Chensheng Peng

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Education

Ph.D. at UC Berkeley *(affiliated with BAIR, BDD)* **2023 - Present**
Research: 3D Computer Vision Advisor: Masayoshi Tomizuka

Bachelor at Shanghai Jiao Tong University (SJTU) **2019 - 2023**
Electrical and Computer Engineering **GPA:** 3.9/4.0

Publications/Preprints

1. **Q-SLAM: Quadric Representations for Monocular SLAM.** *(ECCV 2024 under review)*
   C. Peng, C. Xu, Y. Wang, M. Ding, H. Yang, M. Tomizuka, M. Pavone, and W. Zhan
2. **DELFlow: Dense Efficient Learning of Scene Flow for Large-Scale Point Clouds.** *(ICCV 2023)*
   C. Peng, G. Wang, X. Lo, C. Xu, M. Tomizuka, W. Zhan, and H. Wang
3. **Multi-Modal Object Tracking with Pareto Neural Architecture Search.** *(IEEE RA-L)*
   C. Peng, Z. Zeng, J. Gao, J. Zhou, X. Wang, C. Zhou, and N. Ye
4. **Interactive Multi-scale Fusion of 2D and 3D Features for Multi-object Tracking.** *(IEEE T-ITS)*
   G. Wang*, **C. Peng***, J. Zhang, and H. Wang (* equal contribution)
5. **Object Detection with OOD Generalizable Neural Architecture Search.** *(ICLR 2023 Workshop)*
   F. Wu, K. Li, J. Gao, **C. Peng**, L. Hong, E. Xie, Z. Li and N. Ye
6. **Certifiable out-of-distribution generalization.** *(AAAI 2023)*
   N. Ye, L. Zhu, J. Wang, Z. Zeng, J. Shao, **C. Peng**, B. Pan, K. Li, J. Zhu

Research Experience

3D Dense Reconstruction with Monocular SLAM **Jun. 2023 – Nov. 2023**

- Improved the accuracy of depth prediction based on the quadratic assumption to correct noisy values.
- Incorporated ray transformer to optimize NeRF given RGB images and corrected depth maps.
- Realized fine-grained reconstruction of 3D scenes and joint optimization of camera tracking.

Efficient Processing of Large-Scale Point Clouds **Jun. 2022 – Mar. 2023**

- Conducted research on the efficient processing of large-scale point clouds in autonomous driving.
- Achieved scene flow prediction from large-scale point clouds by reducing the computational complexity.
- Realized real-time processing of dense point clouds with a novel form and a kernel-based grouping technique.

Latency Reduction for Multiple Object Tracking **Nov. 2021 – May. 2022**

- Searched for efficient structures of neural networks for feature extraction using Neural Architecture Search.
- Added latency constraint to the traditional DARTs method such that the running time can be reduced.
- Achieved dynamic trade-off between accuracy and latency and real-time performance on edge devices.

Multiple Object Tracking based on Camera-LiDAR Fusion **Nov. 2020 – Oct. 2021**

- Led the group and collaborated with members to conduct research in object detection and tracking.
- Fused the features from multiple sensors to improve the performance of multi-object tracking.
- Realized effective soft feature fusion by exploring the spatial relation between LiDAR points and image pixels.

Skills

Computer Skills Python, PyTorch, TensorFlow, C/C++, MATLAB
Language Chinese(native), English(fluent)