

FAN LU

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EDUCATION

Tongji University, Shanghai, China

September 2020 – Present

Ph.D. student of Automotive Engineering

Supervisor: Prof. Guang Chen

Research Interests: 3D computer vision, deep learning, SLAM, autonomous driving, especially deep learning-based methods for large scale LiDAR point cloud processing.

Tongji University, Shanghai, China

September 2015 – July 2020

Bachelor of Automotive Engineering

GPA: 4.60/5.0 (Top 15%)

PUBLICATIONS

RSKDD-Net: Random Sample-based Keypoint Detector and Descriptor

Fan Lu, Guang Chen, Yinlong Liu, Zhongnan Qu, Alois Knoll

Advances in Neural Information Processing Systems (NeurIPS), 2020

We propose a random sample-based keypoint detector and descriptor for large scale LiDAR point clouds registration, which achieves state-of-the-art accuracy with $15\times$ faster speed than existing learning-based methods.

PointINet: Point Cloud Frame Interpolation Network

Fan Lu, Guang Chen, Sanqing Qu, Zhijun Li, Yinlong Liu, Alois Knoll

AAAI Conference on Artificial Intelligence (AAAI), 2021

We study a novel task named *Point Cloud Frame Interpolation*, which aims to predict intermediate point clouds between two frames and can be used to upsample low frame rate point cloud streams to higher frame rates.

MoNet: Motion-based Point Cloud Prediction Network

Fan Lu, Guang Chen, Yinlong Liu, Zhijun Li, Sanqing Qu, Tianpei Zou

Arxiv preprint, 2020, Submitted to IEEE TITS

We propose a novel learning-based framework for future LiDAR point clouds prediction, which combines content features and motion features to improve the accuracy and also quality of the predicted point clouds.

HRegNet: A Hierarchical Network for Large-scale Outdoor LiDAR Point Cloud Registration

Fan Lu, Guang Chen, Yinlong Liu, Lijun Zhang, Sanqing Qu, Shu Liu, Rongqi Gu

IEEE/CVF International Conference on Computer Vision (ICCV), 2021

We propose a hierarchical network to leverage rich features in deeper layer and precise position information in shallower layers for robust and precise LiDAR point cloud registration. Bilateral consensus and neighborhood consensus are introduced to improve robustness.

HONORS AND AWARDS

- Shanghai Outstanding Graduate, 2020
- Second Prize of National Post-Graduate Mathematical Contest in Modeling, 2020
- First Class Scholarship of Tongji University, 2018-2019
- First Prize of “Challenge Cup” in Shanghai, 2019
- Second Prize of Formula Student Electric China, 2018

SKILLS

- English: CET-6
- Coding: Python, C++