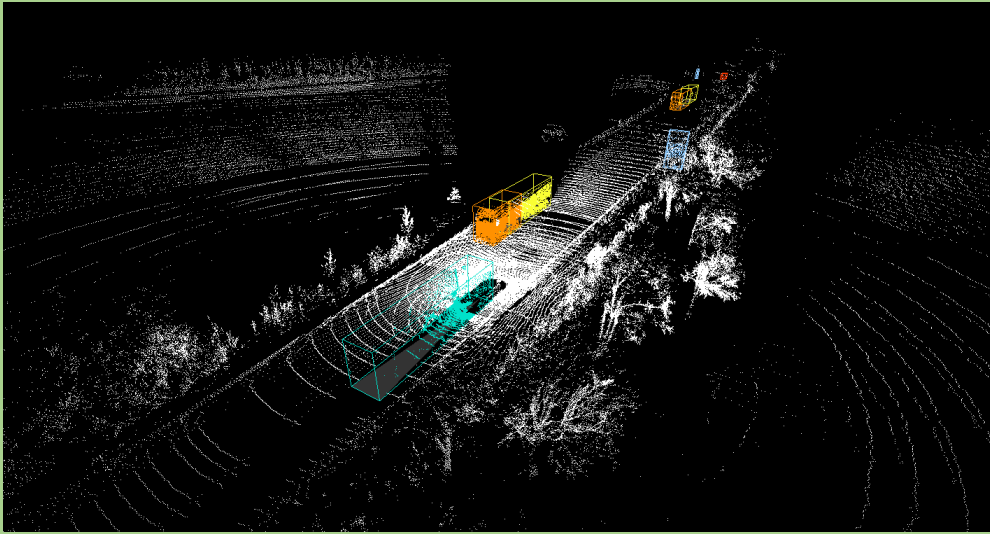
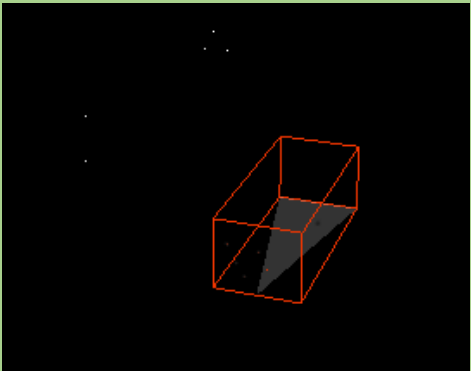
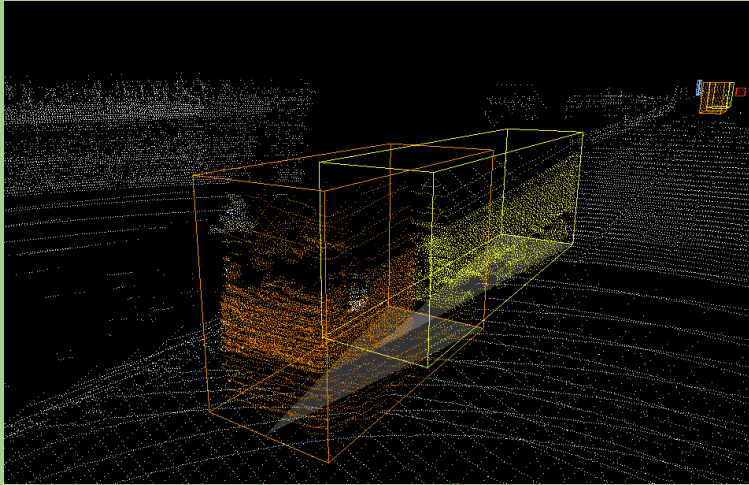
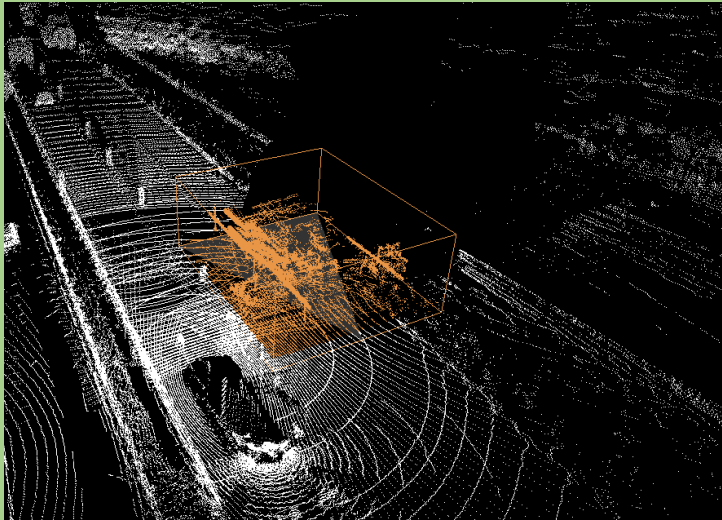
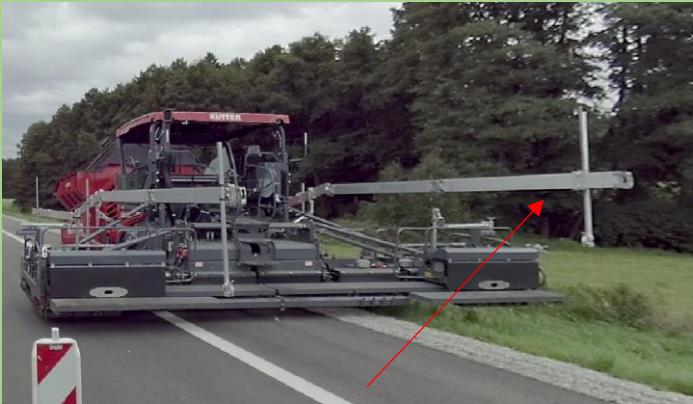
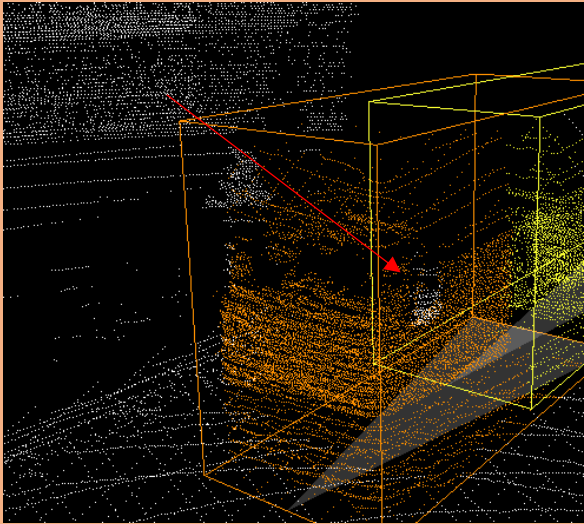
Labelling Annotation Guideline

