

# Object Detection Labeling Examples

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## Examples of labelled objects.

This document contains image examples of every **object category** that is to be labelled in the image samples from the Accra imagery campaign, to support the development of the object detection algorithm to be used in various Pathways research projects.

As well as examples of **correct labeling**, there will also be some **counter-examples** which illustrate when and how **not** to label certain objects.

### Cars



**Correct labelling:** All the cars above are labelled (even the one slightly obscured by a bush) and the bounding boxes cover all the visible parts of the cars, but **no more**.

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**Correct labelling:** Partially obscured cars whose boxes may overlap are labeled accordingly.



**Correct labelling**





**Correct labelling**



**Correct labelling:** The cars that are easily identifiable are labeled but the one that is nearly completely unrecognisable (behind the bush) is **not**.

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## People



**Correct labelling:** All the person's **visible body parts** and **clothing** are included in the bounding box but **not her bags**.



**Correct labelling:** All the people who can be somewhat easily recognised as people with a glance are labeled. Though there are likely others in the photo, if we cannot easily determine all their visible parts in a second or two, we don't bother labelling them.



**Correct labelling:** The bounding box of the person in the red shirt includes their arm, even though it overlaps significantly with the person in the green shirt's bounding box, so each of the respective persons' visible limbs are included in their boxes.





**Correct labelling:** Even though the woman is partially obscured by a bush, all visible parts of her are labeled.

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## Trotros



Correct labelling



Correct labelling



Correct labelling



**Not worth labelling:** Though the long white vehicle is most likely a trotro, since we can't easily determine its visible boundaries and easily differentiate it from a bus/van, we **don't** label it as a trotro in this instance.



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## Market Stalls

**Important note:** We have a very particular definition of a market stall. We define it as a (typically rectangular) structure that looks **temporary** or **mobile** from which **trading or commerce** happens. This means fixed structures (made from concrete and with tin roofs) or large immobile wooden shacks are **not categorised** as 'market stalls' for this study, even though they would be referred to them that way in everyday usage. Nor are the umbrellas over many market stalls included in their bounding boxes. See **examples** of market stalls below.



**Correct labelling:** Although the stall is quite large, it looks like it can be shuttered and moved to different locations (i.e. its position may not be permanent to this location). Therefore we **would** label it as a stall in this instance.





**Correct labelling:** This small, mobile-looking commerce stand is labeled as a **market stall**.



**Not worth labelling:** Though there are definitely what most people would call “market stalls” in this photo, we do not label anything because there aren’t any **structures** with **clearly defined boundaries** that we could easily label.

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## Trucks

**Important note:** By “truck” we specifically mean medium sized vehicles with carrying capacity, as opposed to the large, long vehicles that transport large amounts of goods. Those are instead designated to the “**lorry**” category (see below).



Correct labelling





Correct labelling



Correct labelling



**Not worth labelling:** Even though the top of this vehicle is very likely a truck, since it is >90% obscured and may not be easily recognisable as a truck without the context of the environment, we would **not** label it in this instance.



**Not worth labelling:** Similar to above, this is a marginal case where depending on the relative size of the truck in the image, you might not consider this truck worth labelling since so much of it is obscured. A similar judgement call can be made for other very (visually) small objects.



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## Cookstoves

**Important note:** Cookstoves are very often found with a cooking bowl (see below) on top, or with flames coming out of them. For the purposes of this study, we would like you to include any visible flames in the box, as this is often a helpful indicator that the object is a cooking stove. Note that the contents being heated *above* the stove are **not** to be included in the box.

Since there is no clear view of a cookstove in the campaign example photos below, here are some canonical examples of cookstoves, though they may come in other shapes too:



The examples from the images are given below:



**Correct labelling**



**Correct labelling:** The stove and its flames are all included in the box. Although it is difficult to discern as a stove, we can infer this from the fact that there is a cooking pot above it and from its noticeable flame.



Correct labelling





**Correct labelling (potentially):** In instances like this, though I have chosen to label the cookstove from my contextual knowledge that, that is what the pot with the flame is, you may choose to make a judgement call as to whether a very blurry or distant cookstove is worth labelling.

