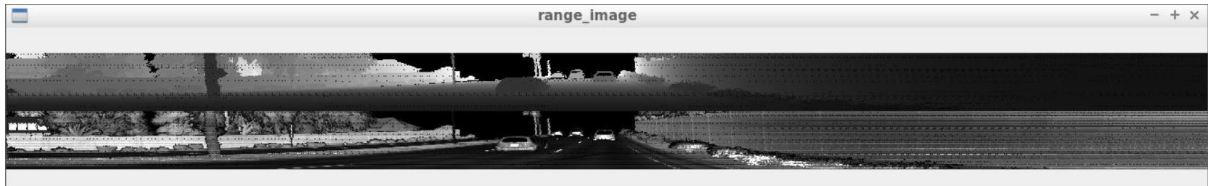


# 3D Object Detection Mid-term

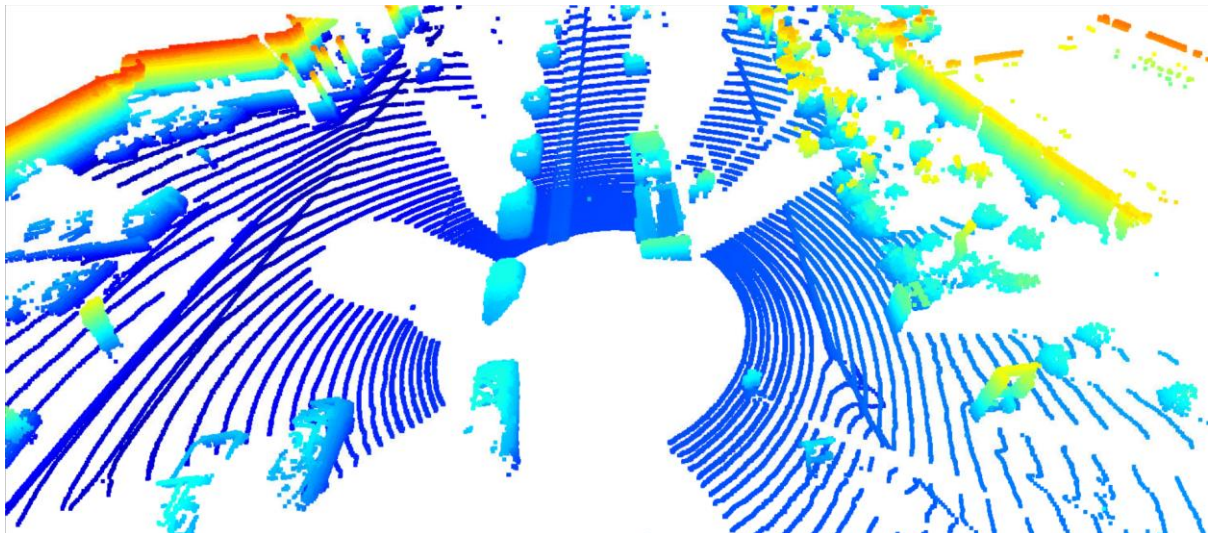
<https://github.com/LimHaeryong/Sensor-Fusion-and-Object-Tracking>

## Project Instructions Step 1

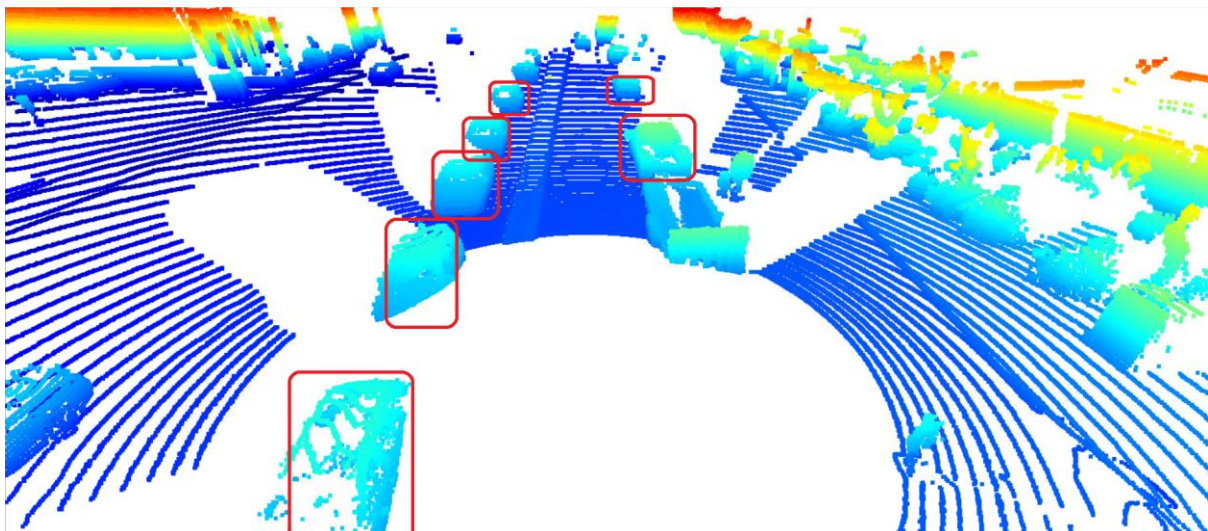
Visualize range image channels(ID\_S1\_EX1).

