Moonjun Gong

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Education

Beijing University of Posts and Telecommunications (BUPT) Beijing, China
Bachelor of Artificial Intelligence; GPA: 3.45/4.00 *July 2020 – July 2024*

Publications

[**1**] Yiming Li, Zhiheng Li, Nuo Chen, **Moonjun Gong**, Zonglin Lyu, Zehong Wang, Peili Jiang, Chen Feng. "Multiagent Multitraversal Multimodal Self-Driving: Open MARS Dataset" (CVPR 2024)

[**2**] **Moonjun Gong***, Xinhao Liu*, Qi Fang, Haoyu Xie, Yiming Li, Hang Zhao, Chen Feng. "Occ4cast: LiDAR-based 4D Occupancy Completion and Forecasting" (IROS 2024)

[**3**] **Moonjun Gong***, Yiming Li*, Sihang Li*, Xinhao Liu*, Kenan Li, Nuo Chen, Zijun Wang, Zhiheng Li, Tao Jiang, Fisher Yu, Yue Wang, Hang Zhao, Zhiding Yu, Chen Feng. "SSCBench: Monocular 3D Semantic Scene Completion Benchmark in Street Views" (IROS 2024)

Research Experience

3D Reconstruction from Multitraversal Driving Images AI4CE Lab, New York University
Research assistant, advised by Professor Chen Feng *Nov 2023 – Now*

- We utilize 3D Gaussian Splatting with appearance embedding to model the different lighting conditions .
- We learn a self-supervised 3D neural representation during reconstruction which can be helpful for lighting sensitive downstream tasks.
- We conduct experiments on Ithaca365 and MARS dataset.

Diverse Scene Geometry Reconstruction MARS Lab, Tsinghua University
Research assistant, advised by Professor Hang Zhao *June 2024 – Now*

- We utilize 2D Gaussian Splatting for accurate geometry reconstruction and conducted preliminary experiments on Waymo dataset.
- We collect LiDAR and image data from both indoor and outdoor scenes in order to curate a comprehensive geometry reconstruction benchmark.

Multiagent Multitraversal Multimodal Self-Driving Dataset AI4CE Lab, New York University
Undergraduate researcher, advised by Professor Chen Feng *Sep 2023 – Nov 2023*

- We present the MARS dataset, which is the first dataset unifying scenarios that enable MultiAgent, multitraveRSal, and multimodal autonomous vehicle research.
- MARS is collected with a fleet of autonomous vehicles driving within a certain geographical area.
- We conduct experiments in place recognition and novel view synthesis.

Occupancy Completion and Forecasting from Point Clouds AI4CE Lab, New York University
Undergraduate researcher, advised by Professor Chen Feng *July 2023 – Sep 2023*

- We introduce the novel task of *Occupancy Completion and Forecasting*, which combines occupancy completion and occupancy forecasting in the context of autonomous driving.
- To enable supervision and evaluation, we curate a large-scale dataset termed *Occ4cast* from public autonomous driving datasets.
- We analyze the performance of closely related existing baseline models and our own ones on our dataset.

Monocular 3D Semantic Scene Completion Benchmark AI4CE Lab, New York University
Undergraduate researcher, advised by Professor Chen Feng *Apr 2023 – Sep 2023*

- We introduce SSCBench, a comprehensive benchmark that integrates scenes from widely-used automotive datasets (e.g., KITTI-360, nuScenes, and Waymo).
- We benchmark models using monocular, trinocular, and point cloud input to assess the performance gap resulting from sensor coverage and modality.
- We have unified semantic labels across diverse datasets to simplify cross-domain generalization testing.

Actor Interaction Relation Learning in Group Activity Recognition COST Lab, BUPT

Undergraduate researcher, advised by Professor Jianqin Yin *Oct 2022 – Mar 2023*

- We propose a novel module: a universal MLP-based module for implicitly modeling Actor Interaction Relation (MLP-AIR), which has a competitive but simple module design solution
- We reproduce three representative methods with MLP-AIR to evaluate our module. Moreover, we conduct extensive experiments on two widely used benchmarks, including the Volleyball and Collective Activity datasets to evaluate the performance of MLP-AIR.

Human Motion Prediction COST Lab, BUPT

Undergraduate researcher, advised by Professor Jianqin Yin *Mar 2022 – Oct 2022*

- Successfully replicated TrajectoryCNN, originally implemented in Tensorflow, using PyTorch. TrajectoryCNN is an end-to-end network introduced in the paper titled "TrajectoryCNN: A New Spatio-Temporal Feature Learning Network for Human Motion Prediction".
- Trained the model on H3.6M, CMU and 3DPW dataset, compared the results with the paper and designed optimization ideas.

Service

Conference Reviewer

- International Conference on Intelligent Robots and System (IROS 2024)

Skills

Programming: C, C++, Python (PyTorch, Tensorflow)

Languages: English (TOEFL 103), Mandarin (Native), Korean (Native)