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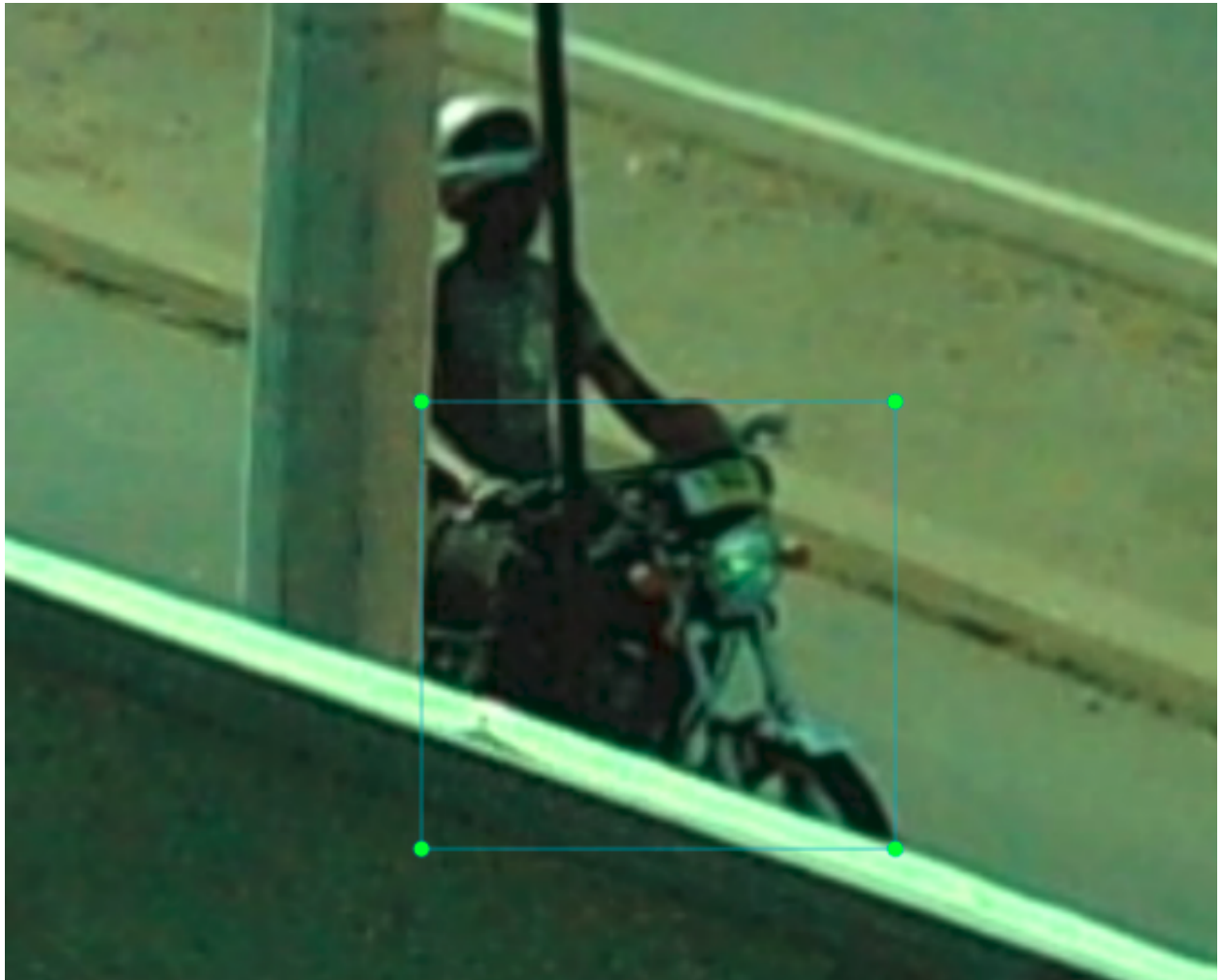
## Motorcycles



**Correct labelling:** Both motorcycles are correctly labeled but their passengers are **not** included in the bounding boxes.



**Correct labelling**



Correct labelling



Correct labelling



**Not worth labelling:** Even though the vehicle in the middle of the photo is most likely a motorcycle, in this instance we would **not** label it, since it is too blurry to easily distinguish as a motorcycle.



