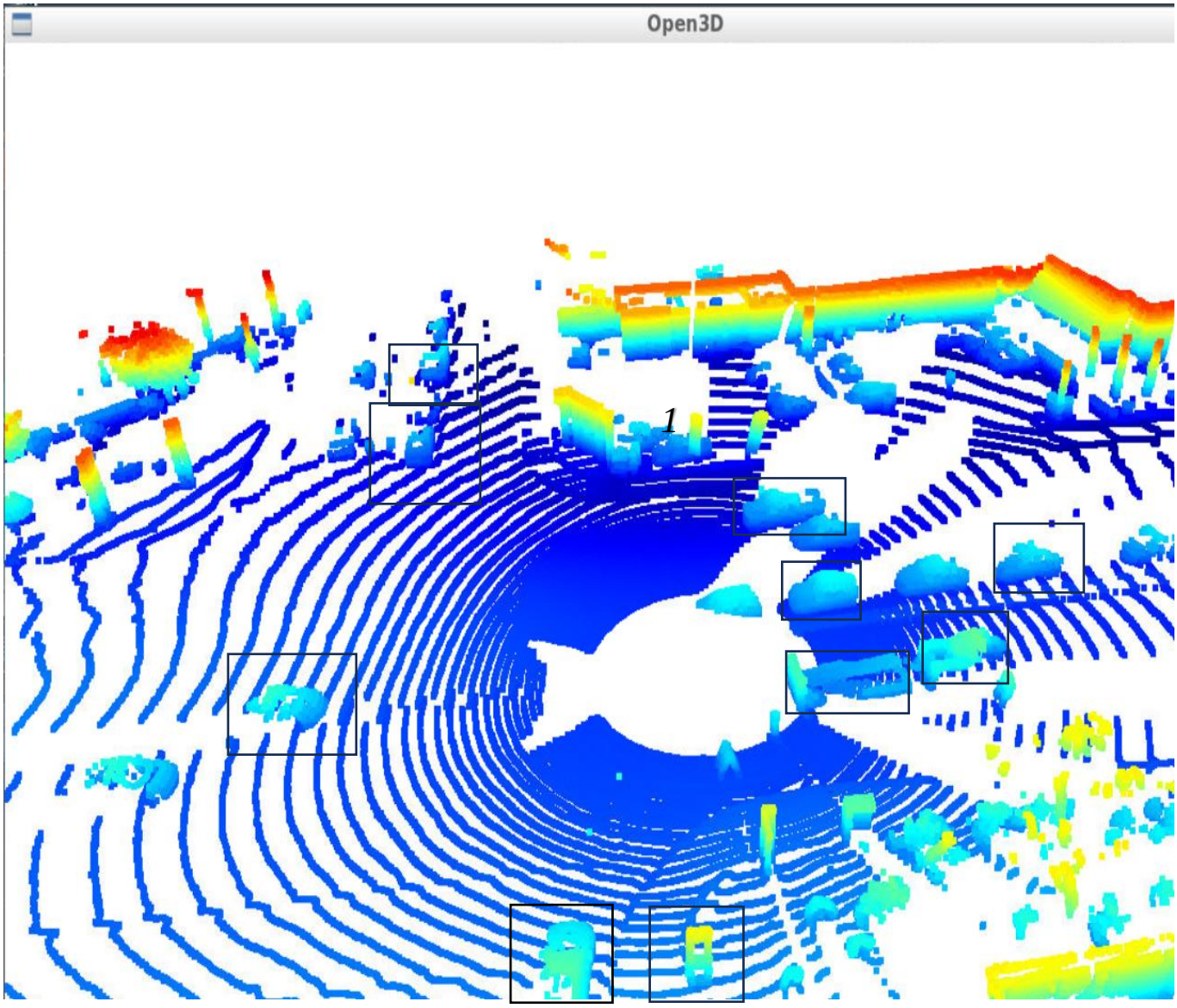
REPORT S1_EX2

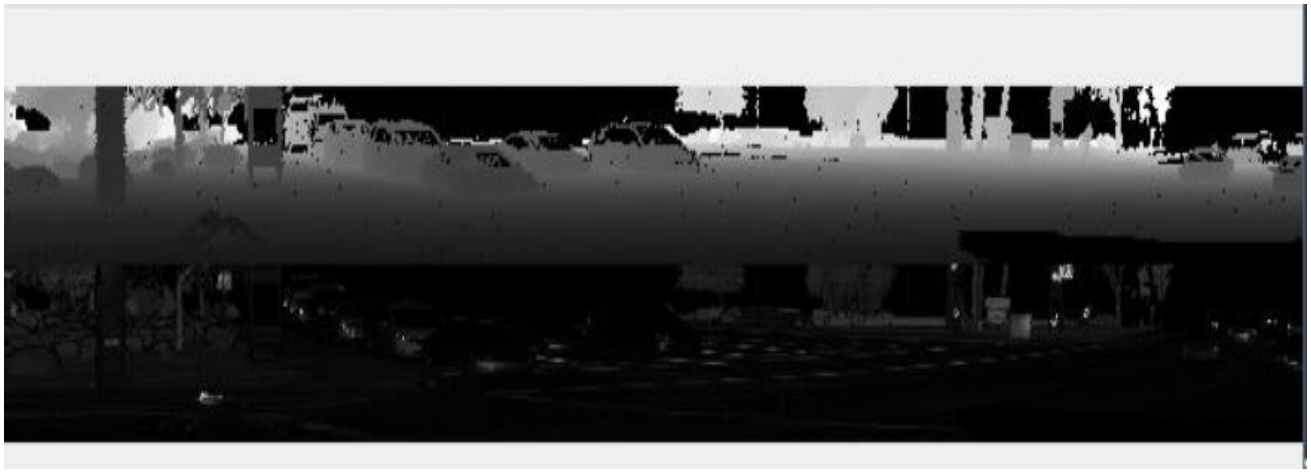
I can identify many cars in the side of roads along with some smaller trucks with good back compartment open. Near the vehicle I can see a vehicle with many wheels and a large chasis but not the complete body near the lidar sensor. As the height of the vehicle increases, colour intensity decreases from dark blue to lighter colors like green, yellow, and then becomes red at last. I can see the few sedan type cars whose windows allows for penetration of waves from lidar to greater distances. As the distance from lidar increases, the structure of the wheel diminishes and only the body of the vehicle is shown like a box. Even though some cars have spoilers, those are visible only when near the lidar sensor. I cannot zoom, the vehicles are like toy boxes. Even I can see a structure like human being and a barricade, they aren't clear distinguishable from other objects.

Below is the snapshot of the point cloud visualised using Open3D.



Let's take the car's position as the centre and I have placed the rectangle boxes around the vehicle I chose to explain. In the left side of the car, two cars are present and as the distance increases, the parts of the car body that are connected externally merges in a way to make the car look like a cuboid. Same is the case for cars in all the directions around 360 degrees. Even the vehicle in the right side of the car looks like a truck but only the wheels are clearly visible when zoomed in. Many cars are parked and looks like boxes. As the vehicles top is visible and the car body looks like a box, the 3D object detection algorithm needs much more clear view from lidar data to properly distinguish between vehicles.

Here is the part of the range image that corresponds to the right side of the car which has lots of car parked. Here, same as the point cloud, the front mirror, top, and side parts of the car are visible but not the bottom parts like wheels and the car looks like a box.



In the below part of the range image, few trucks are visible clearly in the intensity image than range image.