Supplementary Material for "GPNF:A Point Cloud Registration Framework Using Sharp Global Linear Attention Prior and Neighborhood Filtering Strategy"

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1 Implementation Details

Network Architecture. We use our KPFLAN backbone for feature extraction. As the point clouds from different benchmarks differ in density and size, we use slightly different backbones in the experiments. To be specific, We use a 4-stage backbone for 3DMatch and a 5-stage backbone for KITTI because the point clouds in KITTI are much larger than those in 3DMatch.

Training and Testing. We implement and evaluate GPNF with PyTorch [3] on a RTX 3090 GPU. The models are trained with Adam optimizer [1] for 40 epochs on 3DMatch and 160 epochs on KITTI. The batch size is 1 and the weight decay is 10^{-6}. The learning rate starts from 10^{-4} and decays exponentially by 0.05 every epoch on 3DMatch and every 4 epochs on KITTI. The same data augmentation as in [2] is adopted. Unless otherwise noted, we randomly sample $N_g = 128$ ground-truth superpoint correspodences during training, and use N_c= 256 putative superpoint matches during testing.

2 Visualization results

We provide qualitative results on KITTI odometry(Fig. 1) and 3DMatch(Fig. 2). It can be seen that our experimental results are very close to the ground truth.

References

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3. Paszke, A., Gross, S., Massa, F., Lerer, A., Bradbury, J., Chanan, G., Killeen, T., Lin, Z., Gimelshein, N., Antiga, L., et al.: Pytorch: An imperative style, high-performance deep learning library. Advances in neural information processing systems **32** (2019)

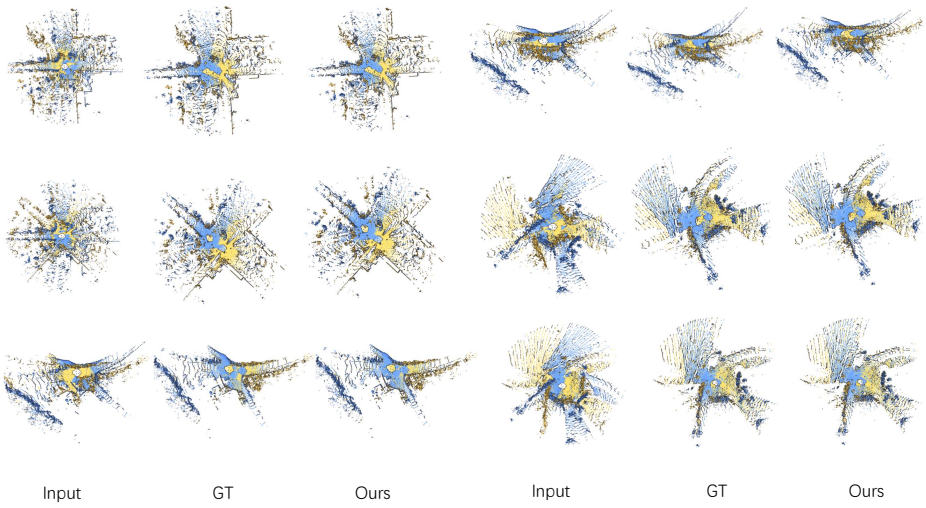

Fig. 1. Visualization results on KITTI odometry.

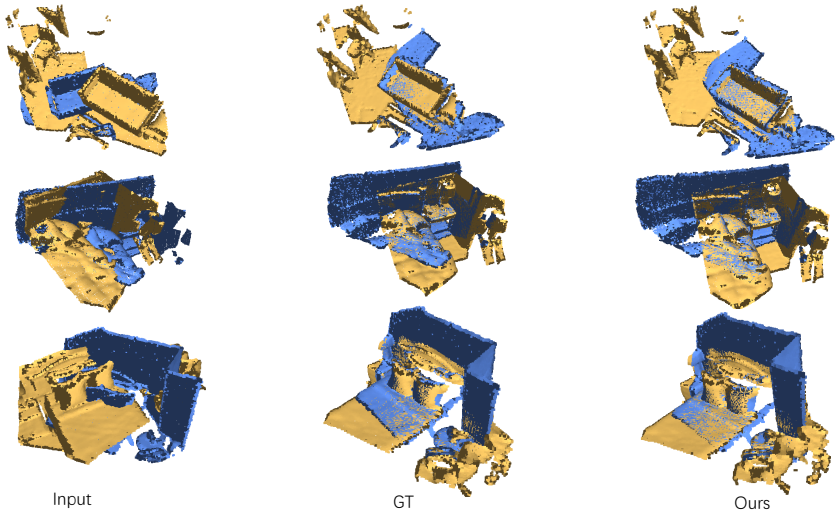

Fig. 2. Visualization results on 3DMatch.