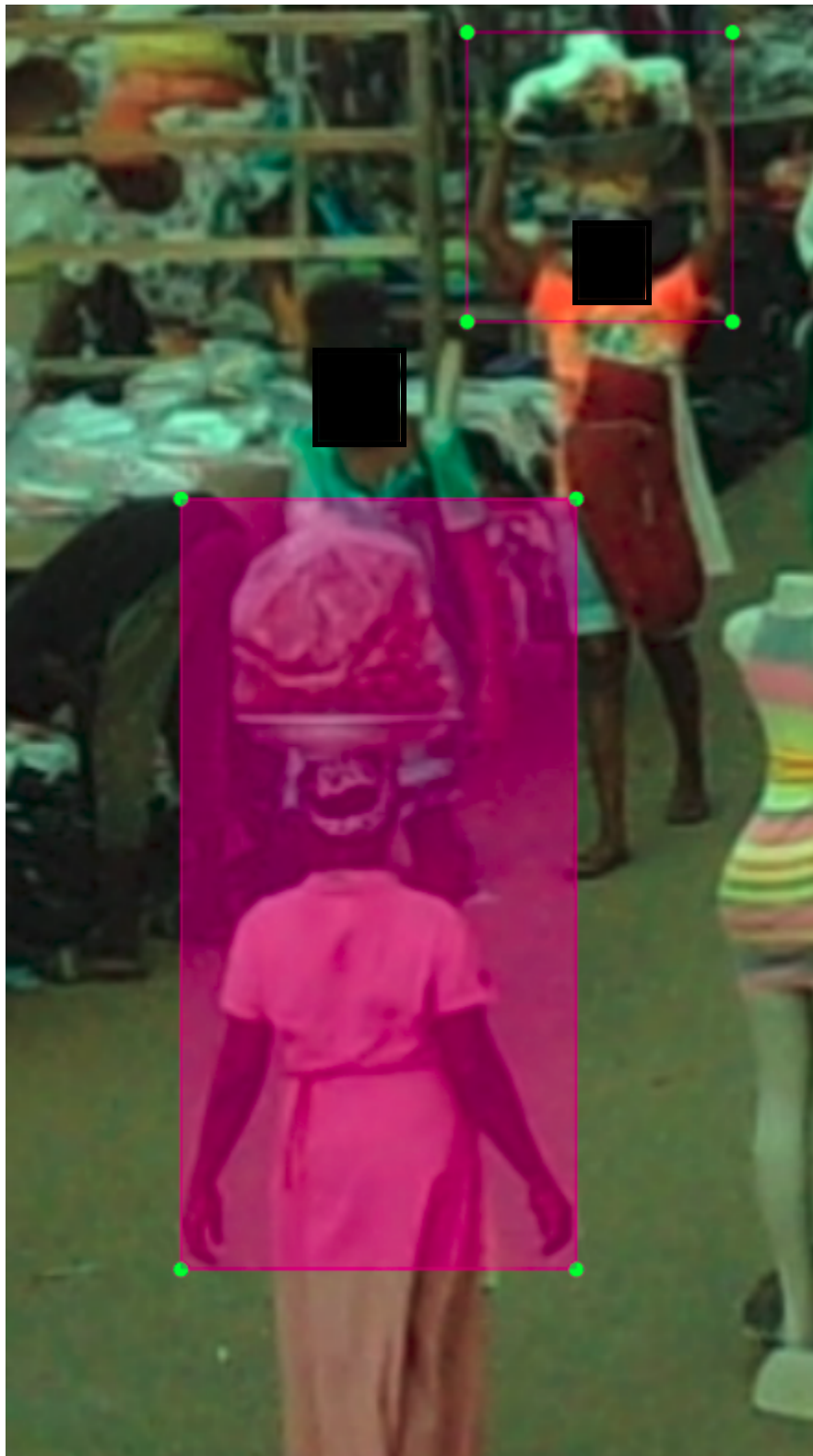
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## Street Vendors

**Important note:** Like “trucks” we have selected the term “Street Vendor” with a particular meaning for the purposes of labeling. In particular, we mean a person, carrying goods above their heads that look like they are to be sold. Their arms may not **necessarily** be above their heads supporting the goods (often cooking bowls with food) although that may often be the case. In this case, we request that you **include** the object being carried **on their head**. Furthermore, in order to try and distinguish the labels from person (which should **also** be labelled when labeling a vendor), we only label their **arms, head and shoulders**, excluding their torso and legs except when they happen to fall into the bounding box because of the position of their arms. The examples below should be illustrative, but please email us if you have any questions.



