

Keze Wang

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Google Scholar

EDUCATION

- 2012.9–2018.12 **Ph.D., Dept. of Computing**
The Hong Kong Polytechnic University, Hong Kong, China
- 2012.9–2017.12 **Ph.D. in Computer Applied Technology**
Sun Yat-sen University, Guangzhou, China
- 2008.9–2012.6 **B.S. in Software Engineering**
Sun Yat-sen University, Guangzhou, China (GPA: 3.9/5, ranking 5/89)

HONORS & AWARDS

- 2019 Chinese Association for Artificial Intelligence (CAAI) Best Doctoral Dissertation Award
- 2015–2016 Graduate National Scholarship
- 2014–2015 Graduate National Scholarship
- 2010–2011 National Encouragement scholarship (top 5% of 89)
- 2010–2011 First-class scholarship - Superior Student (top 5% of 89)
- 2009–2010 National Encouragement scholarship (top 5% of 89)

RESEARCH INTERESTS

Computer Vision

- Visual Detection, including saliency detection, face identification, general object detection.
- Human-centric Analysis, including 2D/3D human pose estimation, human activity recognition.

Machine Learning

- Explainable Artificial Intelligence
- Curriculum Learning & Self-paced Learning
- Self-supervised Learning
- Semi-supervised Learning, including deep active learning.

ACADEMIC SERVICES

Managing Editor:

- Image and Vision Computing

Conference Reviewer:

- AAAI Conference on Artificial Intelligence (AAAI) 2019, 2020
- Neural Information Processing Systems (NeurIPS) 2020
- International Conference in Computer Vision (ICCV 2019)
- IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2018, 2019, 2020
- International Joint Conference on Artificial Intelligence (IJCAI) 2018, 2019, 2020
- Asian Conference on Computer Vision (ACCV) 2018

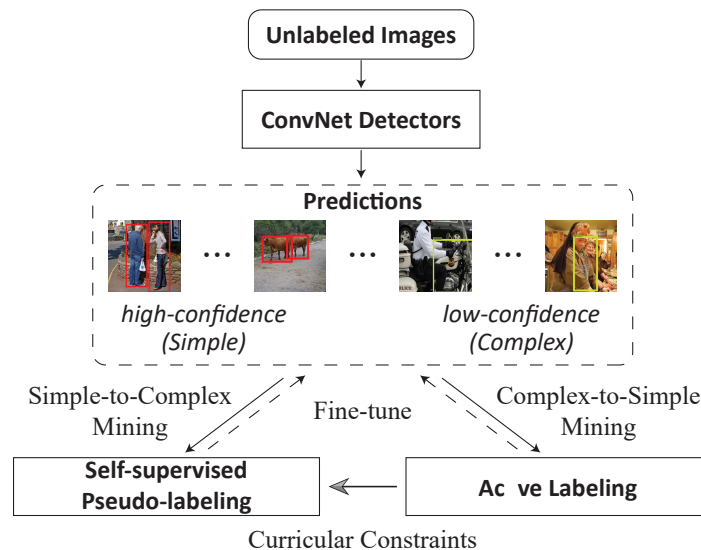
- European Conference on Computer Vision (ECCV) 2020
- International Conference on Pattern Recognition (ICPR) 2020

Journal Reviewer:

- IEEE Transactions on Image Processing (TIP)
- IEEE Transactions on Multimedia (TMM)
- IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
- Neurocomputing
- Pattern Recognition (PR)
- Neural Networks
- Autonomous Robots (AURO)
- Applied Sciences

