

Poster Session at Graduate School Information Fair

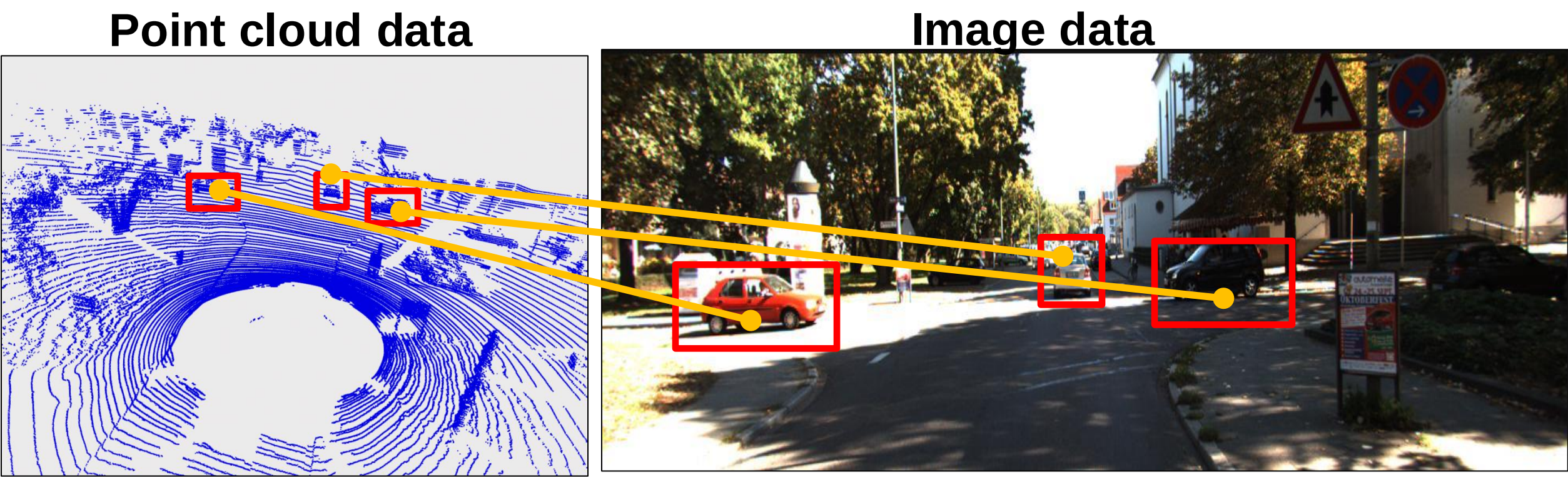
Semantic Segmentation of 3D point clouds using SAM model

Motivation & Background

Cameras and LiDAR are essential sensors and provide complementary information for robotics and self-driving vehicles.

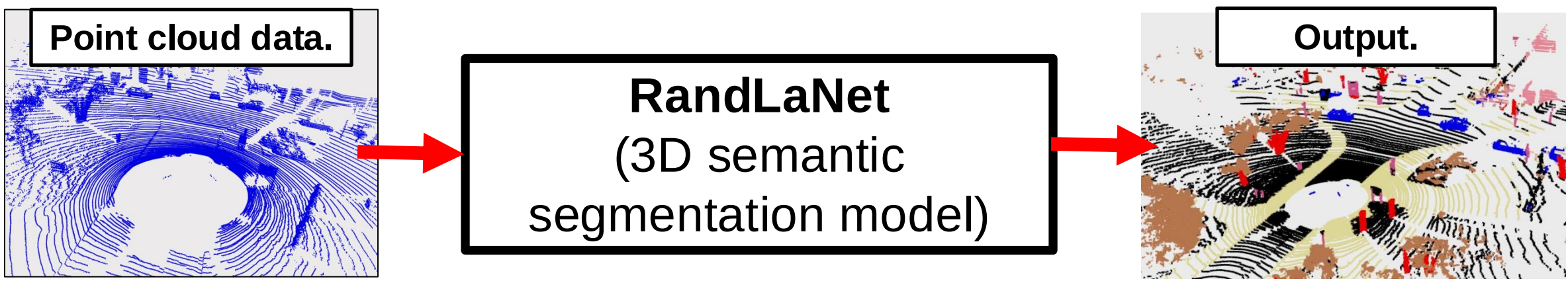
Goal

The goal of this study is to build a point cloud semantic segmentation system using Vision Foundation Models(VFM).