Correct labelling



Correct labelling



Correct labelling



**Not worth labelling:** Although the person is carrying something above their head, it looks like a piece of luggage, **not** something they are intending to sell. Sometimes this may be ambiguous and you can use your best judgement to inform the decision. However, you would still label her under the “person” category as usual (as you would also do for all the examples given above).



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## Lorries

**Important note:** As mentioned in the note for “trucks” lorries are large trucks which are usually long and often have separate cargo trailers attached to the actual vehicle. The examples below, when compared to the “truck” examples above should assist you in distinguishing the two when labeling.



**Correct labelling**



Correct labelling



Correct labelling



Correct labelling



Correct labelling





**Marginal case/Not worth labelling:** This would be a marginal case where you may reason that the lorry is too obscured to be worth labeling (and may not be immediately recognisable as a lorry). You can use your best judgement in such a case to determine whether it is worth labeling or not.



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## Umbrellas

**Important note:** When labelling umbrellas, consider only the “canopy” (the cover) rather than the pole. This will be apparent from the examples below.



### Correct labelling



**Correct labelling:** **Every** visible umbrella is labeled.



Correct labelling



Correct labelling



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## Buses



Correct labelling



Correct labelling



Correct labelling



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## Trash

**Important note:** In general, object detection algorithms struggle with very small and blurry objects. Therefore, only large (in terms of the size in the image, not necessarily the size of the object in real life) pieces of trash with well defined boundaries should be labeled, though this will likely require some best-judgement on your behalves.



Correct labelling



Correct labelling



**Not worth labelling:** Although there are lots of small pieces of trash (litter) in this image, they are all too small and difficult to discern the boundaries of to warrant labeling.



**Correct labelling:** The contents of the bin and the trash bag are included in the category of trash.



Correct labelling



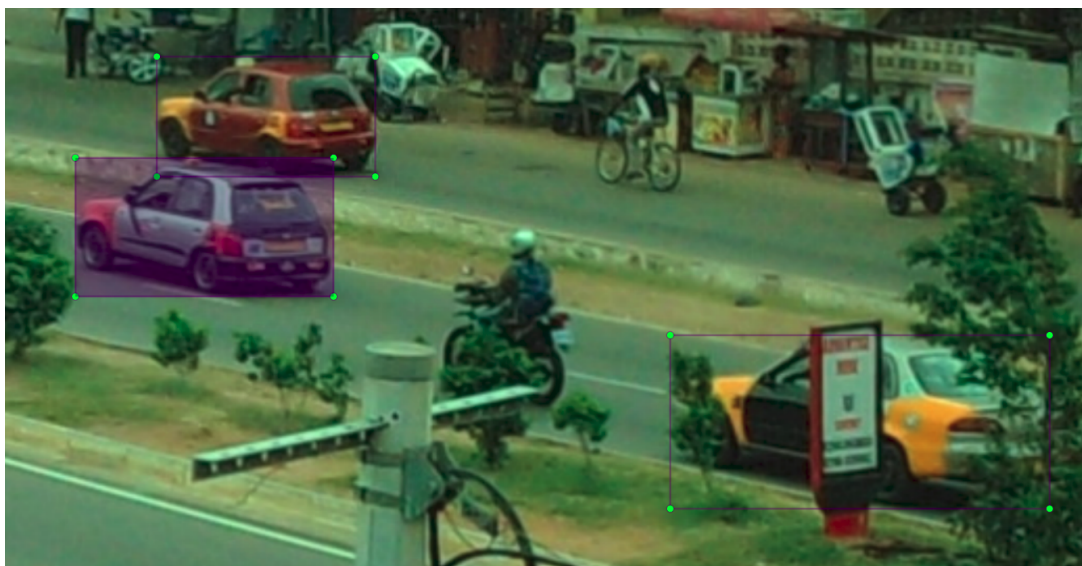
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## Taxis

Many of the same guidelines apply as for cars, with the addition that the sign above the car denoting it a taxi should also be included.