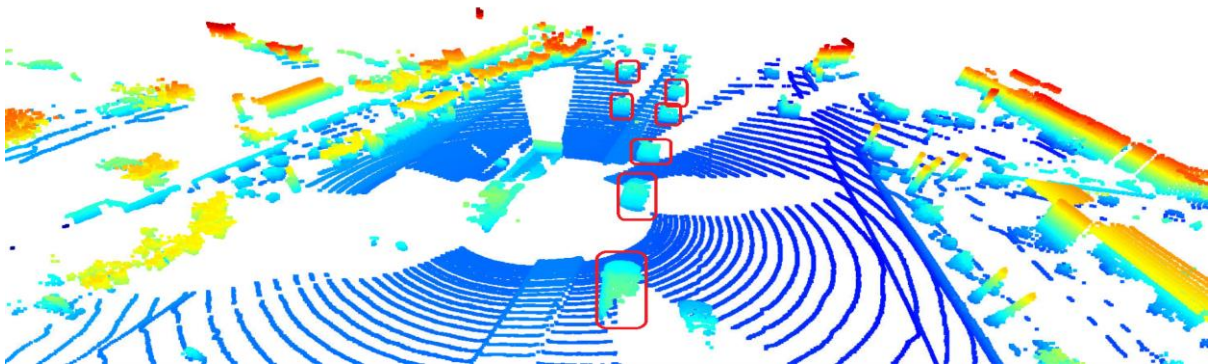


Visualize point-cloud(ID\_S1\_EX2)



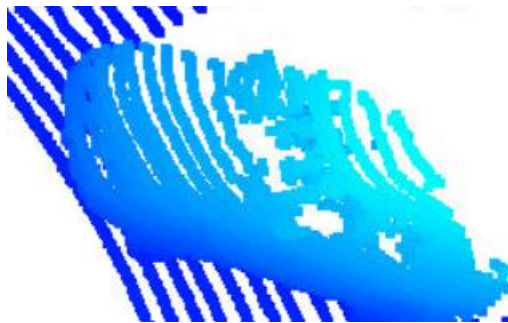
-Find 10 examples of vehicles with varying degrees of visibility in the point-cloud.





-Try to identify vehicle features that appear stable in most of the inspected examples and describe them.

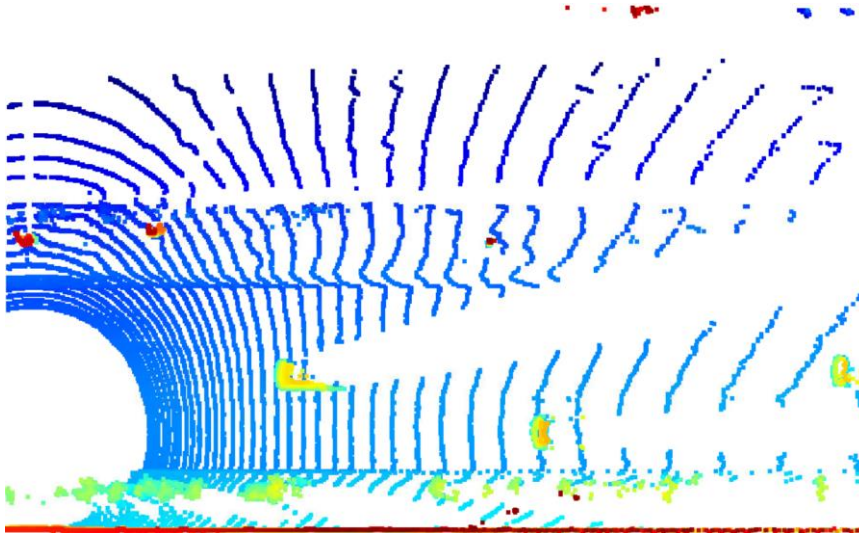
We can identify vehicle features like front-bumper, wheels and windshield from the point cloud image.



## Project Instructions Step 2

---

Convert sensor coordinates to bev-map coordinates(ID\_S2\_EX1)



Compute intensity layer and height layer of bev-map(ID\_S2\_EX2, 3).