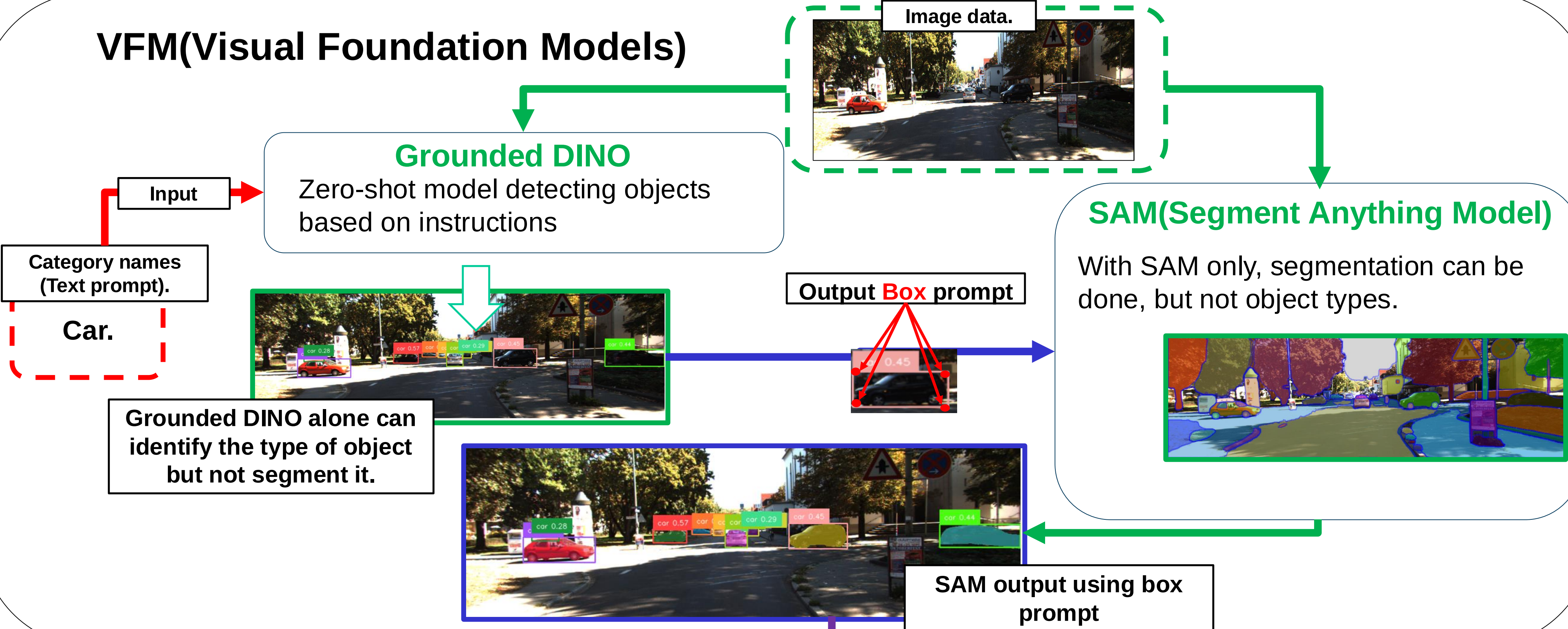


Conventional method:

Conventional semantic segmentation methods for point clouds perform inference using only point cloud data.