Correct labelling



Correct labelling



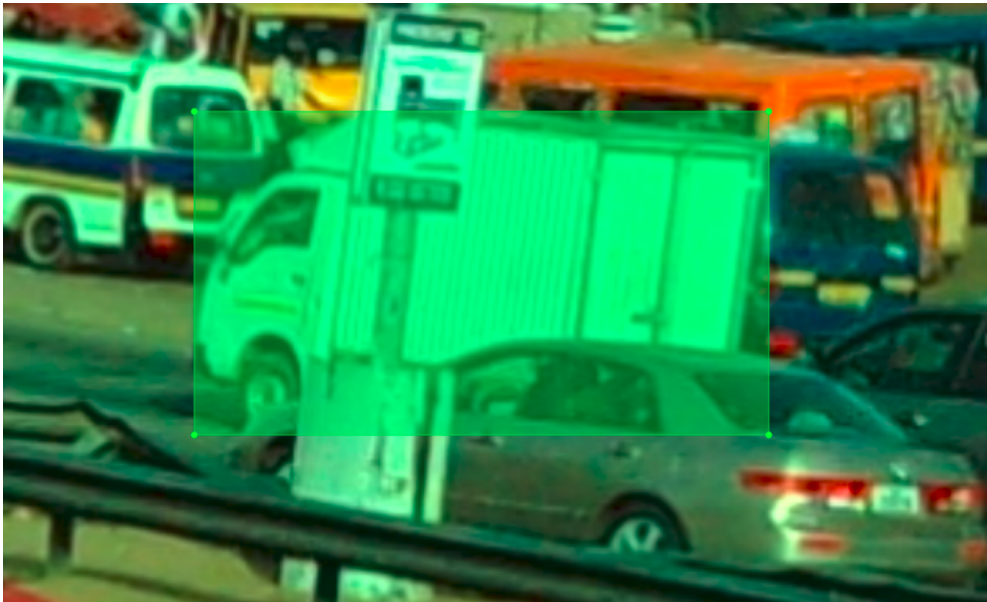
**Correct labelling/marginal:** We have decided to label the taxi in this case (distinguished from a car by the sign on top and its yellow corner plates) but this is a marginal case where if it were any more obscured, you may reasonably decide it is not worth labeling.



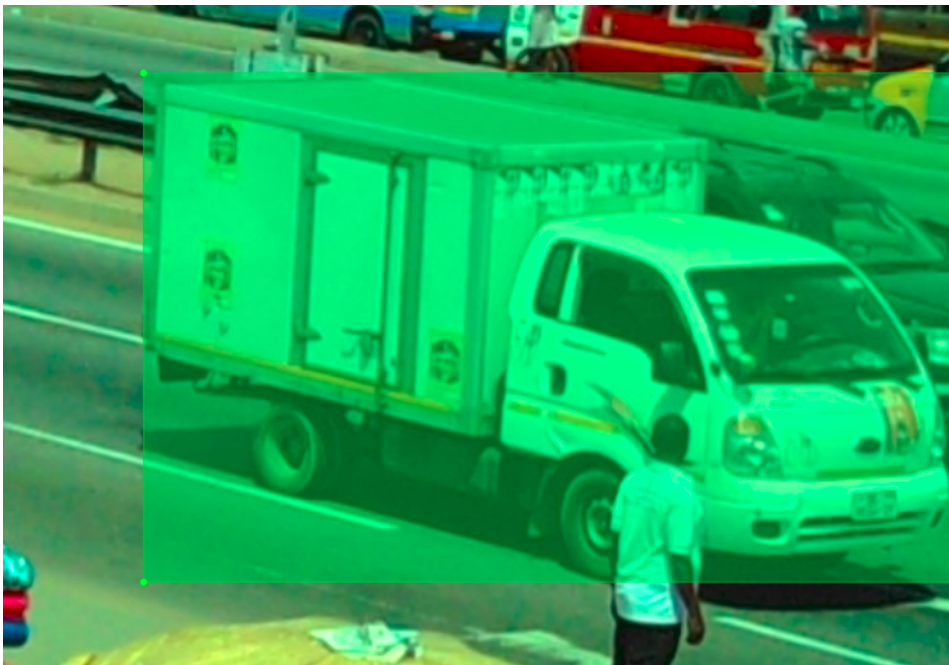
Correct labelling

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## Vans



Correct labelling



Correct labelling





**Correct labelling**

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## Pieces of Debris

**Important note:** The labeling guidelines for “trash” also apply here in terms of the visible size/easily discernible nature of the piece of debris.



**Correct labelling**



**Not worth labelling:** Although there are lots of small pieces of debris in this image, they are all too small and difficult to discern the boundaries of to warrant labeling.



