

# Overview

- In this task you will be adding bounding boxes and attributes to vehicles, humans, and human faces for black and white infrared images.
- Humans, vehicles and human faces have specific requirements on when to box. Make sure you understand the different requirements for these three classes before annotating the target.

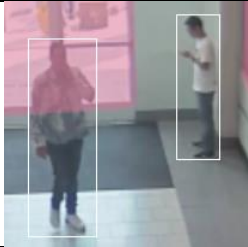
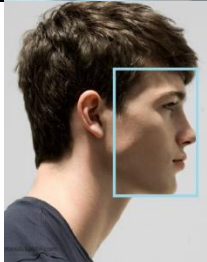
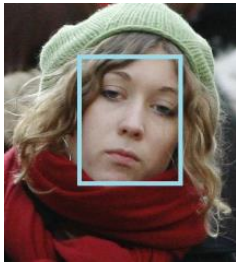

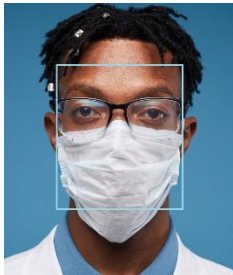
## Steps


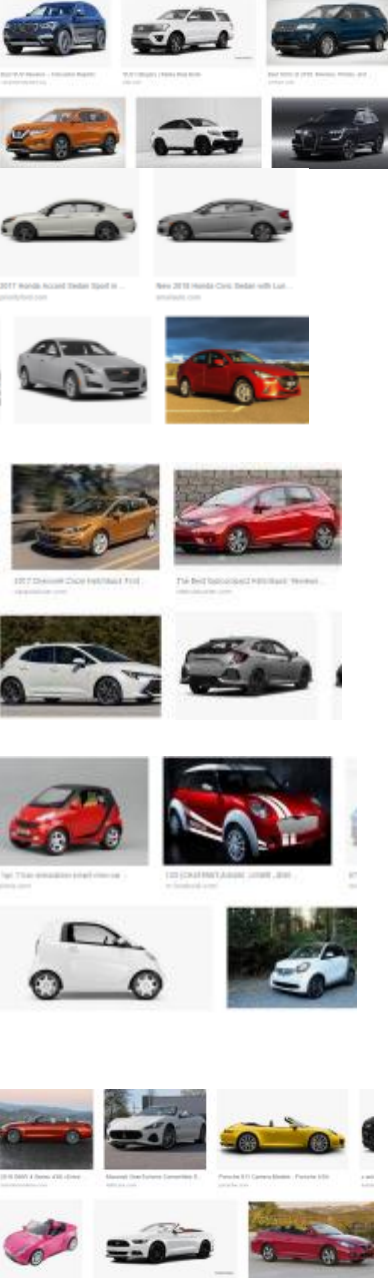
1. Review the provided image to locate target objects of human bodies and faces.
2. Make sure there is only **one box per target per Human Body and one box per Human Face, and Vehicles**
3. **After drawing the box, make sure you add the right attributes for each classification based on the definitions on the attributes section**







## Rules & Tips























- Make sure there is only one rectangle for each Target
- Some targets are hard to see in the infrared images. Make sure you scan the whole image and annotate every single target.
- **VEHICLES, HUMAN\_BODY and HUMAN FACES** have specific bounding box requirements and minimum size requirements. Make sure you understand the differences before annotating the image itself.
- **Minimum Size in Pixels**
  - HUMAN\_BODY - 30 pixels diagonal
  - HUMAN\_FACE - 20 pixels wide
  - VEHICLE - 30 pixels diagonal
- Make sure all the bounding boxes tight and on target.
- Make use of the zoom function to ensure the targets are tightly annotated.
- **Do not annotate REFLECTIONS of targets** in mirrors, glass walls, or in objects such as posters or billboards.