Date	Version	Editor	Change Protocol
2023.09.27	1.0	b-plus automotive GmbH	Initial document
2024.03.28	1.1	b-plus automotive GmbH	Final document

1. Template

#	DO?	Description	Image
0001	👍 YES	Do XYZ	
0002	✕ NO	Don't XYZ	

0000

2. General Guidelines

2.1 Labelling Examples

Input	Output

2.2 Minimum number of points

#	DO?	Description	Image
0001	👍 YES	Label any target object containing at least 1 LIDAR or RADAR point, as long as you can be reasonably sure you know the location and shape of the object. Use your best judgment on correct cuboid position, sizing, and heading. Example: Estimated size of car using one lidar point.	

2.3 Cuboid sizing

#	DO?	Description	Image
0002	👍 YES	Cuboids must be very tight. Draw the cuboid as close as possible to the edge of the object without excluding any LIDAR points. There should be almost no visible space between the cuboid border and the closest point on the object.	

2.4 Extremities

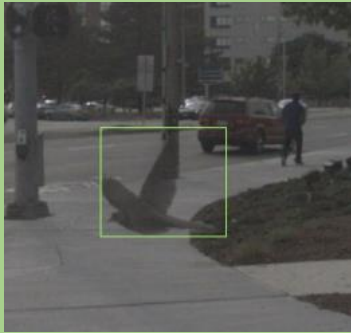
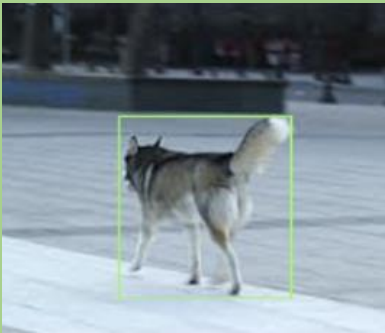
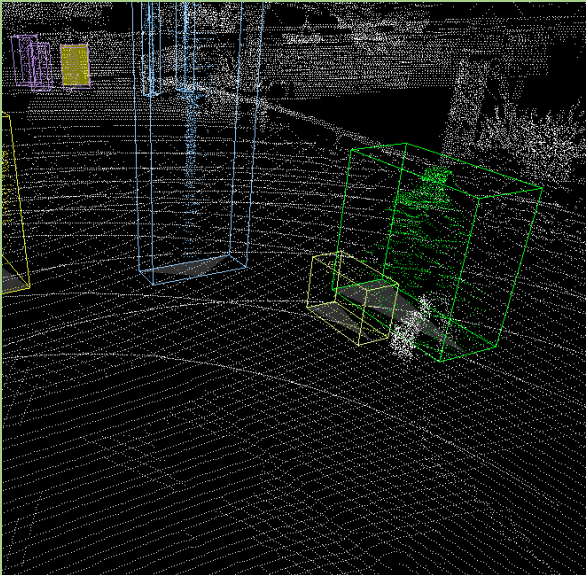
#	DO?	Description	Image
0003	👍 YES	If an object has extremities (e.g. arms and legs of pedestrians), then the bounding box should include the extremities.	
0004	✕ NO	Do not include vehicle side view mirrors.	