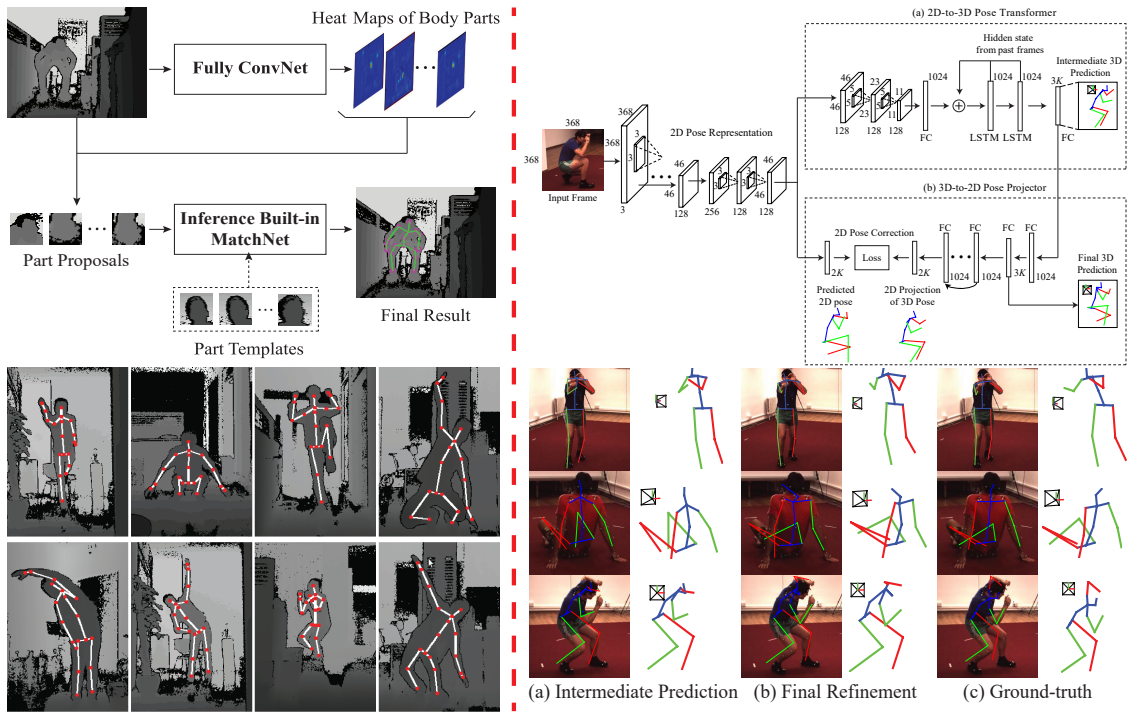
SELECTED PROJECTS

- **Explainable Video Analysis** We employ a Theory of Mind (X-ToM) approach in which an explicit representation of the users' mental model is inferred and applied to the tasks of Visual Question Answering (VQA) on video analysis. Please visit <http://xai.visualturingtest.org> for more details.
- **Self-driven Progressive Learning System for Large-scale Visual Recognition.**



We developed a rational yet cost-effective pipeline to significantly decrease the amount of user annotations for improving large-scale visual recognition (e.g., *face identification* and *object detection*). Specifically, our system mines from unlabeled and partially labeled images by automatically distinguishing the samples with high prediction confidences, which can be easily and faithfully recognized by computers via a simple-to-complex fashion, and low-confident ones, which can be labeled by active users in an interactive complex-to-simple manner.

- **Network Acceleration on Embedded Devices.** We presented a simple yet effective strategy to design lightweight network architectures. Moreover, we have also studied the fastest convolution algorithm (i.e., winograd) and further extended it with specific optimizations for the ARM Cortex-A15 (32bit) and Cortex A72 (64bit) chips. The Guangzhou company named “Xinjiezhou” has already selected our method as a solid solution for their commercial products.
- **Human-centric Analysis System.**



We proposed several methods to accomplish a real-time and high-accuracy system to predict 2D/3D human poses from depth or common RGB cameras. This system works efficiently and properly on mobile devices, e.g., MiBox 3.