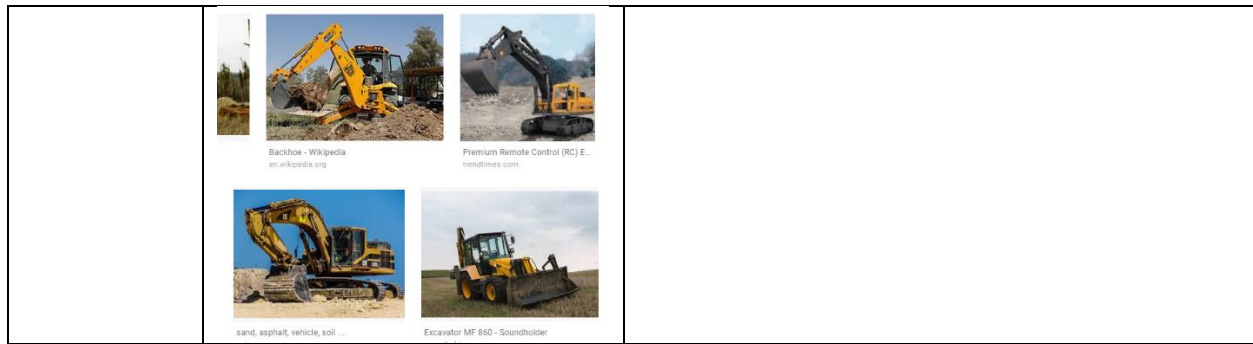
## Ontology Classes Definitions and Examples

Categories	Example Picture	Description
Human - Human_body		A single person in the video. A Human_body needs to have at <b>least more than 50% of the body</b> to be seen and visible.
Human - Human_face	   	<p>A human face. Can have a face mask or no face mask</p> <p>If the face has no mask, make sure that at least one eye (also includes glasses and sunglasses), half a nose, and half a mouth is clearly visible.</p> <p>If the face has a mask, make sure there is at least one eye or the eye is covered by glasses, sunglasses or mask. The mask can be covering the mouth, nose, or eye.</p>

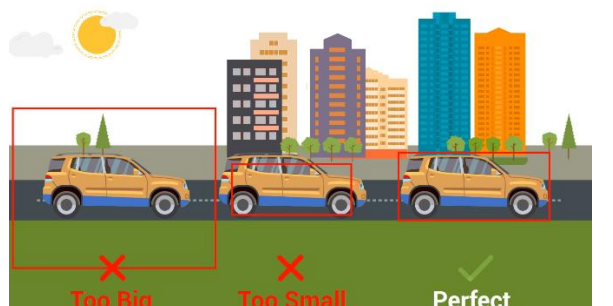

<p>Vehicle- Bus</p>		<p>A large motorized vehicle use for carrying passengers by the road usually along a fixed route.</p>
<p>Vehicle – Car</p>		<p>Small to medium four wheeled vehicles, includes sedans, SUVs, hatchbacks and etc.</p>

Vehicle - Truck	   	A large heavy motor vehicle used to transport objects. Also includes pickup trucks and vans
Vehicle- Motorcycle	 	A small two wheeled motorized vehicle. Includes motorcycles and motor scooters

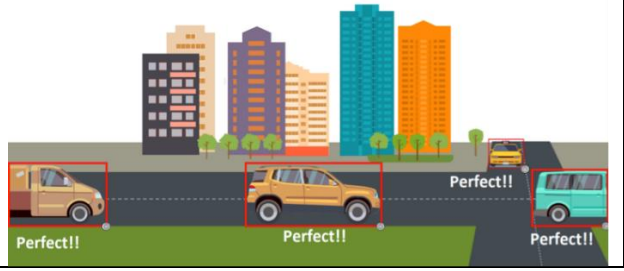
Vehicle - Bicycle	   	A small human powered vehicle two wheeled vehicle
Vehicle- Boat	     	A vessel propelled on water by oars, sails, or an engine
Vehicle - Unknown	            	<b>GROUND</b> Vehicles not included on this table



## BOUNDING BOX Instructions

Description	Example Image
<ul style="list-style-type: none"> <li>Draw a VERY tight rectangle around each vehicle</li> </ul>	
<ul style="list-style-type: none"> <li>Draw a single rectangle around each vehicle...do not group vehicles inside a rectangle.</li> </ul>	

- Draw tight rectangles even with the objects are small, or partially occluded



## VEHICLE Specific instructions and Examples

- Make sure to pick the right vehicle based on the definitions above from above
- Minimum size for the vehicle bounding box should be **30 pixels** diagonal.
- Only draw the box over vehicles that are over 50 percent visible.
- If the whole vehicle is oversaturated by light do not annotate the vehicle.
- 50 percent visible means if a side is visible (for example: back, front or side of the car), make sure at least one of the sides is 50 percent visible or more
  - Annotate if the rear end of the car (trunk) is visible in FoV and at least 50% visible
  - Annotate If the front end of the car (hood) is visible in FoV and at least 50% visible

This truck **should be** annotated. In this truck, only the side is visible, and since the side is more than 50 percent visible, this vehicle should be annotated.