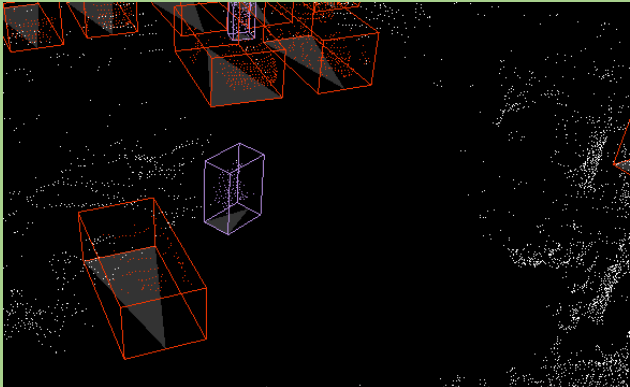
2.5 Carried Object

#	DO?	Description	Image
0005	👍 YES	If a pedestrian is carrying an object (bags, umbrellas, tools etc.), such object will be included in the bounding box for the pedestrian. If two or more pedestrians are carrying the same object, the bounding box of only one of them will include the object.	

2.6 Use Pictures

#	DO?	Description	Image
0006	👍 YES	For objects with few LIDAR or RADAR points, use the images to make sure boxes are correctly sized. If you see that a cuboid is too short in the image view, adjust it to cover the entire object based on the image view.	

2.7 Visibility Attribute

#	DO?	Description	Image
0007	👍 YES	The visibility attribute specifies the percentage of object pixels visible in the panoramic view of all cameras. This is a trailer spanning multiple cameras. The combined view covers more than 80%, so it should be marked as >80%.	

2.8 Scene Tagging

#	DO?	Description	Image
0008	👍 YES	If several attributes within a category apply to several cameras, only one attribute with the closest match should be taken.	

3. Class-specific Guidelines

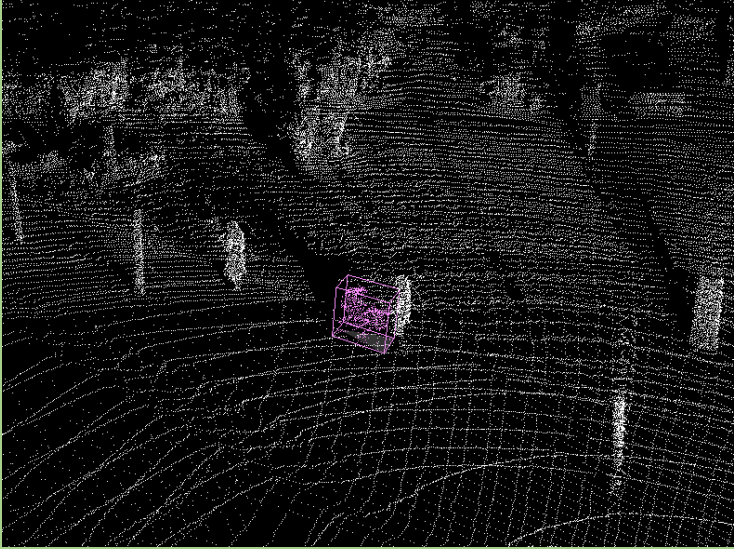
3.1 animal

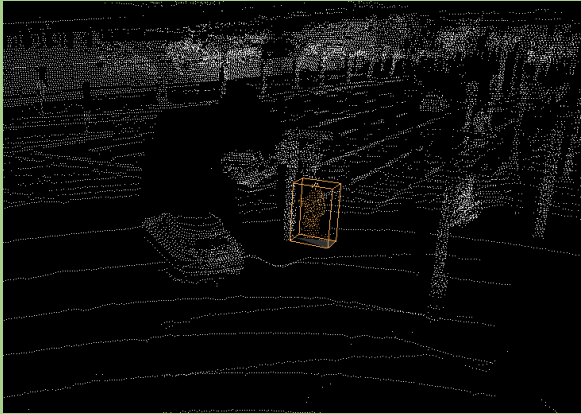
#	DO?	Description	Image
0009	👍 YES	All animals, e.g. cats, rats, dogs, deer, birds.	