Correct labelling



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## Loudspeakers

**Important note:** Although we could not find any examples of loudspeakers in the sample of images we compiled, we have included some reference images below that should be labeled in line with the general guidelines demonstrated in the other example labels throughout this document.



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## Cooking Bowls



**Correct labelling:** As you might anticipate, the “cooking bowl” category will often coincide with objects in the “food” category (see below).



**Correct labelling:** Note that in this image, you would **also** be labeling the “person” and “vendor” which will have overlapping boxes with both the person and the bowl.



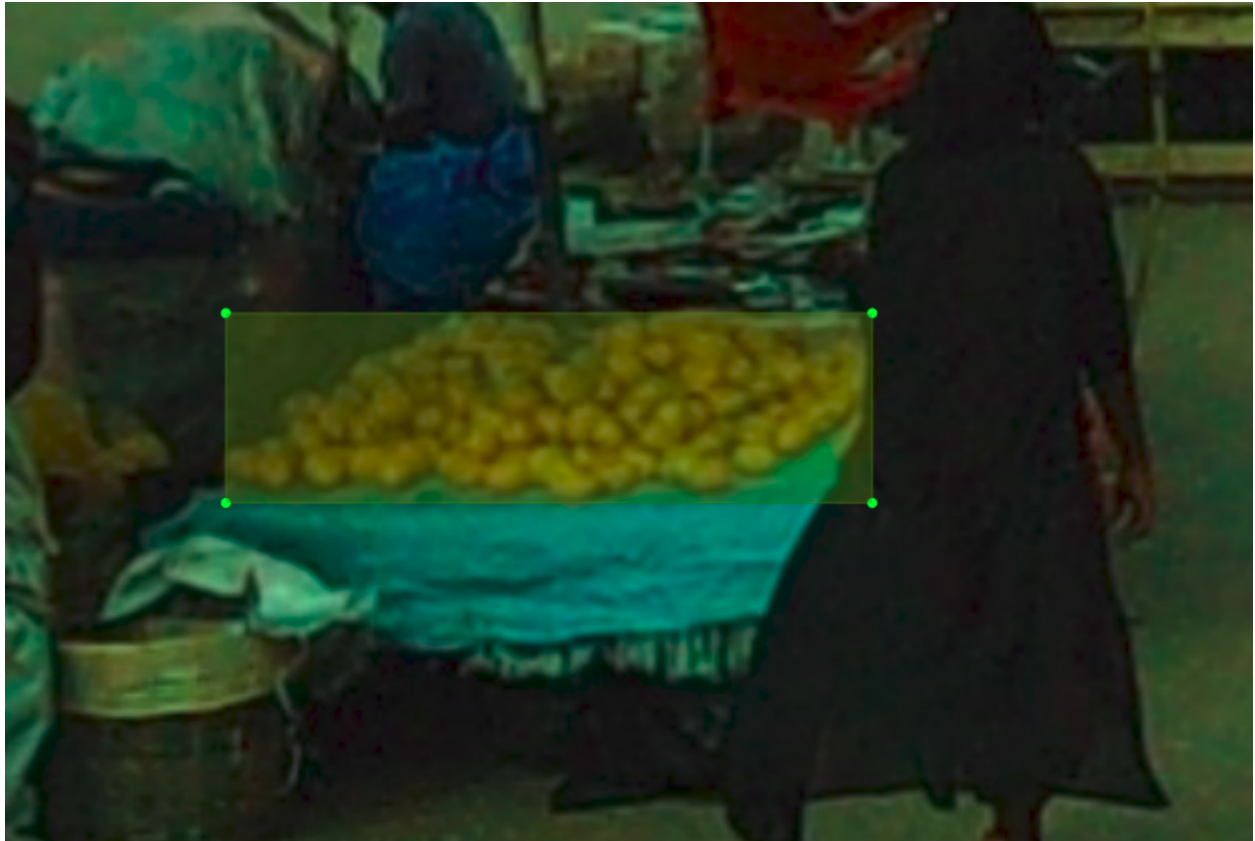
Correct labelling



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## Food

**Important note:** Although there may be instances of single, large, visible and individual items of food (i.e. a single apple), most instances will likely be groups of foodtypes together. In these cases, as illustrated below, you may simply label the entire group as a single instance of "food".