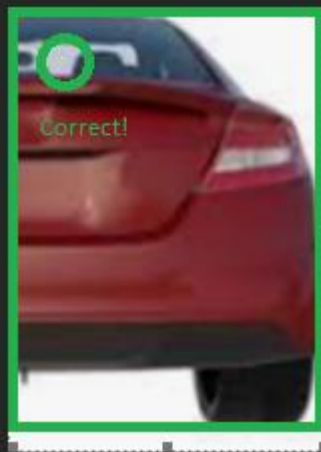


This car **should be** annotated. In this car, the back and sides are visible, While is back is less than 50 percent visible the side of the car is more than 50% visible, therefore this car should be annotated





This car **should be** annotated. Since the back is visible and is around 50 percent visible, this should be annotated



This car **should not be** annotated. Even though the back of the vehicle is visible in the picture, **only the lights and license plates** are visible therefore less than 50%



This car **should be** annotated . The car's back is visible and more than 50 percent visible.



This car should not be annotated. Since only the side of the car is visible and the side of the car is less than 50 percent visible this car should not be annotated.





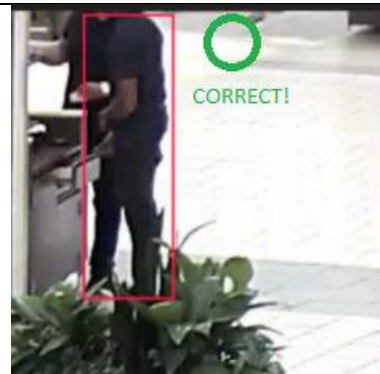
This Vehicle is oversaturated so this car should not be annotated. The sides are not visible



## HUMAN BODY Specific Instructions and Examples

- Minimum the human body should be 30 pixels diagonal.
- Human should be 50% or more visible
- Only annotate the visible portions of the body. Do not annotate the occluded parts of the human body.

- This Human is more than 50 percent visible so this human should be annotated.



These Humans on the right should not be annotated since the human is less than 50 percent visible



Only include the visible portions of the person in the box.

As you see on the right, the legs that are occluded by the table is not boxed since the legs are not visible, so this is correct.



The human in the bounding box is **annotated incorrectly** as the lower person of the human body is not visible therefore should not be annotated. Instead, the Human should be annotated where the human is visible



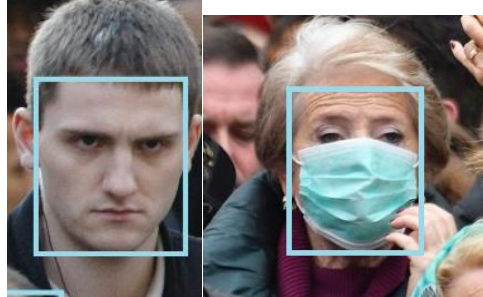
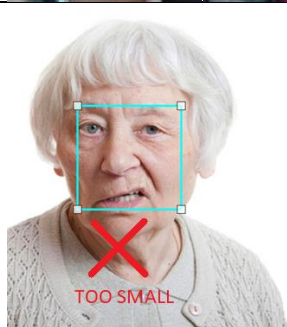

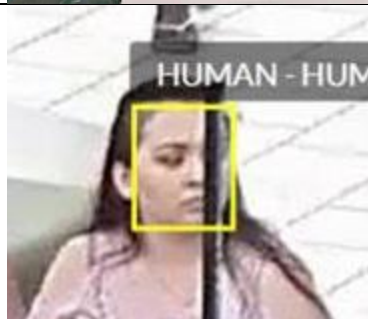
The example on the right is wrong for HUMAN BODY since human is less than 50% visible therefore this human SHOULD NOT be annotated.



## HUMAN FACE Specific Instructions and Examples

- Minimum the human face should be 20 pixels wide.
- If the human face has **NO** mask/coverings, make sure the human face has **AT LEAST ONE** eye (also includes sunglasses), half a nose, and half a mouth visible and defined.
- If the face has a mask/covering, make sure there is at least one eye is visible or the eye is covered by glasses, sunglasses or mask. The mask/covering can be covering the mouth, nose, or eye. Provide the best estimate of the covered face features including the eyes, nose, mouth, chin, and ears when annotating.

