Introduction to Object Detection

Image Classification Problem

Problem Statement: Classify the given images of vehicles as 'Emergency' or 'non-Emergency vehicles'

Emergency Vehicle

Non Emergency Vehicle

Emergency Vehicle

Image Classification Problem

Problem Statement: Classify the given images of dogs into the different breeds such as 'Labrador', 'Beagle', etc.

Labrador
Retriever

Bulldog
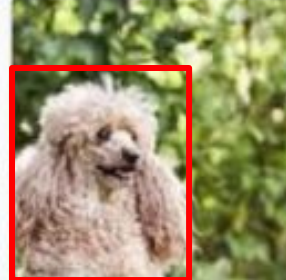
Beagle

Poodle

Golden
Retriever

Image Localization Problem

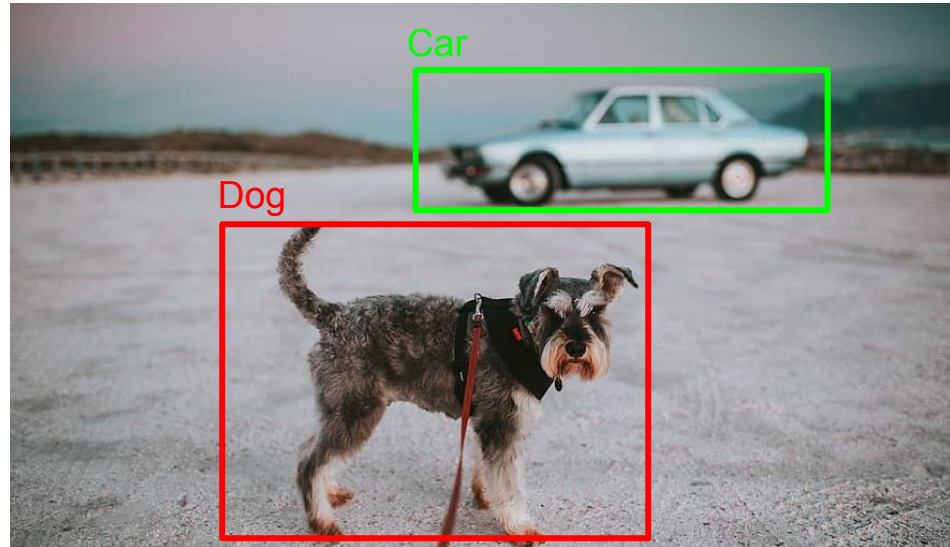**Problem Statement:**   Identify the Location of dogs in the given set of images

Image Localization Problem

Problem Statement: Identify the Location of dogs in the given set of images

Object Detection Problem

Problem Statement: Identify the Location of objects in the given and classify
the object into the categories

Image Classification v/s Object Detection

Image Classification	V / S	Object Detection

- Object Classification

- Object Classification

- Object Localization

Image Classification v/s Object Detection

Image Classification	V / S	Object Detection

Target Class:
Emergency Vehicle

Target Class:
Emergency Vehicle

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Image Classification v/s Object Detection

| Image Classification | V / S | Object Detection |

Target Class:
Emergency Vehicle

Predict Target Class

Target Class:
Emergency Vehicle

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Image Classification v/s Object Detection

Image Classification	V / S	Object Detection

Target Class:
Emergency Vehicle

Target Class:
Emergency Vehicle

Predict Target Class

Predict Object Location

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Object Detection Problem - Tasks

Object Detection

Is an Object Present in the image?

Target Class:
Emergency Vehicle

Where is the Object located?

Predict Target Class

What is the Object?

Predict Object Location

Object Detection Problem - Tasks

Object
Detection

Target Class:
Emergency Vehicle

Predict Target Class

Predict Object Location

Is an Object Present
in the image?

Yes

Where is the Object
located?

**Bounding
Box**

What is the Object?

**Emergency
Vehicle**

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Object Detection Problems

Single Object

Single Class

Object Detection Problems

Single Object

Multiple Object

Single Class

Single Class

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Object Detection Problems

Single Object

Multiple Object

Multiple Object

Single Class

Single Class

Multiple Class

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Thank You

Image Classification Problem

Problem Statement: Classify the given images of vehicles as 'Emergency' or 'non-Emergency vehicles'.

Emergency Vehicle

Non Emergency Vehicle

Objective -

Is this an Emergency Vehicle?

Image Classification v/s Object Detection

| Image Classification | V / S | Object Detection |