## Project Instructions Step 3

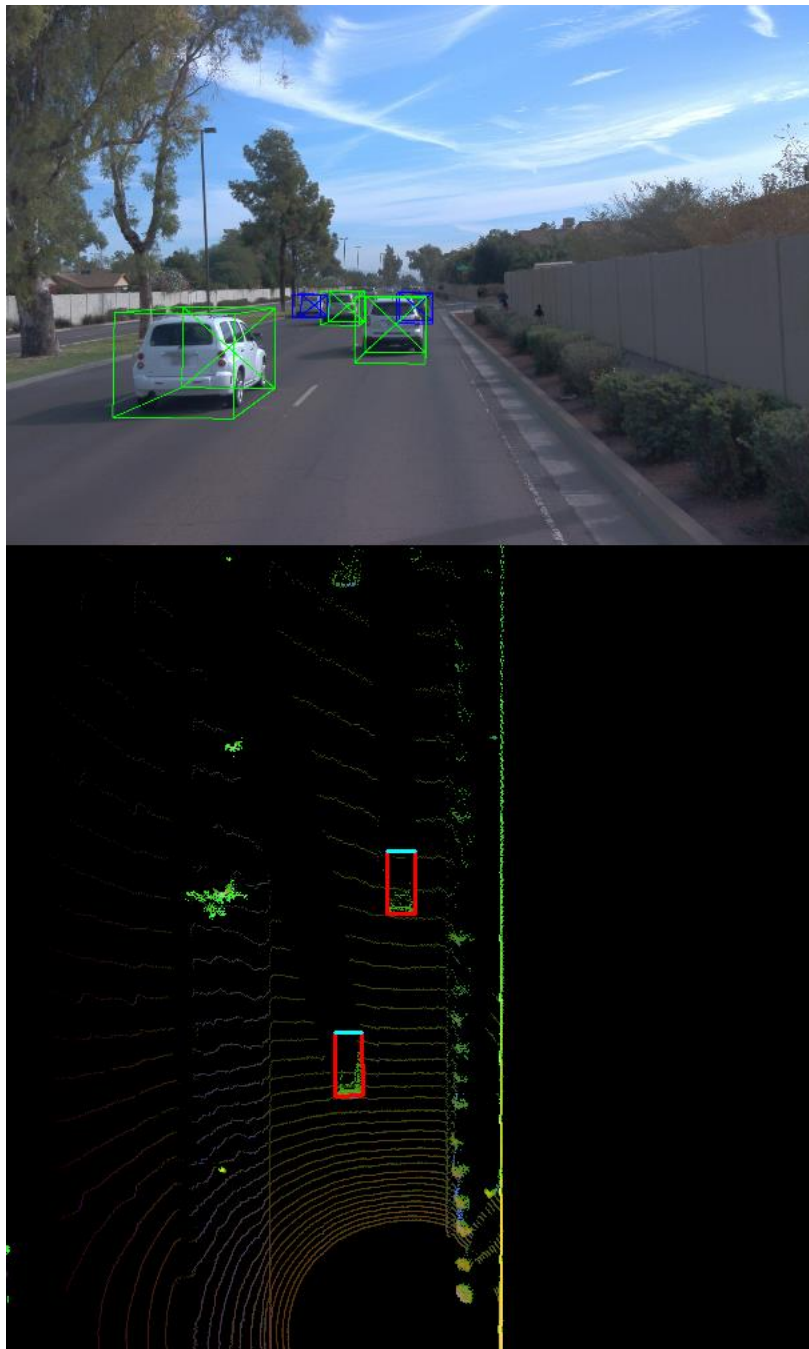
---

Add a second model from a GitHub repo(ID\_S3\_EX1)

```
student task ID_S3_EX1-5  
[[9.7223872e-01 3.5127075e+02 2.1875238e+02 1.0574490e+00 1.6241086e+00  
 2.0172737e+01 4.7542793e+01 1.3822034e-02]  
 [6.2091374e-01 3.1184229e+02 3.5521008e+02 1.1316251e+00 1.7765539e+00  
 2.0849136e+01 4.6748154e+01 8.4769009e-03]]
```

Output of detections.

Extract 3D bounding boxes from model response(ID\_S3\_EX2)



## Project Instructions Step 4

Compute IOU between labels and detections(ID\_S4\_EX1)

```
student task ID_S4_EX1
ious : [0.8234004203468781, 0.8904463951713695, 0.8749700508054353]
center devs : [[tensor(0.1402), tensor(-0.0197), 1.0292643213596193], [tensor(-0.0810), tensor(0.0000), 1.0292643213596193], [tensor(0.0000), tensor(0.0000), 1.0292643213596193]]
```

ious and center\_devs

Compute precision and recall(ID\_S4\_EX3)

```
student task ID_S4_EX3
precision = 0.9506578947368421, recall = 0.9444444444444444
```

Precision and recall

