CVPR 2022

23. Zhipeng Huang, Zhizheng Zhang, Cuiling Lan, Wenjun Zeng, Peng Chu, Quanzeng You, Jiang Wang, Zicheng Liu, Zheng-jun Zha, *Lifelong unsupervised domain adaptive person re-identification with coordinated anti-forgetting and adaptation*, CVPR 2022

24. Zhiyuan Fang, Jianfeng Wang, Xiaowei Hu, Lin Liang, Zhe Gan, Lijuan Wang, Yezhou Yang, Zicheng Liu, *Injecting semantic concepts into end-to-end image captioning*, CVPR 2022

25. Kevin Lin, Linjie Li, Chung-Ching Lin, Faisal Ahmed, Zhe Gan, Zicheng Liu, Yumao Lu, Lijuan Wang, *Swinbert: End-to-end transformers with sparse attention for video captioning*, CVPR 2022

26. Xiaowei Hu, Zhe Gan, Jianfeng Wang, Zhengyuan Yang, Zicheng Liu, Yumao Lu, Lijuan Wang, *Scaling up vision-language pre-training for image captioning*, CVPR 2022

27. Yinpeng Chen, Xiyang Dai, Dongdong Chen, Mengchen Liu, Xiaoyi Dong, Lu Yuan, Zicheng Liu, *Mobile-former: Bridging mobilenet and transformer*, CVPR 2022

28. Zhe Gan, Yen-Chun Chen, Linjie Li, Tianlong Chen, Yu Cheng, Shuohang Wang, Jingjing Liu, Lijuan Wang, Zicheng Liu, *Playing Lottery Tickets with Vision and Language*, AAAI 2022

29. Sheng Liu, Kevin Lin, Lijuan Wang, Junsong Yuan, Zicheng Liu, *OVIS: Open-Vocabulary Visual Instance Search via Visual-Semantic Aligned Representation Learning*, AAAI 2022

30. Zhengyuan Yang, Zhe Gan, Jianfeng Wang, Xiaowei Hu, Yumao Lu, Zicheng Liu, Lijuan wang, *An Empirical Study of GPT-3 for Few-Shot Knowledge-Based VQA*, AAAI 2022

31. Linjie Li, Jie Lei, Zhe Gan, Licheng Yu, Yen-Chun Chen, Rohit Pillai, Yu Cheng, Luowei Zhou, Xin Eric Wang, William Yang Wang, Tamara Lee Berg, Mohit Bansal, Jingjing Liu, Lijuan Wang, Zicheng Liu, *VALUE: A Multi-Task Benchmark for Video-and-Language Understanding Evaluation*, NeurIPS2021

32. Kevin Lin, Lijuan Wang, Zicheng Liu, *Mesh Graphormer*, ICCV2021

33. Zhiyuan Fang, Jianfeng Wang, Xiaowei Hu, Lijuan Wang, Yezhou Yang, Zicheng Liu, *Compressing Visual-linguistic Model via Knowledge Distillation*, ICCV2021

34. Mengde Xu, Zheng Zhang, Han Hu, Jianfeng Wang, Lijuan Wang, Fangyun Wei, Xiang Bai, Zicheng Liu, *End-to-End Semi-Supervised Object Detection with Soft Teacher*, ICCV2021

35. Yunsheng Li, Yinpeng Chen, Xiyang Dai, Dongdong Chen, Mengchen Liu, Lu Yuan, Zicheng Liu, Lei Zhang, Nuno Vasconcelos, *Improving Image Recognition with Extremely Low FLOPs*, ICCV2021

36. Xin Li, Deng-Ping Fan, Fan Yang, Ao Luo, Hong Cheng, Zicheng Liu, *Probabilistic Model Distillation for Semantic Correspondence*, CVPR 2021

37. Kevin Lin, Lijuan Wang, Zicheng Liu, *End-to-End Human Pose and Mesh Reconstruction with Transformers*, CVPR 2021

38. Zhiyuan Fang, Jianfeng Wang, Lijuan Wang, Lei Zhang, Yezhou Yang, Zicheng Liu, *SEED: Self-supervised Distillation for Visual Representation,* ICLR 2021