SELECTED PUBLICATIONS

- [1] Keze Wang, Liang Lin, Chenhan Jiang, Chen Qian, and Pengxu Wei. 3D Human Pose Machines with Self-supervised Learning. To appear in *IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI)*, 2019.
- [2] Guangrun Wang, Keze Wang, Liang Lin. Adaptively Connected Neural Networks. In *Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019.
- [3] Keze Wang, Liang Lin, Xiaopeng Yan, Ziliang Chen, Dongyu Zhang, Lei Zhang. Self-supervised Sample Mining with Switchable Selection Criteria for Object Detection. To appear in *IEEE Transactions on Neural Networks and Learning System (T-NNLS)*, 2018.
- [4] Keze Wang, Liang Lin, Chuangjie Ren, Wei Zhang, Wenxiu Sun. Convolutional Memory Blocks for Depth Data Representation Learning. In *Proceedings of the 27th International Joint Conference on Artificial Intelligence and the 23rd European Conference on Artificial Intelligence (IJCAI)*, 2018.
- [5] Keze Wang, Xiaopeng Yan, Dongyu Zhang, Lei Zhang, Liang Lin. Towards Human-Machine Cooperation: Self-supervised Sample Mining for Object Detection. In *Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018.
- [6] Guanbin Li, Yuan Xie, Tianhao Wei, Keze Wang, Liang Lin. Flow Guided Recurrent Neural Encoder for Video Salient Object Detection. In *Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018.
- [7] Liang Lin, Keze Wang, Deyu Meng, Wangmeng Zuo, and Lei Zhang. Active Self-Paced Learning for Cost-Effective and Progressive Face Identification. In *IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI)*, vol. 40, no. 1, pp. 7–19, 2018.
- [8] Keze Wang, Dongyu Zhang, Liang Lin, Ya Li and Ruimao Zhang. Cost-Effective Active Learning for Deep Image Classification. In *IEEE Transactions on Circuits and Systems for Video Technology (T-CSVT)*, vol. 27, no. 12, pp. 2591–2600, 2017.
- [9] Yukai Shi, Keze Wang, Chongyu Chen, Li Xu and Liang Lin. Structure-Preserving Image Super-resolution via Contextualized Multi-task Learning. In *IEEE Transactions on Multimedia (T-MM)*, vol. 19, no. 12, pp. 2804–2815, 2017.
- [10] Ziliang Chen, Keze Wang, Xiao Wang, Pai Peng and Liang Lin. Deep Co-Space: Sample Mining Across Feature Transformation for Semi-Supervised Learning. In *IEEE Transactions on Circuits and Systems for Video Technology (T-CSVT)*, 2017.

- [11] Mude Lin, Liang Lin, Xiaodan Liang, Keze Wang, and Hui Cheng, Recurrent 3D Pose Sequence Machines. In *Proc. of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2017. (oral).
- [12] Liang Lin, Keze Wang, Wangmeng Zuo, Meng Wang, Jiebo Luo, Lei Zhang, A Deep Structured Model with Radius-Margin Bound for 3D Human Activity Recognition. In *International Journal of Computer Vision (IJCV)*, 118(2), 256-273, 2016.
- [13] Keze Wang, Liang Lin, Jiangbo Lu, Chenglong Li, Keyang Shi, PISA: Pixelwise Image Saliency by Aggregating Complementary Appearance Contrast Measures with Edge-Preserving Coherence. In *IEEE Transactions on Image Processing (T-IP)*, 24(10), 3019-3033, 2015.
- [14] Keze Wang, Shengfu Zhai, Hui Cheng, Xiaodan Liang, Liang Lin. Human Pose Estimation from Still Depth Image via Inference Embedded Multi-task Learning. In *Proceedings of the ACM International Conference on Multimedia (ACM MM)*, 2016. (oral, full paper)
- [15] Keze Wang, Liang Lin, Wangmeng Zuo, Shuhang Gu, Lei Zhang. Dictionary Pair Classifier Driven Convolutional Neural Networks for Object Detection. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2016.
- [16] Keze Wang, Xiaolong Wang, Liang Lin, Meng Wang, Wangmeng Zuo, 3D human activity recognition with reconfigurable convolutional neural networks. In *Proceedings of the ACM International Conference on Multimedia (ACM MM)*, pp. 97-106, 2014. (oral, full paper)
- [17] Yukai Shi, Keze Wang, Li Xu, Liang Lin, Local- and Holistic- Structure Preserving Image Super Resolution via Deep Joint Component Learning. In *Proceedings of the IEEE International Conference on Multimedia and Expo (ICME)*, 2016. (oral)
- [18] Linnan Zhu, Keze Wang, Liang Lin, Lei Zhang, Learning a Lightweight Deep Convolutional Network for Joint Age and Gender Recognition. In *Proceedings of the IEEE International Conference on Pattern Recognition (ICPR)*, 2016. (oral)
- [19] Keyang Shi, Keze Wang, Jiangbo Lu, Liang Lin, Pisa: Pixelwise image saliency by aggregating complementary appearance contrast measures with spatial priors. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pp. 2115-2122, 2013.