**Annotations/Labels:** The task of labeling digital images, which usually involves human input or computer-assisted assistance.

**Types of Annotation:**

-1**Bounding Box Annotation:** It involves using an image to create a rectangular drawing by connecting the corners of the object with its edges.

-2**Polygon Annotation:** High-resolution annotations on object boundaries in the frame, used to identify objects such as logos and faces.

-3**Cuboid Annotation:** High-quality markers used in this style of 3D annotation to emphasize 3D drawing shapes, help define area and volume, and measure the depth or dimensions of objects.

-4**Key Points Annotation:** Used to annotate very small elements, such as facial features and body parts.

5-**Text Annotation:** Text annotations help identify words or sentence by adding labels to a text document, so that the model can understand the language, intent, and emotion behind the words.

6- **Semantic Segmentation:** computer vision technique that involves dividing an image into multiple segments or regions based on the semantic meaning of each pixel.

**Formats of data annotation:**

**1-Common Objects in Context (COCO):**

COCO is a huge image dataset collected for object detection and segmentation, the annotations are stored using JSON.

Coordination: Centralized - [x top-left , y top-left , width , height]

Method of recording the boundaries of object: polygon-based

Speed: slow

**2-You Only Look Once (YOLO):**

In the YOLO tagging format, a .txt file with the same name is created for each image file in the same directory. Each .txt file contains the annotations for the image file.

**Coordination**: Centralized - [x-center, y-center, width, height]

**Method of recording the boundaries of object**: Grid-based

**Speed**: very fast

**3-PASCAL VOC:** This annotation format stores annotation information in XML format. Each image requires an XML file. It provides image datasets for over 20 classes that use object detection.

**Coordination: Distributed -** [x-min , y-min , x-max, y-max]

**Method of recording the boundaries of object:** Rectangle-based

Speed: **Fast**

**Text annotation**: is the process of adding metadata to textual data to provide context and meaning to the content.

There are several types of text annotation, including:

**1. Named Entity Recognition (NER):**

Is a type of text annotation that involves identifying and classifying named entities such as people, organizations, locations, and dates within a text.

**2. Part-of-Speech (POS) Tagging:** POS tagging involves labeling each word in the text with its part of speech, such as noun, verb, adjective, etc.

**3. Sentiment Analysis:** Sentiment analysis is the process of determining sentiment expressed in a text. This type of annotation is commonly used in social media analysis and customer feedback analysis.

**4. Dependency Parsing:** Is a technique used to analysis the grammatical structure of a sentence by identifying the relationship between words in a sentence.

**5. Coreference Resolution:** Is the process of determining when two or more words or term in a text refer to the same entity.

**6. Text Classification:** Text classification involves classifying text documents into specific categories based on their content.

**7. Event Extraction:** Event extraction is the process of identifying events in text and their associated attributes, such as participants, time and location.

**Convert One Data Format into Another:**

**1- Using roboflow:**

**2 - Using python code**

**Before converting from one format to another, you must download this library**

**!pip install pylabel**