VFM(Visual Foundation Models)

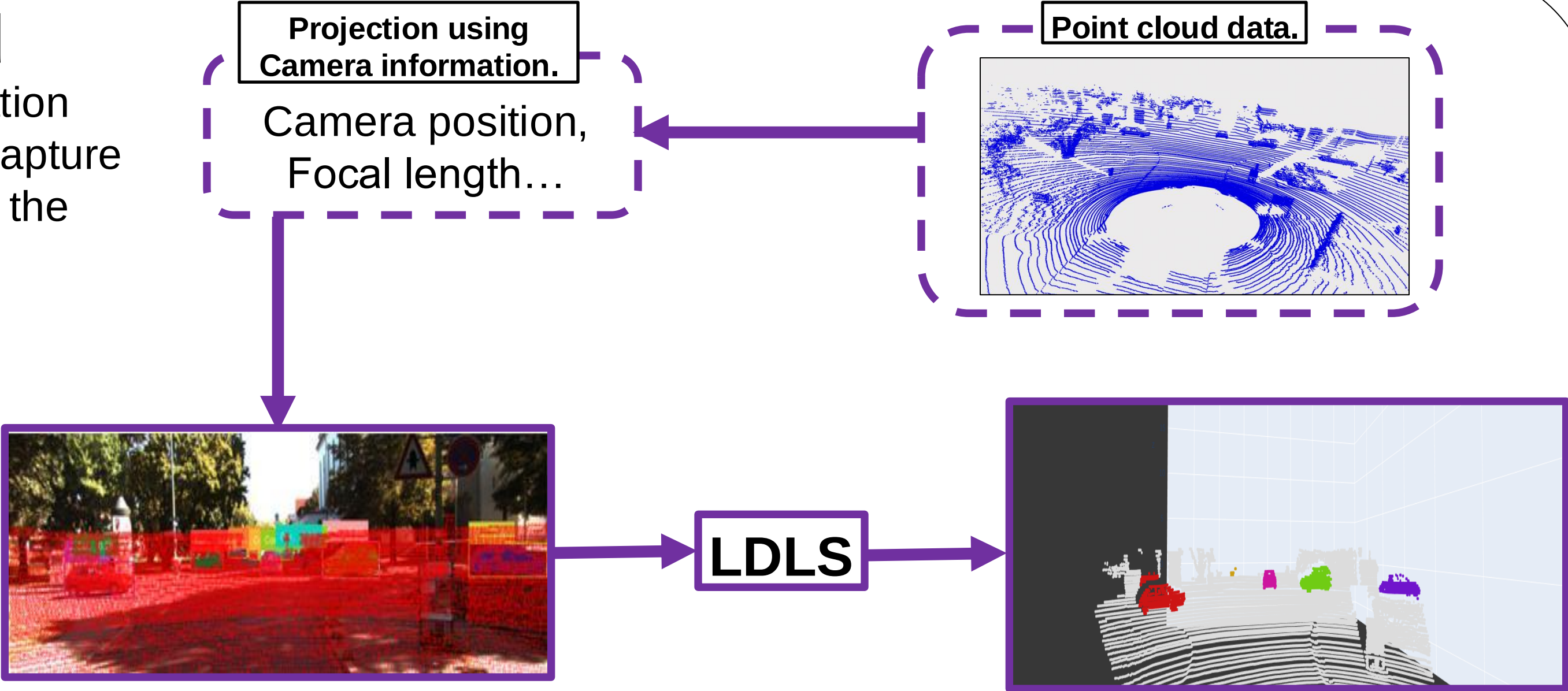


Projection to Point cloud

The point cloud data and the camera information (camera position, focal length, etc.) used to capture the image are used to project the image onto the point cloud.

Label Diffusion Lidar Segmentation (LDLS)

A connection graph links 3D points with 2D pixels, allowing label information to spread from the 2D pixels across the 3D LiDAR point cloud for complete segmentation.



Dataset: Semantic KITTI

The SemanticKITTI dataset provides 3D point clouds for semantic segmentation, widely used in autonomous driving research. Based on the KITTI Benchmark Suite, it includes labeled 3D data from vehicle-mounted LiDAR, with detailed class labels for objects like ground, buildings, vehicles, humans, and vegetation.