3.2 human.pedestrian.adult

#	DO?	Description	Image
0010	👍 YES	An adult pedestrian moving around the cityscape.	
0011	✖ NO	Mannequins should also be treated as adult pedestrian.	

3.3 human.pedestrian.child

#	DO?	Description	Image
0012	👍 YES	A child pedestrian moving around the cityscape.	

3.4 human.pedestrian.construction_worker

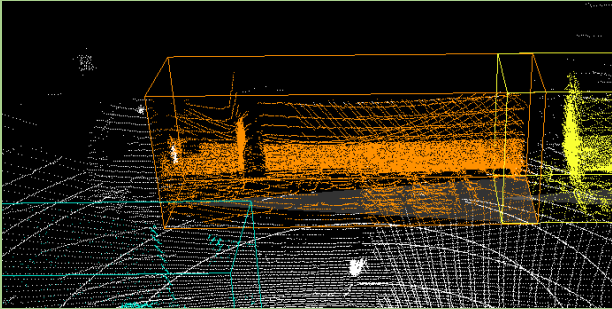
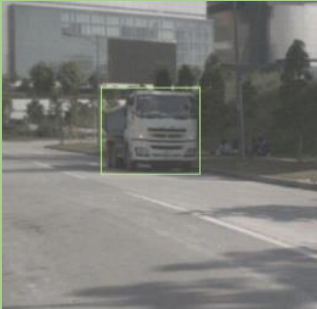
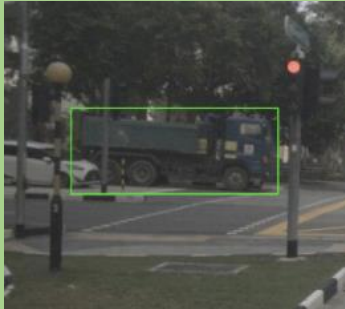
#	DO?	Description	Image
0013	👍 YES	A human in the scene whose main purpose is construction work.	
0014	✕ NO	Don't use this class for people that are just wearing warning vests. Use "human.pedestrian.adult" instead.	

3.5 human.pedestrian.police_officer

#	DO?	Description	Image
0015	👍 YES	Any type of police officer, regardless whether directing the traffic or not.	

3.6 human.pedestrian.stroller

#	DO?	Description	Image
0016	👍 YES	Any stroller. If a person is in the stroller, include in the annotation. Pedestrians pushing strollers should be labelled separately.	

3.7 human.pedestrian.personal_mobility

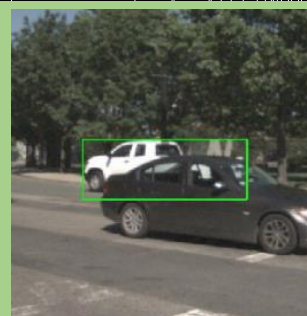
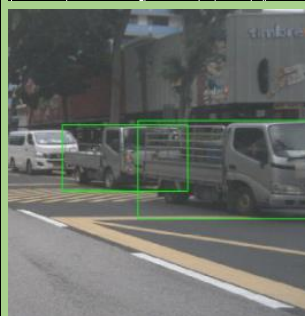
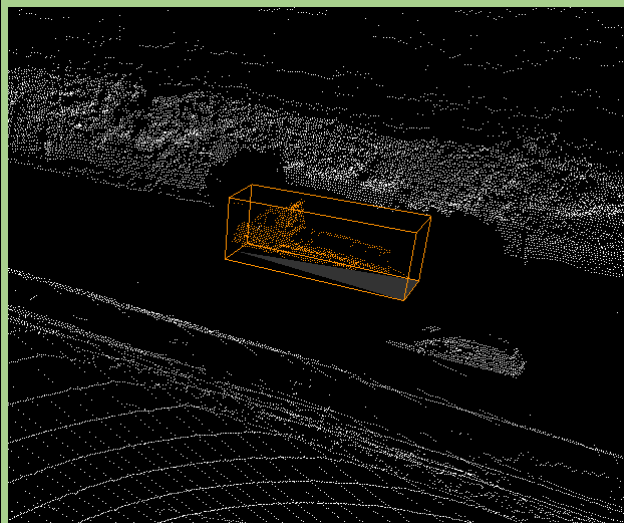
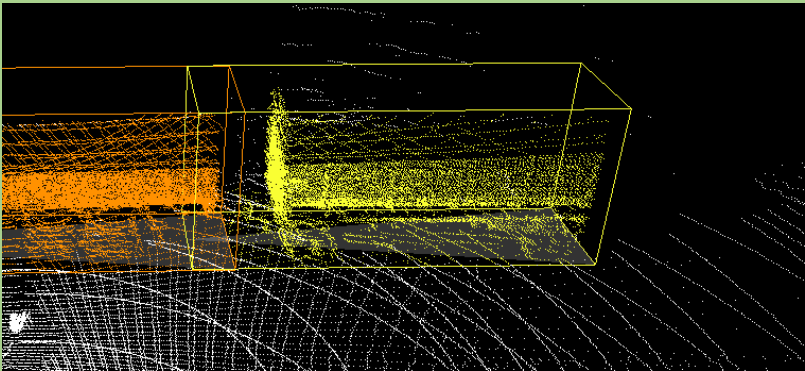
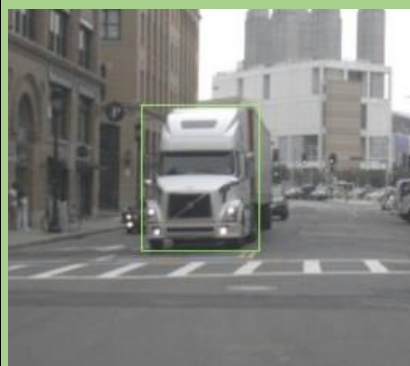
#	DO?	Description	Image
0017	👍 YES	A small electric or self-propelled vehicle, e.g. skateboard, segway, or scooters, on which the person typically travels in an upright position. Driver and (if applicable) rider should be included in the bounding box along with the vehicle.	

