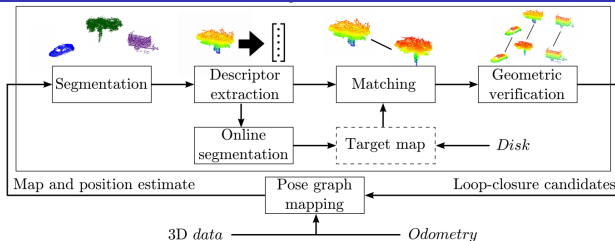# SegMatch: Segment based loop-closure for 3D point clouds
R. Dub, D. Dugas, E. Stumm, J. Nieto, R. Siegwart, C. Cadena (ARXIV 2016)

- ▶ Loop-closure detection on 3D data
- ▶ Existing methods based on local features suffer from robustness to environment changes while methods based on global features are viewpoint dependent
- ▶ Proposes SegMatch, a loop-closure detection algorithm based on the matching of 3D segments

- ▶ Method:
    - ▶ extracts and describes segments from a 3D point cloud
    - ▶ matches them to segments from already visited places
    - ▶ uses a geometric verification step to propose loop-closures candidates

- ▶ Advantage of this segment-based technique is its ability to compress the point cloud into a set of distinct and discriminative elements for loop-closure detection
- ▶ First paper to present a real-time algorithm for performing loop-closure detection and localization in 3D laser data on the basis of segments
- ▶ Evaluates on KITTI odometry dataset