Correct labelling



**Correct labelling**



**Correct labelling**



Correct labelling

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## Animal

**Important note:** The animal category will largely consist of small, four legged mammals, but may also consist of birds but **not** insects.



Correct labelling





Correct labelling



Correct labelling



Correct labelling



Correct labelling



Correct labelling



Correct labelling



Correct labelling





Correct labelling

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## Bicycles

**Important note:** Like motorcycle, only the vehicle, **not** its passenger/rider should be included.



Correct labelling



Correct labelling



Correct labelling





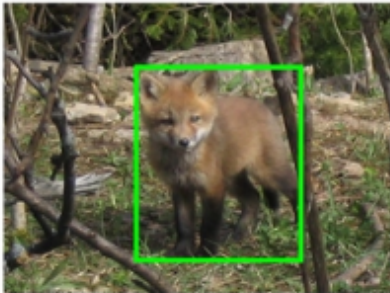
**Not worth labelling:** Although the top of the handlebars on this bike are just about visible, there is too much of it obscured for it to be worth labeling. Also, we cannot be sure if it is a bicycle or motorcycle.

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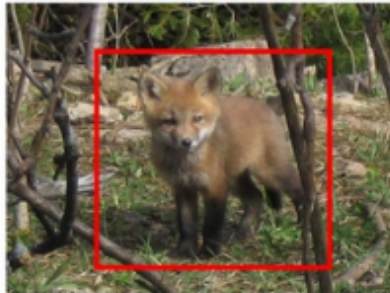
**GENERAL LABELING GUIDELINES (Example from COCO) :**

**Instructions of drawing bounding boxes, with examples for "Kit fox"**

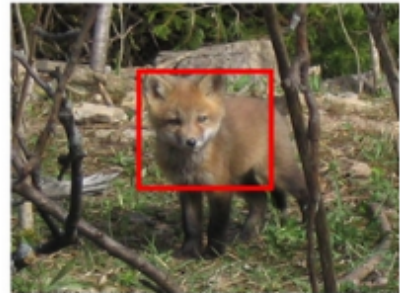
**Rule 1: Include all visible part and draw as tightly as possible.**



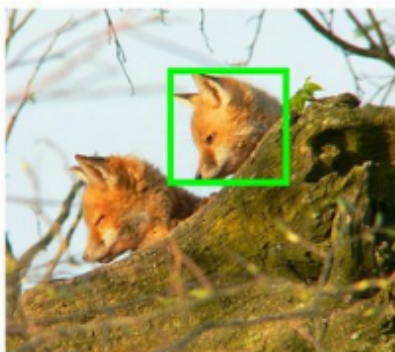
**CORRECT**



**WRONG: must be as tight as possible!**



**WRONG: must include all visible parts!**



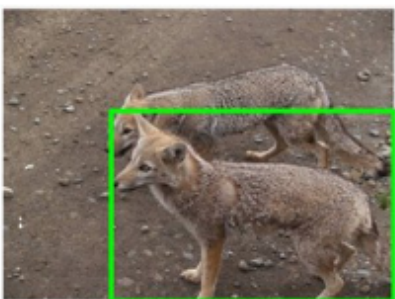
**CORRECT**



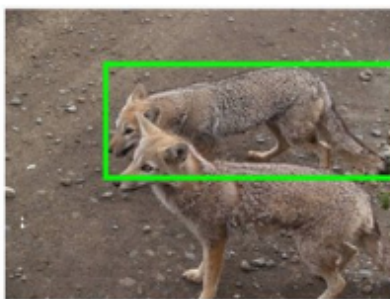
**WRONG: occluded parts do not matter as long as all visible parts are included.**

**Instructions of drawing bounding boxes, with examples for "Kit fox"**

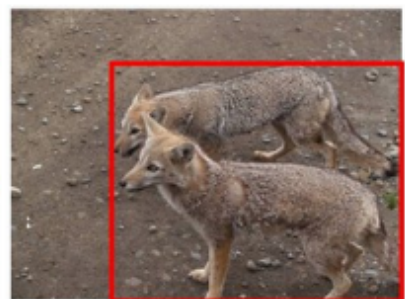
**Rule 2: If there are multiple instances, include only ONE ( any one ).**



**CORRECT**



**CORRECT**



**WRONG: should include only one instance.**