3.8 human.pedestrian.wheelchair

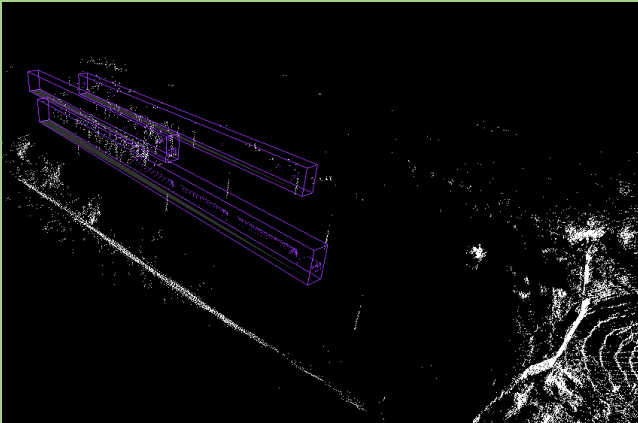
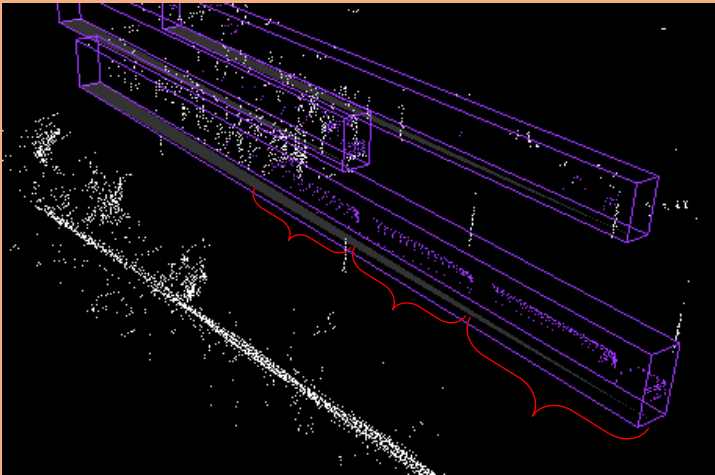
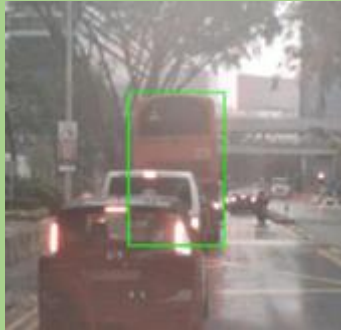
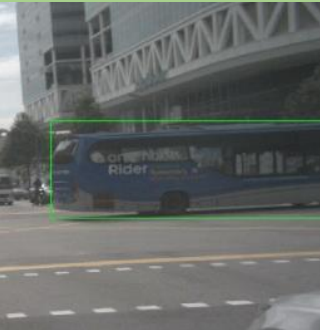
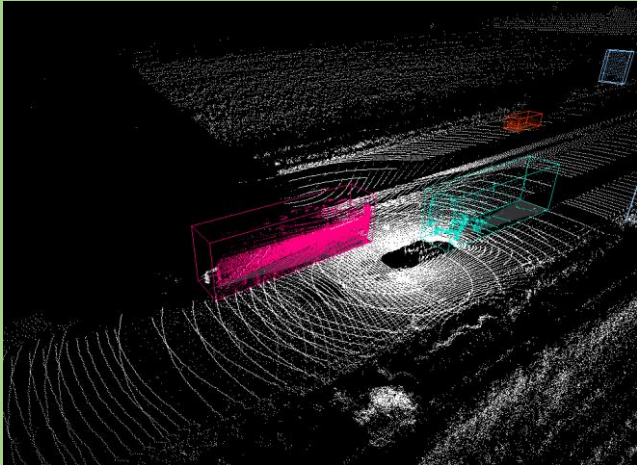
#	DO?	Description	Image
0018	👍 YES	Any type of wheelchair. If a person is in the wheelchair, include in the annotation. Pedestrians pushing wheelchairs should be labeled separately.	

