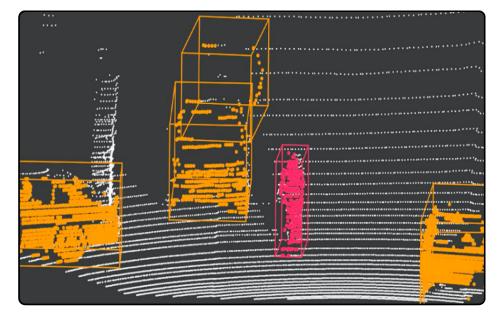
Goal #1: Multi-Sensor Perception - PointPainting

A method where information inferred from a camera is combined with a LiDAR point cloud to improve performance in 3D object detection.



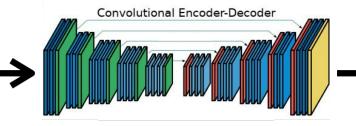


Vora, Sourabh, et al. "Pointpainting: Sequential fusion for 3d object detection." *Proceedings of the IEEE/CVF Conference* DRIVERLESS on Computer Vision and Pattern Recognition. 2020.

Step 1: Inferring information from a camera

How is this done?







Camera Image

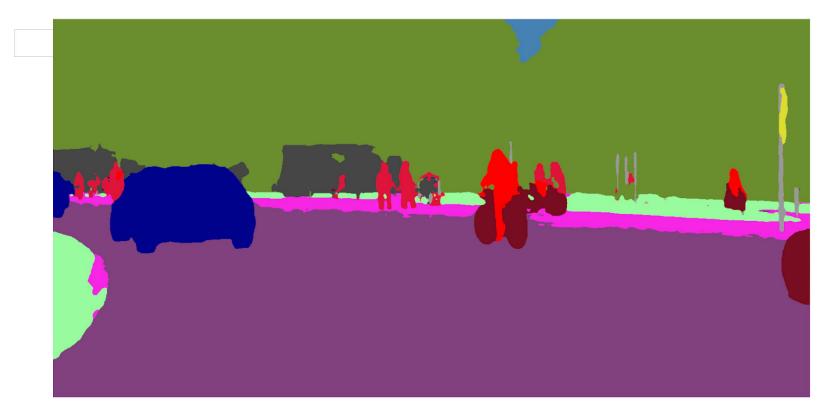
Semantic Segmentation Model

Pixelwise 'class' Scores



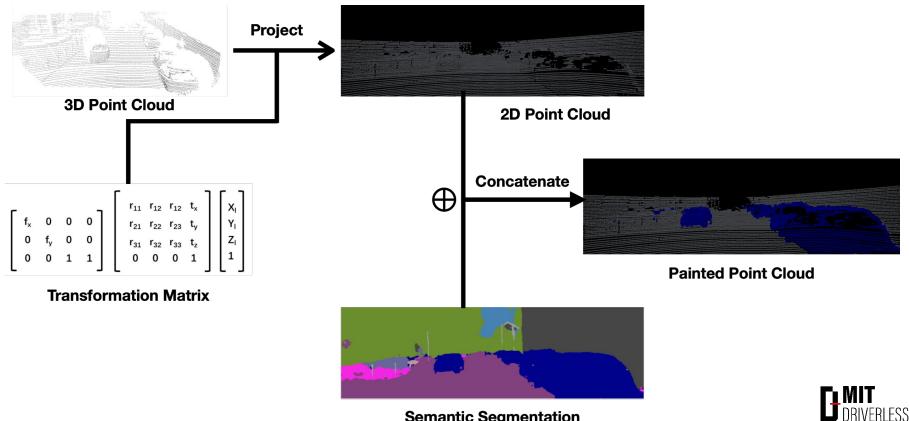
L.-C. Chen, et al. "Encoder-decoder with atrous separable convolution for semantic image segmentation." *Proceedings of the European conference on computer vision.* 2018.

Step 1: Inferring information from a camera





Step 2: Combine with LiDAR Point Cloud



Semantic Segmentation

Step 2: Combine with LiDAR Point Cloud

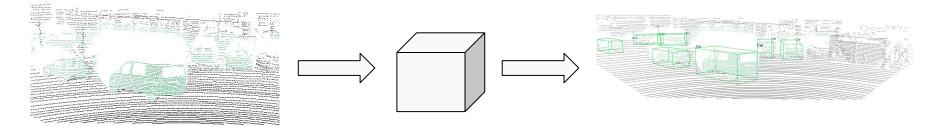
Lidar

PointPainted

Camera



Step 3: Develop 3D Object Detection Model



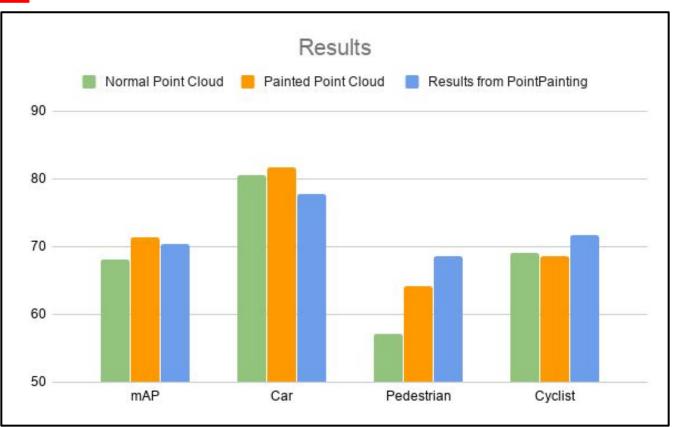
'Painted' Point Cloud

3D Object Detection Model

Detection of objects in point cloud



Results





Conclusion: Putting it all together

