

LEHENG LI 李乐恒

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Research Interest: Computer Vision · Email: lehengli@outlook.com

Education

The Hong Kong University of Science and Technology (Guangzhou) 2022.09 - Now

- Ph.D. student in Artificial Intelligence, supervised by Prof. [Ying-Cong Chen](#)
- Research focus: Computer Vision, Generative Model

Dalian University of Technology School of Mathematical Sciences 2018.09 - 2022.06

- B.Sc in Information and Computing Science

Research Experience

Huawei Noah's Ark Lab, Research Intern 2023.10 - Now

- Research Project: Long-tailed data generation and video generation in driving scenarios.

NIO Autonomous Driving, Research Intern 2021.12 - 2022.07

- Research Project: NeRF-based dataset generation in driving scenarios.
- Synthesize free training data by generative NeRF. Relevant work has been accepted by CVPR 2023.

MEGVII Technology, Research Intern 2021.03 - 2021.10

- Research Project: Shape-aware 3D object detection using Normalized Object Coordinate Space (NOCS) and Perspective-n-Point (PnP). Failed to submit a paper.

Publication

- OmniBooth: Learning Latent Control for Image Synthesis with Multi-modal Instruction
Leheng Li, Weichao Qiu, Xu Yan, Jing He, Kaiqiang Zhou, Yingjie Cai, Qing Lian, Bingbing Liu, Ying-Cong Chen
arxiv preprint
An image generation framework that enables spatial control with instance-level multi-modal control. Core idea: Extend ControlNet input from RGB space to latent space. [Project link](#)
- SyntheOcc: Synthesize Geometric Controlled Street View Images through 3D Semantic MPIs
Leheng Li, Weichao Qiu, Yingjie Cai, Xu Yan, Qing Lian, Bingbing Liu, Ying-Cong Chen
arxiv preprint
A diffusion model that generate images by voxel guidance. Convey data prior from SD to driving scenarios. Building blocks of Generative Simulation Model. [Project link](#)
- Neural Radiance Field in Autonomous Driving: A Survey
Lei He, **Leheng Li**, Wenchao Sun, Zeyu Han, Yichen Liu, Sifa Zheng, Jianqiang Wang, Keqiang Li
arxiv preprint
We systematically explored the applications of NeRF within the realm of autonomous driving, encompassing perception, reconstruction, simulation, and SLAM.
- Adv3D: Generating 3D Adversarial Examples in Driving Scenarios with NeRF
Leheng Li, Qing Lian, Ying-Cong Chen
IEEE/RSJ International Conference on Intelligent Robots and Systems 2024 (IROS 2024 oral)
We present the first exploration of modeling adversarial examples as NeRFs. Our examples demonstrate satisfactory transferability and physical realizability in driving scenarios. [Project link](#)
- Lift3D: Synthesize 3D Training Data by Lifting 2D GAN to 3D Generative Radiance Field
Leheng Li, Qing Lian, Luozhou Wang, Ningning Ma, Ying-Cong Chen
Proc. IEEE Conf. on Computer Vision and Pattern Recognition 2023 (CVPR 2023)
The first work to use NeRF-generated datasets to benefit downstream tasks. The datasets enjoy both photorealistic synthesis and 3D-controllable properties, improving 3D detection performance in a Real2Sim2Real manner. [Project link](#)

Awards

- RoboMaster Robotic Challenge, *Second Prize* 2020.08
- Developed real-time object detection algorithm on DJI robots.
- Kaggle CVPR 2020 Herbarium FGVC Challenge, *Rank:10/153* 2020.06
- Fine-grained recognition problem. I developed a bilateral neural network, which simultaneously learns the representation of head data and tail data to handle the long-tailed effect.

Invited Talks

- Boost Perception Models in Autonomous Driving by Generative AI 2023.08
- Talk of our CVPR 2023 work at Zhidx online. [Link](#)
- Recent Advances of NeRF in Autonomous Driving 2023.07
- School of Vehicle and Mobility, Tsinghua University.

Skills

- Programming: Python, C/C++, Matlab, PyTorch, TensorFlow, Blender
- Research experience: Detection, 3D Vision, Robotics, Generative Model, Diffusion, NeRF, LLMs

Academic Services

- Reviewer: AAAI, NeurIPS, ICLR, ICML, CVPR, ICCV, ACM MM, IEEE TIP
- Teaching Assistant: UFUG1103 - Calculus, HKUST(GZ) 2025.
- Teaching Assistant: AIAA5023 - Foundations of Deep Neural Networks, HKUST(GZ) 2024.
- Teaching Assistant: Introduction to Deep Learning, DUT, 2020.