3.9 vehicle.car

#	DO?	Description	Image
0019	👍 YES	Vehicle designed primarily for personal use, e.g. sedans, hatch-backs, wagons, vans, mini-vans, campervan, SUVs and jeeps.	
0020	✕ NO	If the vehicle is designed to carry more than 10 people label it is not a car. Label it as a bus instead. If it is primarily designed to haul cargo it is a truck.	

3.10 vehicle.truck

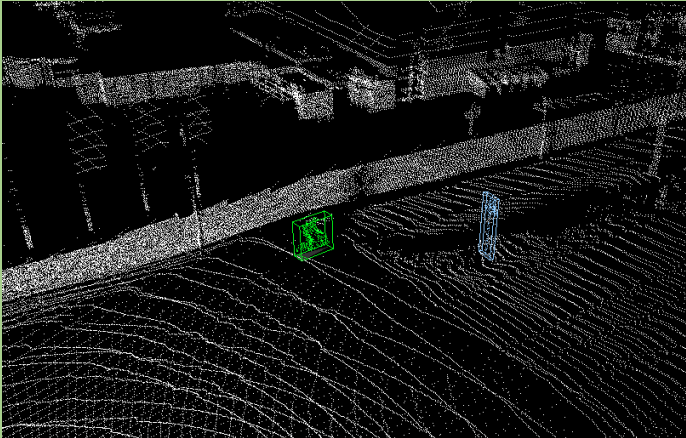
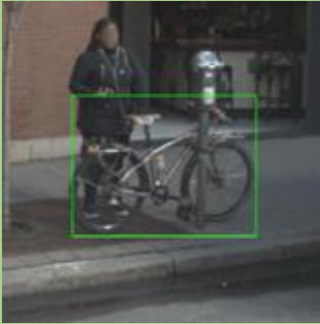
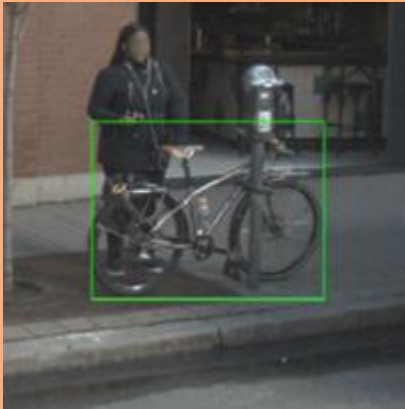
#	DO?	Description	Image
0021	👍 YES	Vehicles primarily designed to haul cargo including pick-ups, lorries, trucks and semi-tractors. Last example: blue, green = truck Yellow = trailer	
0022	👍 YES	A pickup truck is a light duty truck with an enclosed cab and an open or closed cargo area. A pickup truck can be intended primarily for hauling cargo or for personal use.	

| 0023 | 👍 YES | Tractor part of a semi trailer truck. Trailers hauled after a semi-tractor should be labeled as a trailer. | |

3.11   vehicle.trailer

#	DO?	Description	Image
0024	👍 YES	Any vehicle trailer, both for trucks, cars and motorcycles (regardless of whether currently being towed or not). For semi-trailers (containers) label the truck itself as "front of semi truck". Last example: blue = truck Yellow = trailer	

| 0025 | ✗ NO | Don't label trailer here because the container is not part of the trailer anymore at the time it was detached. | |

3.12   vehicle.train

#	DO?	Description	Image
0026	👍 YES	Use this class for the objects on the right example.	
0027	✕ NO	Don't split the bounding box into segments for each wagon.	