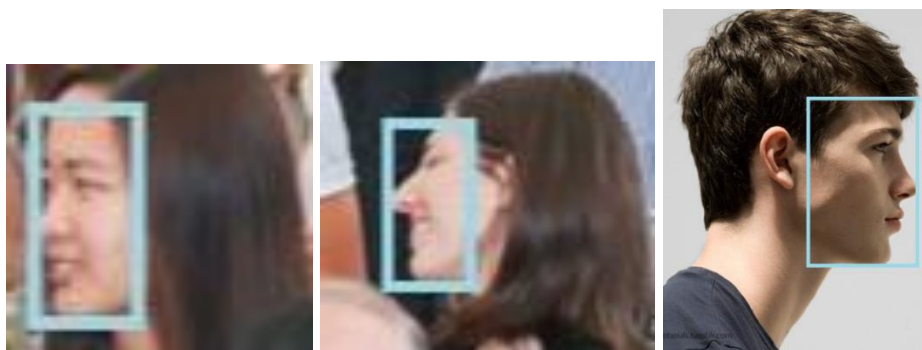
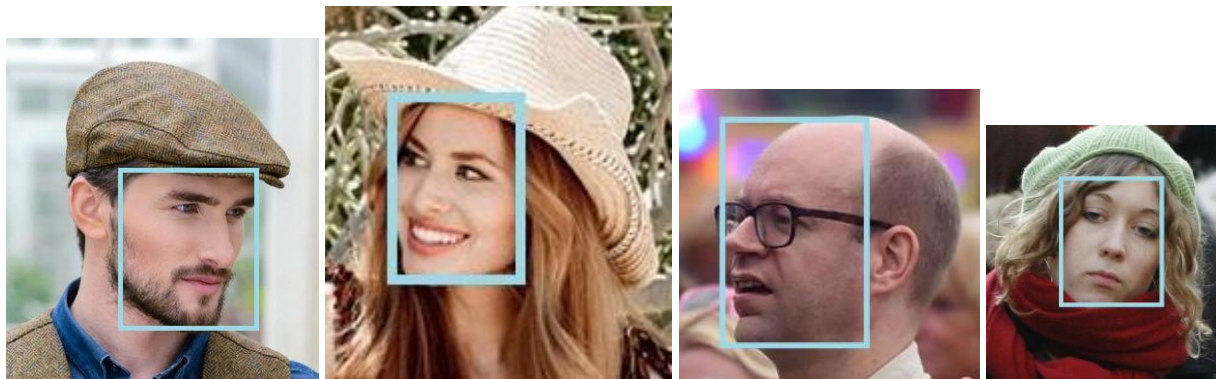
- Make sure to draw rectangles very tight in size with respect to the face, not the head.
- Try to **LEAVE OUT hat, hair, ears** as much as possible while retaining the entire face.
- Make sure to have the bottom of the box touch the chin.
- If the face fits these criteria, human faces in an enclosed vehicle are to be annotated as well.

<ul style="list-style-type: none"> <li>• Draw a very tight box around every individual human face in the image.</li> </ul>	
<ul style="list-style-type: none"> <li>• This box is too small and should extend to the chin and closer to the ears.</li> </ul>	
<ul style="list-style-type: none"> <li>• This box is too big and should only extend down to the chin, exclude the ears, and be closer to the front of the face.</li> </ul>	
<ul style="list-style-type: none"> <li>• Human face is partially occluded by an object, but face is still showing at least one eye, half a nose, and half a mouth. It is correct to place this face in a bounding box.</li> </ul>	