39. Yunsheng Li, Yinpeng Chen, Xiyang Dai, Mengchen Liu, Dongdong Chen, Ye Yu, Lu Yuan, Zicheng Liu, Mei Chen, Nuno Vasconcelos, *Revisiting Dynamic Convolution via Matrix Decomposition,* ICLR 2021

40. Xiaowei Hu, Xi Yin, Kevin Lin, Lijuan Wang, Lei Zhang, Jianfeng Gao, Zicheng Liu, *Surpassing Human Performance in Novel Object Captioning with Visual Vocabulary Pre-Training,* AAAI 2021

41. Kevin Lin, Lijuan Wang, Ying Jin, Zicheng Liu, Ming-Ting Sun, *Learning Nonparametric Human Mesh Reconstruction from a Single Image without Ground Truth Meshes, arXiv:2003.00052*

42. Yinpeng Chen, Xiyang Dai, Mengchen Liu, Dongdong Chen, Lu Yuan, Zicheng Liu, *Dynamic ReLU*, ECCV 2020

43. Yinpeng Chen, Xiyang Dai, Mengchen Liu, Dongdong Chen, Lu Yuan, Zicheng Liu, *Dynamic Convolution: Attention over Convolution Kernels*, CVPR 2020

44. Yue Wu, Yinpeng Chen, Lu Yuan, Zicheng Liu, Lijuan Wang, Hongzhi Li, Yun Fu, *Rethinking Classification and Localization for Object Detection*, CVPR 2020

45. Mingxuan Sun, Qing Wang, Zicheng Liu, *Human Action Image Generation with Differential Privacy*, ICME 2020

46. Yue Wu, Yinpeng Chen, Lijuan Wang, Yuancheng Ye, Zicheng Liu, Yandong Guo, Yun Fu, *Large Scale Incremental Learning*, CVPR 2019

47. Yue Wu, Yinpeng Chen, Lijuan Wang, Yuancheng Ye, Zicheng Liu, Yandong Guo, Zhengyou Zhang, Yun Fu, *Incremental classifier learning with generative adversarial networks*, arXiv preprint arXiv:1802.00853, 2018

48. Nikolaos Karianakis, Zicheng Liu, Yinpeng Chen, Stefano Soatto, *Reinforced Temporal Attention and Split-Rate Transfer for Depth-Based Person Re-identification*, ECCV 2018

49. Emad Barsoum, John Kender, and Zicheng Liu, *HP-GAN: Probabilistic 3D human motion prediction via GAN*, CVPR Workshop, 2018

50. Jingyong Zhou, Xin Tong, Zicheng Liu, Baining Guo*, 3D Cartoon Face Generation by Local Deformation Mappings*, CGI, 2016

51. Gang Yu, Zicheng Liu, Junsong Yuan*, Discriminative orderlet mining for real-time recognition of human-object interaction* , ACCV, 2015

52. Yinpeng Chen, Zicheng Liu, Phil Chou, Zhengyou Zhang, *VTouch: Vision-Enhanced Interaction for Large Touch Displays,* , IEEE International Conference on Multimedia and Expo, 2015

53. Keita Higuchi, Yinpeng Chen, Philip A Chou, Zhengyou Zhang, Zicheng Liu, *ImmerseBoard: Immersive Telepresence Experience using a Digital Whiteboard,* Proceedings of CHI 2015, Seoul, Korea, 2015.

54. Jia-Bin Huang, Qin Cai, Zicheng Liu, Narendra Ahuja, Zhengyou Zhang, *Towards Accurate and Robust Cross-Ratio based Gaze Trackers Through Learning From Simulation* 8th ACM Symposium on Eye Tracking Research and Applications, 2014

55. Omar Oreifej and Zicheng Liu, *HON4D: Histogram of Oriented 4D Normals for Activity Recognition from Depth Sequences*, CVPR 2013.

