

JINGBO WANG

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EDUCATION

The Chinese University of Hong Kong, Sha Tin, Hong Kong *August 2020 - Now*
Information Engineering
Ph.D. Student (Supervised by Prof. Dahua Lin),
Department of Information Engineering

Peking University, Beijing, China *September 2016 - July 2019*
Intelligence Science and Technology
Master of Science (Supervised by Prof. Gang Zeng),
Key Laboratory of Machine Perception,
School of Electronics Engineering and Computer Science (EECS)

Beijing Institute of Technology, Beijing, China *September 2012 - July 2016*
Information and Computing Science
Bachelor of Science,
School of Mathematics

Peking University, Beijing, China *September 2014 - July 2017*
Economics
Double Bachelor Major
National School of Development (CCER)

SELECTED RESEARCH EXPERIENCE

Research in 3D Human Motion Synthesis in The Scene *June 2020 - Now*

Supervised by Prof. Dahua Lin, MMLab, CUHK

- In this project, we propose a novel generative framework for human motion synthesis in the scene. We first extract the geometry-aware feature of the scene by the depth estimation network as the condition of the generation adversarial network. Then, a two stage generation network, which first synthesizes trajectory in the scene and then synthesizes pose sequences under the guidance of the sampled trajectories, is adopted in this framework. In the discriminator, additionally, we introduce the projection discriminator and context discriminator, which can help the generator synthesize compatible human motion with the scene, based on projected 2d human motion and the scene context sequences. As our known, our method is the **first fully generative framework** to synthesize human motions in complex scenes.
- *In Submission*

Research in 3D Human Pose Estimation *August 2019 - April 2020*

Supervised by Prof. Dahua Lin, MMLab, CUHK

- In this project, we propose our motion loss and the UGCN network for 3D human pose estimation. The motion loss supervises the network by the high order motion information of GT 3D pose sequences. The loss on motion can represent the differences between the prediction and gt pose sequences, although the point-to-point loss of them is same. Besides, to capture the motion information, we propose our UGCN, which is based on graph convolution layers. Our method achieves the state-of-the-art on both H36M and MPI-INF-3DHP datasets, comparing against other monocular video based methods.

- *Accepted by ECCV 2020*

Research in RGB-D Semantic Segmentation

November 2018 - June 2019

Supervised by Prof. Gang Zeng, Key Laboratory of Machine Perception, Peking University

- In this project, we propose our malleable 2.5D convolution operator, which can take the advantages of the receptive fields of convolution operator in both image and camera coordinate space. Based on the distance in 3D space, our operator can learn dynamic weight for different convolution kernels, which capture information from the different distance ranges of the center point of 2D convolution operator. Thus, based on this operator, the network can learn robust local representation of different scenes and we achieve significant improvements on both indoor (NYU-RGBD) and outdoor (Cityscapes) datasets.
- *Accepted by ECCV 2020*

Research in Panoptic Segmentation

May 2018 - August 2018

Supervised by Dr. Gang Yu, Megvii(Face++) inc.

- In this project, we train stuff segmentation model and instance segmentation model separately and merge the results. We design a novel network structure with different context information for the Stuff region in semantic segmentation task and proposed a merge strategy for the occlusion issue in instance segmentation task. This method achieves 53.2 PQ on COCO 2018 challenge datasets and 41.2 PQ on Mapillary test dataset.
- *Winner of COCO2018 and Mapillary Panoptic Segmentation Competitions.*

Research in Semantic Segmentation and Real Time Scene Parsing

July 2017 - May 2018

Supervised by Dr. Gang Yu, Megvii(Face++) inc.

- We propose a Convolution Neural Network Structure which contained a global context branch and a boundary branch to solve the inter-class and intra-class problems for the semantic segmentation task. We achieve the *state-of-the-art* performance on the benchmarks of PASCAL VOC 2012 and Cityscapes datasets
- *Accepted by CVPR 2018*
- We designed a novel network structure for real time scene parsing. This algorithm achieves the real time speed and 74 % mIoU on Cityscapes datasets. Our network structure takes the balance of speed and the spatial information in scene parsing task.
- *Accepted by ECCV 2018*

SELECTED PUBLICATIONS

Scene-aware Generative Network for Human Motion Synthesis

Jingbo Wang, Sijie Yan, Bo Dai, Dahua Lin

In Submission

Motion Guided 3D Pose Estimation from Videos

Jingbo Wang, Sijie Yan, Yuanjun Xiong, Dahua Lin

Accepted, In *IEEE European Conference on Computer Vision (ECCV), 2020*

Malleable 2.5D Convolution: Learning Receptive Fields along the Depth-axis for RGB-D Scene Parsing

Yajie Xing, **Jingbo Wang**, Gang Zeng

Accepted, In *IEEE European Conference on Computer Vision (ECCV), 2020*

BiSeNet: Bilateral Segmentation Network for Real-time Semantic Segmentation

Changqian Yu*, **Jingbo Wang***, Chao Peng, Changxin Gao, Gang Yu, Nong Sang (‘*’ Equal Contribution)

Accepted, In *IEEE European Conference on Computer Vision (ECCV), 2018*

Learning a Discriminative Feature Network for Semantic Segmentation

Changqian Yu, **Jingbo Wang**, Chao Peng, Changxin Gao, Gang Yu, Nong Sang

Accepted, In *IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018*

HONORS AND AWARDS

Winner of COCO2018 and Mapillary Panoptic Segmentation Competitions *September 2018*

Peking University and Megvii(Face++),inc., Beijing, China

WORKING EXPERIENCE

Information Engineering, The Chinese University of Hong Kong August 2019 - July 2020

Supervised by Prof. Dahua Lin at MMLab. Junior Research Assistant

- Research of human pose estimation, especially in 3D human pose estimation of video data.

Momenta, inc.

March 2019 - July 2019

Leaded by Mr. Chao Peng. Computer Vision Researcher Internship

- Research of general object segmentation, especially based on RGBD or 3D data in 3D scene.

Detection Group, Megvii (Face++), inc.

June 2017 - March 2019

Supervised by Dr. Gang Yu. Computer Vision Researcher Internship

- Research of general object segmentation, especially in Semantic Segmentation, Scene Parsing, and Video Segmentation.

ACADEMIC ACTIVITIES

Serve as the reviewer for ICCV 2019, CVPR 2019/2020/2021, ECCV 2020, AAAI 2020/2021.

Serve as the guest reviewer for IJCV.

TECHNICAL STRENGTHS

Computer Languages

Python, MatLab, C/C++

Software & Tools

CUDA, L^AT_EX

Deep Learning Framework

Pytorch, Caffe