

JINGBO WANG

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EDUCATION

The Chinese University of Hong Kong, Hong Kong

August 2020 - August 2023

Multimedia Lab, Information Engineering

Ph.D. (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)

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

RESEARCH EXPERIENCE

1. Human Motion Analysis

I mainly focus on building automatic humanoid agents in complex environments, following multi-modality instructions, such as language and vision.

- **Human Motion with Semantic Instructions:** In our research, we go beyond the scope of text-based human motion synthesis. We also consider high-level information derived from semantic instructions as tasks and employ Language Models (LLMs) to translate them into motion generation models or physics simulators. This approach enables us to synthesize human motions with precise semantic-level control with scene context and other characters.
- **Real-Time Human Motion Control:** Our research primarily focuses on the development of a lightweight auto-regressive diffusion motion model for synthesizing high-quality human motions. Additionally, we explore various control approaches for our model. The synthesized motions exhibit considerable improvements in both diversity and quality compared to methods based on Variational Autoencoders (VAEs) and Diffusion Models.
- **Human Motion for Human-Scene Interaction:** In our analysis, we examine human behaviors within different-level scene contexts, such as indoor and outdoor environments. We decompose human motion into various components to facilitate a step-by-step synthesis process. The synthesized motion not only includes walking or other compatible human motions specific to the given scene context but also enables moving objects to solve problems in complex environments.

2. Scene Understanding

Our research primarily revolves around semantic segmentation and scene understanding, comprising two main aspects.

- **Real-Time Segmentation:** This research enables efficient and accurate real-time image segmentation, offering substantial advantages for applications that necessitate rapid and precise scene analysis.
- **Multi-Modality Segmentation:** We expand our scene understanding methods to encompass various 3D data modalities, including point clouds, depth maps, and TSDF (Truncated Signed

Distance Function). This extension enables us to apply the same semantic segmentation framework to diverse 3D data formats, enhancing its versatility and potential for utilization across a broad spectrum of applications.

SELECTED PUBLICATIONS

Sorted by date. [Google Scholar](#) for more details.

- **PACER+: On-Demand Pedestrian Animation Controller in Driving Scenarios**
Jingbo Wang, Zhengyi Luo, Ye Yuan, Yixuan Li, Bo Dai
In Submission
- **Environment Modification: Teaching Humanoid Agents to Manipulate Surroundings for Task Completion**
Liang Pan†, **Jingbo Wang**, Zeshi Yang, Zhiyang Dou, Yangang Wang, Bo Dai
In Submission (‘†’ Supervised Intern)
- **Unified Human-Scene Interaction via Prompted Chain-of-Contacts**
Zeqi Xiao†, Tai Wang, **Jingbo Wang**, Jinkun Cao, Wenwei Zhang, Bo Dai, Dahua Lin, Jiangmiao Pang (‘†’ Supervised Intern)
<https://arxiv.org/abs/2309.07918>
- **Interactive Character Control with Auto-Regressive Motion Diffusion Models**
Yi Shi†, **Jingbo Wang**, Xuekun Jiang, Bo Dai, Jason Peng
<https://arxiv.org/abs/2306.00416> (‘†’ Supervised Intern)
- **Synthesizing Physically Plausible Human Motions in 3d Scenes**
Liang Pan†, **Jingbo Wang**, Buzhen Huang, Junyu Zhang, Haofan Wang, Xu Tang, Yangang Wang
International Conference on 3D Vision (3DV), 2024 (‘†’Supervised Intern)
- **Learning Human Dynamics in Autonomous Driving Scenarios**
Jingbo Wang, Ye Yuan, Zhengyi Luo, Kevin Xie, Dahua Lin, Umar Iqbal, Sanja Fidler, Sameh Khamis
IEEE Conference on International Conference on Computer Vision (ICCV), 2023
- **Towards Diverse and Natural Scene-aware Human Motion Synthesis**
Jingbo Wang, Yu Rong, Jingyuan Liu, Sijie Yan, Dahua Lin, Bo Dai
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2022
- **Scene-aware Generative Network for Human Motion Synthesis**
Jingbo Wang, Sijie Yan, Bo Dai, Dahua Lin
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2021
- **Motion Guided 3D Pose Estimation from Videos**
Jingbo Wang, Sijie Yan, Yuanjun Xiong, Dahua Lin
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)
IEEE European Conference on Computer Vision (ECCV), 2018

HONORS AND AWARDS

Winner of COCO2018 and Mapillary Panoptic Segmentation Competitions *September 2018*
Peking University and Megvii(Face++),inc., Beijing, China

WORKING EXPERIENCE

Digital Content Group, Shanghai AI Lab

Sep 2023 - Now

Supervised by Dr. Bo Dai and Prof. Dahua Lin.

Young Researcher.

Human Motion Modeling.

Simulation Technology, Nvidia Toronto AI Lab

May 2022 - April 2023

Supervised by Dr. Sameh Khamis, Dr. Ye Yuan, and Prof. Sanja Fidler.

Research Scientist Internship.

Pedestrian Simulation and Recovery in Driving Scenarios.

Digital Content Group, Shanghai AI Lab

Jan 2022 - May 2022

Supervised by Dr. Bo Dai.

Research Scientist Internship.

Neural Reconstruction on Clothed Human.

Information Engineering, The Chinese University of Hong Kong

August 2019 - July 2020

Supervised by Prof. Dahua Lin.

Research Assistant.

Video-based 3D human pose estimation.

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

June 2017 - March 2019

Supervised by Dr. Gang Yu.

Computer Vision Researcher Internship.

Semantic Segmentation in Real-time.

ACADEMIC ACTIVITIES

Serve as the reviewer for CVPR, ICCV, ECCV, NeurIPS, ICML, ICLR, 3DV

Serve as the guest reviewer for T-PAMI, IJCV, TIP.

TECHNICAL STRENGTHS

Software & Tools

CUDA, L^AT_EX, MatLab

Deep Learning Framework

Pytorch, Caffe