56. Yinpeng Chen, Zicheng Liu, Zhengyou Zhang, *Tensor-Based Human Body Modeling,* CVPR 2013.

57. L. Zhang, M. Song, Z. Liu, X. Liu, J. Bu, C. Chen, *Probabilistic Graphlet Cut: Exploring Spatial Structure Cue for Weakly Supervised Image Segmentation,* CVPR 2013.

58. X. Liu, M. Song, D. Tao, Z. Liu, L. Zhang, J. Bu, C. Chen, *Semi-Supervised Node Splitting for Random Forest Construction,* CVPR 2013.

59. Javier Hernandez, Zicheng Liu, Geoff Hulten, Dave DeBarr, Kyle Krum, Zhengyou Zhang, *Measuring the Engagement Level of TV Viewers,* 10th IEEE International Conference on Automatic Face and Gesture Recognition, Shanghai, China, April 22-26, 2013.

60. Zhongjun Dai, Hong Cheng, Zicheng Liu, *Image-To-Class Dynamic Time Warping for 3D Hand Gesture Recognition,* ICME 2013.

61. Yang Zhao, Zicheng Liu, Lu Yang, Hong Cheng, *Combining RGB and Depth Map Features for Human Activity Recognition,* 2012 APSIPA Annual Summit and Conference, Hollywood, California, Dec 3-6, 2012.

62. Jiang Wang, Zicheng Liu, Jan Chorowski, Zhuoyuan Chen, Ying Wu, *Robust 3D Action Recognition with Random Occupancy Patterns,* ECCV 2012.

63. Gang Yu, Junsong Yuan, Zicheng Liu, *Propagative Hough Voting for Human Activity Recognition,* ECCV 2012.

64. Jiang Wang Zicheng Liu, Ying Wu, Junsong Yuan, *Mining Actionlet Ensemble for Action Recognition with Depth Cameras,* CVPR 2012.

65. Alexey Kurakin, Zhengyou Zhang, Zicheng Liu, *A Real-Time System for Dynamic Hand Gesture Recognition with a Depth Sensor,* EUSIPCO, 2012.

66. Hong Cheng, Rongchao Yu, Zicheng Liu, *A Pyramid Nearest Neighbor Search Kernel for Object Categorization*, ICPA 2012.

67. Antonio W. Vieira, Erickson R. Nascimento, Gabriel L. Oliveira, Zicheng Liu, Mario F. M. Campos, *STOP: Space-Time Occupancy Patterns for 3D Action Recognition from Depth Map Sequences,* 17th Iberoamerican Congress on Pattern Recognition (CIARP), Buenos Aires, Argentina, Sep 3-6, 2012.

68. Gang Yu, Junsong Yuan, Zicheng Liu, *Predicting Human Activities using Spatio-Temporal Structure of Interest Points,* ACM Multimedia 2012.

69. Gang Yu, Junsong Yuan, Zicheng Liu, *Real-time Human Action Search using Random Forest based Hough Voting,* ACM Multimedia 2011.

70. Hong Cheng, Zicheng Liu, Yang Zhao, Guo Ye, *Real World Activity Summary for Senior Home Monitoring,* IEEE International Conference on Multimedia and Expo (ICME), 2011.

71. Gang Yu, Junsong Yuan, Zicheng Liu, Unsupervised Random Forest Voting for Fast Action Search, IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2011.

72. Norberto A. Goussies, Zicheng Liu, Junsong Yuan, *Efficient Search for Top-k Video Subvolumes for Multi-Instance Action Detection,* 2010 IEEE International Conference on Multimedia and Expo, Singapore, July 19-23, 2010.

73. Liangliang Cao, Yingli Tian, Zicheng Liu, Benjamin Yao, Zhengyou Zhang, Thomas S. Huang, *Action Detection Using Multiple Spatio-Temporal Interest Point Features,* 2010 IEEE International Conference on Multimedia and Expo, Singapore, July 19-23, 2010.