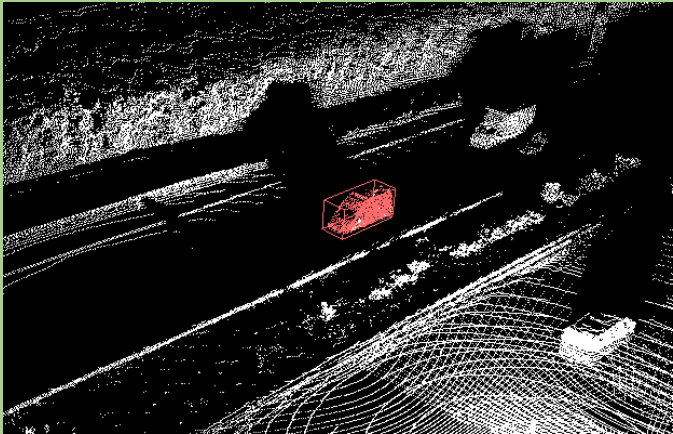
3.13   vehicle.bus.bendy

#	DO?	Description	Image
0028	👍 YES	Buses and shuttles designed to carry more than 10 people and comprises two or more rigid sections linked by a pivoting joint. Annotate each section of the bendy bus individually.	
0029	✖ NO	If you cannot see the pivoting joint of the bus, annotate it as rigid bus.	
0030	✖ NO	Don't label campervans as bus.	

3.14   vehicle.bus.rigid

#	DO?	Description	Image
0031	👍 YES	Rigid buses and shuttles designed to carry more than 10 people.	
0032	✕ NO	Don't label campervans as bus.	

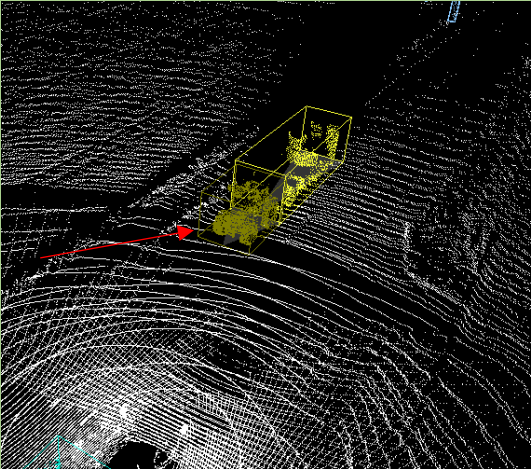
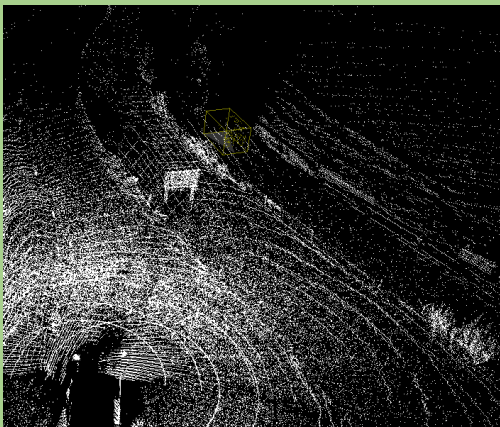
3.15 vehicle.motorcycle

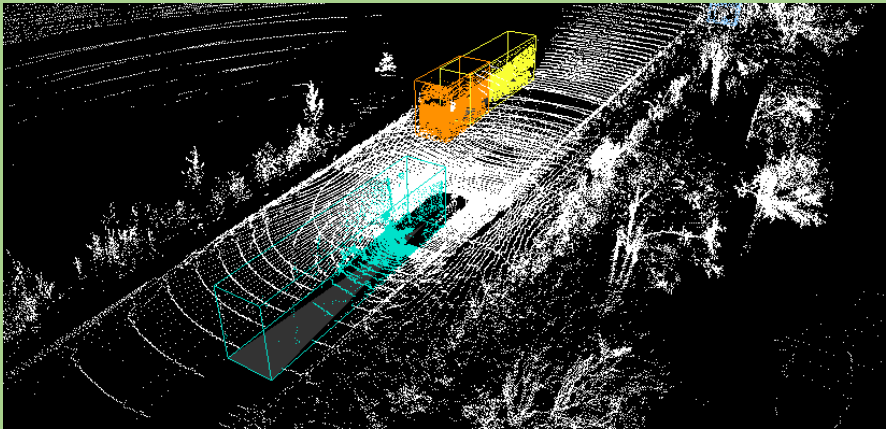
#	DO?	Description	Image
0033	👍 YES	Gasoline or electric powered 2-wheeled vehicle designed to move rapidly (at the speed of standard cars) on the road surface. This category includes all motorcycles, Vespa's and scooters. It also includes light 3-wheel vehicles, often with a light plastic roof and open on the sides, that tend to be common in Asia.	

0034	👍 YES	If there is a rider, include the rider in the box. If there is a passenger, include the passenger in the box.	
0035	✗ NO	Do NOT include the pedestrian in the annotation if the pedestrian is standing next to the motorcycle.	

3.16   vehicle.bicycle

#	DO?	Description	Image
0036	👍 YES	Human or electric powered 2-wheeled vehicle designed to travel at lower speeds either on road surface, sidewalks or bicycle paths. If there is a rider, include the rider in the box.	
0037	✗ NO	If there is a pedestrian standing next to the bicycle, do NOT include the pedestrian in the annotation.	