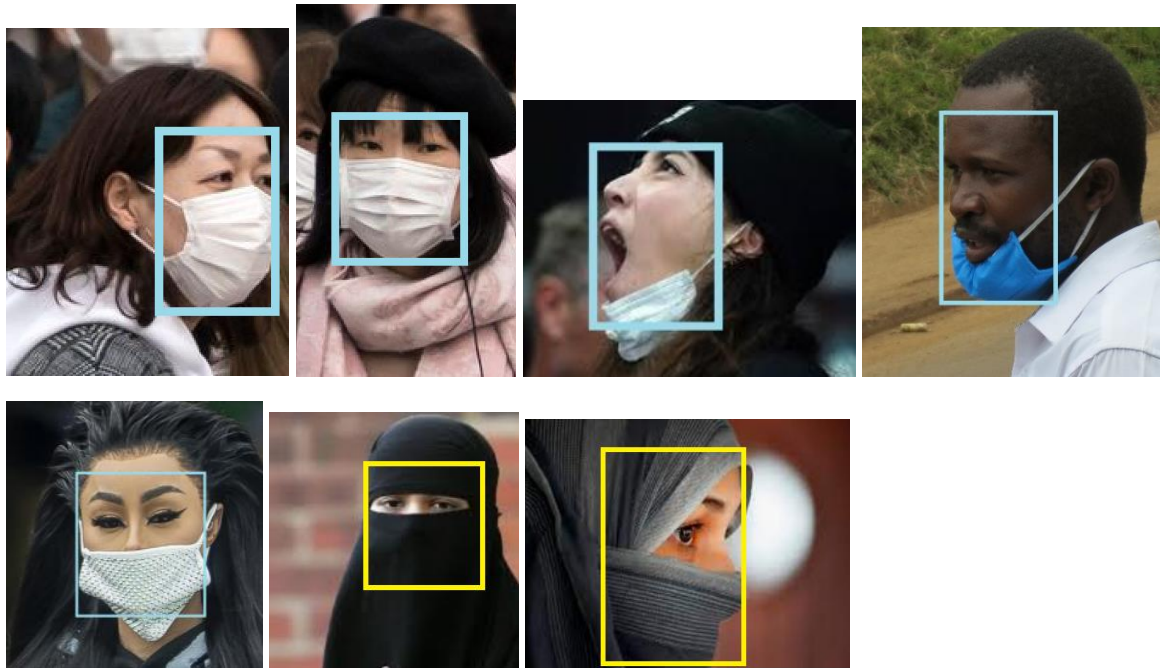
- This Human Face should not be annotated since the mouth, nose and an eye is not clearly defined

✗ WRONG!



## Examples of good face annotations

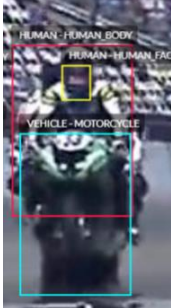
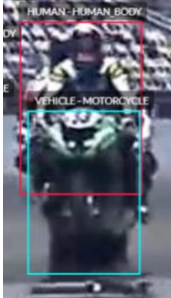






## Labeling Instructions Case-By-Case Situations

Notes	Annotation
<p><b>INCORRECT</b> - The rider and vehicle are in one box.</p>	
<p><b>CORRECT</b> - On a vehicle where the rider and vehicle are clearly visible both rider and vehicle are separately boxed.</p>	

<p><b>INCORRECT</b> - The person's head in a helmet is not a face because at least one eye, nose, and mouth is not visible therefore this is incorrect</p>	
<p><b>CORRECT</b> - The person's head in a helmet is not boxed since its not a face</p>	

# Attributes Definitions

## Occlusion Definition

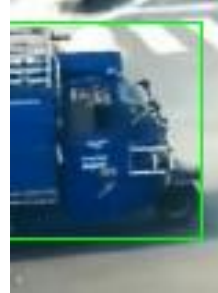
Definition	Example Picture
<p><b>NONE:</b> &gt;85% percent of the target is visible</p>	 <p>The targeted person on the motorcycle is completely visible</p>



**PARTIAL:**  
between 85% and 15% of the target is visible



The targeted person on the motorcycle is completely visible



The targeted truck is cut off partially by the edge of the photo more than 15%.







## Carrying/Carried Relation

Definition	Example Picture
Carried: <b>Human</b> is being <b>CARRIED</b> by the scooter Carrying: <b>Scooter</b> is <b>CARRYING</b> the human	
Carried: <b>Cart</b> is being <b>CARRIED</b> by human Carrying: <b>Human</b> is <b>CARRYING</b> the cart	


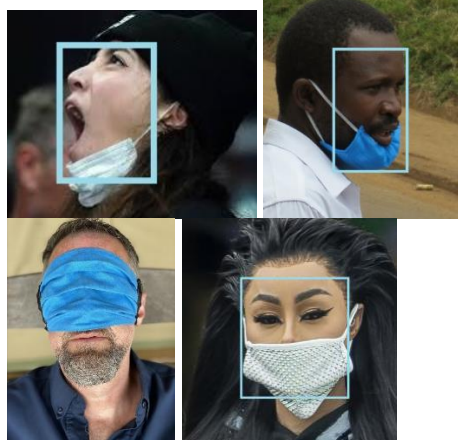

Not Carrying/Carried: **Person is not carrying or being carried by an object throughout the whole video, i.e.: a person walking alone**