74. Liangliang Cao, Zicheng Liu, Thomas Huang, *Cross-dataset Action Detection,* IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2010), San Francisco, CA, June, 2010

75. Qin Cai, A. Sankaranarayanan, Q. Zhang, Zhengyou Zhang, Zicheng Liu, *Real Time Head Pose Tracking from Multiple Cameras with a Generic Model,* IEEE International Workshop on Analysis and Modeling of Faces and Gestures (in conjunction with CVPR2010), San Francisco, CA, June, 2010.

76. Wanqing Li, Zhengyou Zhang, Zicheng Liu, *Action Recognition Based on A Bag of 3D Points,* IEEE International Workshop on CVPR for Human Communicative Behavior Analysis (in conjunction with CVPR2010), San Francisco, CA, June, 2010.

77. Hong Cheng, Zicheng Liu, Jie Yang, *Sparsity Induced Similarity Measure for Label Propagation,,* IEEE International Conference on Computer Vision (ICCV) 2009.

78. Junsong Yuan, Zicheng Liu, Ying Wu, Zhengyou Zhang, *Speeding up Spatio-Temporal Sliding-Window Search for Efficient Event Detection in Crowded Videos,* 1st ACM International Workshop on Events in Multimedia (EiMM09, in conjunction with ACMMM09), Beijing.

79. Gang Hua, Cha Zhang, Zicheng Liu, Zhengyou Zhang, Ying Shan, *Efficient scale-space sptiotemporal saliency tracking for distortion-free video retargeting,* Asian Conference on Computer Vision (ACCV), Sep. 23-27, 2009, Xi'an, China

80. Junsong Yuan, Zicheng Liu, Ying Wu, *Discriminative Subvolume Search for Efficient Action Detection,* IEEE International Conference on Computer Vision and Pattern Recognition (CVPR) 2009.

81. Mehrez Souden, Zicheng Liu, *Optimal Joint Linear Acoustic Echo Echo Cancellation and Blind Source Separation in the Presence of Loud Speaker Nonlinearity,* IEEE International Conference on Multimedia and Expo (ICME 2009), June 30 - July 2, 2009,

82. Zicheng Liu, *Sound Source Separation with Distributed Microphone Arrays in the presence of Clock Synchronization Errors* 2008 International Workshop for Acoustic Echo and Noise Control (IWAENC 2008), Sep. 14-17.

83. Jacek P. Dmochowski, Zicheng Liu, Phil Chou, *Sound Blind Source Separation in a Distributed microphone Meeting Environment for Improved Teleconferencing,* ICASSP 2008

84. Wanqing Li, Zhengyou Zhang, Zicheng Liu, *Graphical Modeling and Decoding of Human Actions* IEEE International Workshop on Multimedia Signal Processing (MMSP), 2008.

85. Hong Cheng, Zicheng Liu, Nanning Zheng, Jie Yang, *A Deformable Local Image Descriptor ,* IEEE International Conference on Computer Vision and Pattern Recognition (CVPR) 2008.

86. Aayush Sharma, Gang Hua, Zicheng Liu, Zhengyou Zhang, *Meta-tag Propagation by Co-training an Ensemble Classifier for Improving Image Search Relevance,* First International Workshop on Internet Vision (in conjunction with CVPR), Anchorage, Alaska, June 23, 2008.

87. Yang Wang, Zicheng Liu, Gang Hua, Zhen Wen, Zhengyou Zhang, and Dimitris Samaras, *Face relighting from a Single Image under Harsh Lighting Conditions,* IEEE International Conference on Computer Vision and Pattern Recognition (CVPR) 2007.

88. Zicheng Liu, Cha Zhang, Zhengyou Zhang, *Learning-Based Perceptual Image Quality Improvement for Video Conferencing,* IEEE International Conference on Multimedia and Expo (ICME) 2007. Best paper award.

89. Hong Cheng, Zicheng Liu, Jie Yang *Enhancing a Driver's Awareness Using a Global View Map,* IEEE International Conference on Multimedia and Expo (ICME) 2007.

90. Minghua Chen, Zicheng Liu, Li-Wei He, Phil Chou, Zhengyou Zhang, *Energy-based Position Estimation of Microphones and Speakers for Ad Hoc microphone Arrays* 2007 IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA 07), New Paltz, NY, October 21-24, 2007.