3.17 vehicle.emergency.police

#	DO?	Description	Image
0038	👍 YES	All types of police vehicles including police bicycles and motorcycles.	

3.18 vehicle.emergency.ambulance

#	DO?	Description	Image
0039	👍 YES	All types of ambulances.	

3.19 vehicle.construction

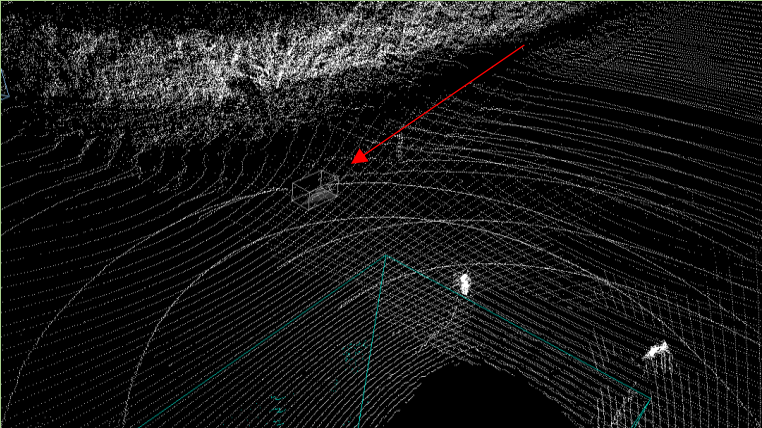
#	DO?	Description	Image
0040	👍 YES	Vehicles primarily designed for construction. Typically very slow moving or stationary. Cranes and extremities are always included in the bounding box.	
0041	✖ NO	Cranes and extremities should be included in the bounding box.	

3.20 vehicle.other

#	DO?	Description	Image
0042	👍 YES	Do label as "vehicle.other" when the vehicle doesn't fit in one of the other categories.	

3.21 vehicle.ego_trailer

#	DO?	Description	Image
0043	👍 YES	Do label the cyan coloured box as "vehicle.ego_trailer" as this is the attached trailer of the recording vehicle (ego vehicle).	

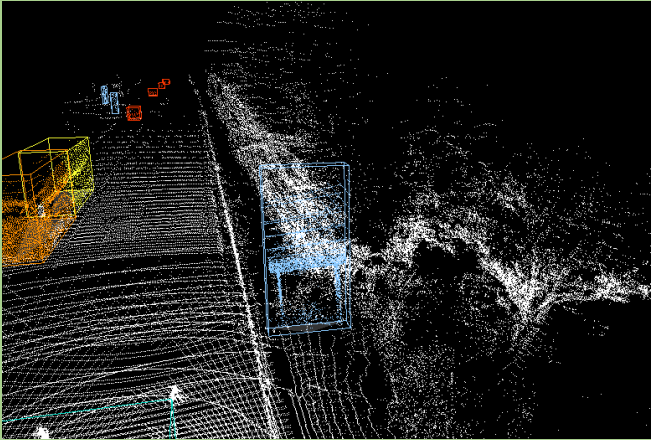
3.22   movable_object.trafficcone

#	DO?	Description	Image
0044	👍 YES	All types of traffic cones.	

3.23   movable_object.barrier

#	DO?	Description	Image
0045	👍 YES	Any metal, concrete or water barrier temporarily placed in the scene in order to re-direct vehicle or pedestrian traffic. In particular, includes barriers used at construction zones. If there are multiple barriers either connected or just placed next to each other, they should be annotated separately.	

| 0046 | ✗ NO | If barriers are installed permanently, then do NOT include them. | |

3.24 movable_object.pushable_pullable

#	DO?	Description	Image
0047	👍 YES	Objects that a pedestrian may push or pull. For example dolly's, wheel barrows, garbage-bins with wheels, or shopping carts. Typically not designed to carry humans. It's meant to be moved by people.	

3.25 movable_object.debris

#	DO?	Description	Image
0048	👍 YES	Debris or movable object that is left on the driveable that is too large to be driven over safely, e.g. tree branch, full trash bag etc. It's not meant to be moved by people and it's only on the street or sidewalk when there is potential danger.	

3.26 static_object.bicycle_rack

#	DO?	Description	Image
0049	👍 YES	Area or device intended to park or secure the bicycles in a row. It includes all the bicycles parked in it and any empty slots that are intended for parking bicycles.	
0050	✕ NO	Bicycles that are not part of the rack should not be included. Instead they should be annotated as bicycles separately.	

3.27 static_object.traffic_sign

#	DO?	Description	Image
0051	👍 YES	Use class traffic sign for the objects on the right.	
0052	✕ NO	Don't use this class for signs that are not driving relevant.	