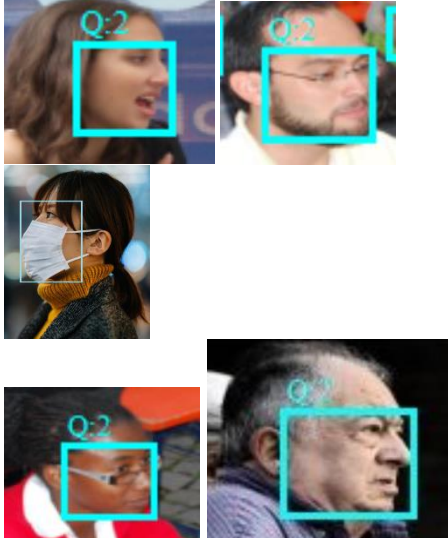
## Human Posture

Definition	Example Picture	
<b>Upright</b>		
<b>Sitting</b>		
<b>Lying</b>		

## Facemask Definition

Definition	Example Picture
<b>No_Mask:</b> There is no mask on the face of the person	
<b>Not_Properly_Worn:</b> The Face Mask is not properly worn ( the mask is not covering the nose and mouth or covering only one)	
<b>Properly_Worn:</b> The mask is covering both nose and mouth	

## Face Quality Definition

Definition	Example Picture
<p>1:</p> <p>poor quality face: poor image quality, or significant poses</p> <p>Even though the face is in the view of the camera, the face is not quite visible and blurry either through low resolution or motion blur .</p> <p>Without mask the eyes, nose, or mouth have to be seen. With mask, the mask must be seen and can be covering the eye, nose or mouth but the other face parts not covered by mask has to be visible.</p>	
<p>2:</p> <p>medium quality face: The face is <b>clearly</b> visible, but the face is not frontal, that is the face is not directly facing the camera.</p> <p>Without mask the eyes, nose, or mouth have to be visible. With mask, the mask has to be visible and can be covering the eye, nose or mouth but the other face parts not covered by mask has to be visible.</p>	

3:

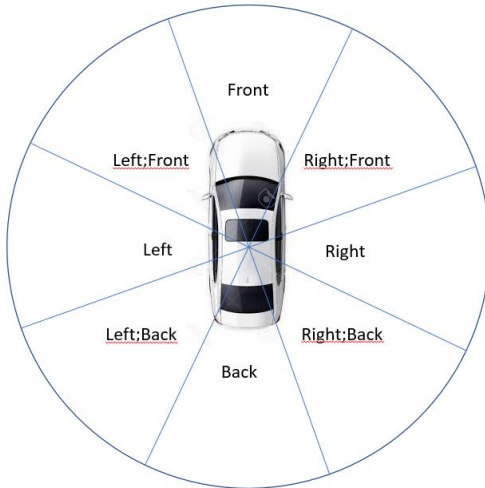
good quality face: good image quality, frontal, no occlusion. The face is clear and pointing straight at the camera. Two Eyes are clearly visible and straight to the camera



Without mask the eyes, nose, or mouth have to be visible. With mask, the mask has to be visible and can be covering the eye, nose or mouth but the other face parts not covered by mask has to be visible







## Pose Definition




- Poses can be multiple selection with more than one choice



Categories	Example Picture
Left	
Left:Front (This choice is multiple selection of left and Front)	

<p>Left:Back</p> <p>(This choice is multiple selection of left and back)</p>					
<p>Right</p>					
<table border="1" data-bbox="207 827 423 957"> <tr> <td>Right:Front</td><td></td></tr> <tr> <td></td><td></td></tr> </table> <p>(This choice is multiple selection of Right and Front)</p>	Right:Front				
Right:Front					
<p>Right:Back</p> <p>(This choice is multiple selection of Right and Back)</p>					



Front	
Back	
Top	

## Vehicle Color Definition

- Since these images are black and white, there are three shades of colors for the colors, light, medium, and dark. They should be the primary colors of the vehicle itself.

# VALUE SCALE