91. Zicheng Liu, Zhengyou Zhang, Li-Wei He and Phil Chou, *Energy-based sound source localization and gain normalization for ad hoc microphone arrays.* IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2007.

92. Gang Hua, Zicheng Liu, Zhengyou Zhang, Ying Wu, *Automatic Business Card Scanning with a Camera,* International Conference on Image Processing (ICIP) 2006.

93. Mingli Song, Huiqiong Wang, Jiajun Bu, Chun Chen, Zicheng Liu, *Subtle Facial Expression Modeling with Vector Field Decomposition,* International Conference on Image Processing (ICIP) 2006.

94. Mingli Song, Zicheng Liu, Baining Guo, *Real-Time Facial Expression Mapping for High Resolution 3D Meshes,* Computer Graphics International 2006.

95. Amar Subramanya, Zhengyou Zhang, Zicheng Liu, Alex Acero, *Speech Modeling with Magnitude-Normalized Complex Spectra and Its Application to Multisensory Speech Enhancement,* ICME 2006.

96. Zicheng Liu, Michael Seltzer, Alex Acero, Ivan Tashev, Zhengyou Zhang, Mike Sinclair, *A Compact Multi-Sensory Headset for Hands-Free Communication*, IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA 05) Mohonk, Oct. 16-19, 2005.

97. Zhengyou Zhang, Amarnag Subramanya, Zicheng Liu, Alex Acero, Jasha Droppo, *A Graphical Model for Multi-Sensory Speech Processing in Air-and-Bone Conductive Microphones,* Eurospeech 2005.

98. Ya Chang, Ross Cutler, Zicheng Liu, Zhengyou Zhang, Alex Acero, *Automatic Head-Size Equalization in Panorama Images for Video Conferencing,* IEEE International Conference on Multimedia and Expo (ICME) 2005, Amsterdam, July 5-9.

99. Zicheng Liu, Michael Cohen, Head-Size Equalization for Better Visual Perception of Video Conferencing, IEEE International Conference on Multimedia and Expo (ICME) 2005, Amsterdam, July 5-9.

100. Amarnag Subramanya, Li Deng, Zicheng Liu, Zhengyou Zhang, *Multi-Sensory Speech Processing: Incorporating Automatically Extracted Hidden Dynamic Information*, ICME 2005, Amsterdam, July 5-9.

101. Yong Rui, Zicheng Liu, Shannon Kallin, Gavin Janke, Cem Paya, Characters or Faces: *A User Study on Easy of Use for HIPs,* HIP 2005, Lecture Notes in Computer Science 3517, Henry S. Baird and Daniel P. Lopresti (eds), pp53-65

102. Zicheng Liu, Amar Subramanya, Zhengyou Zhang, Jasha Droppo, Alex Acero, *Leakage Model and Teeth Clack Removal for Air- and Bone-Conductive Integrated*

Microphones, International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2005.

103.   Zicheng Liu, Zhengyou Zhang, Alex Acero, Jasha Droppo, Xuedong Huang, *Direct Filtering for Air- and Bone-Conductive Integrated Microphones,* IEEE International Workshop on Multimedia Signal Processing (MMSP), 2004.

104.   Li Deng, Zicheng Liu, Zhengyou Zhang, Alex Acero, *Nonlinear Information Fusion in Multi-Sensor Processing – Extracting and Exploiting Hidden Dynamics of Speech Captured by a Bone-Conductive Microphone*, IEEE International Workshop on Multimedia Signal Processing (MMSP), 2004.

105.   Yanli Zheng, Zicheng Liu, Zhengyou Zhang, Mike Sinclair, Jasha Droppo, Li Deng, Alex Acero, Xuedong Huang, *Air-And Bone-Conductive Integrated Microphones for Robust Speech Detection and Enhancement.* IEEE Workshop on Automatic Speech Recognition and Understanding (ASRU) 2003, St. Thomas, U.S. Virgin Islands, Nov. 30 - Dec. 4, 2003.

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