

## **Emmanuel Owusu Ahenkan : CV 2, LAB 1 REPORT**

I installed Detectron2 in google colab. I used pictures(images) from my personal collections and on the internet and run a pre-trained model on them.

### **Instance Segmentation:**

Instance segmentation is a subtype of image segmentation which identifies each instance of each object within the image at the pixel level.

I used the Mask Regional Convolutional Neural Network (Mask R-CNN) method. The framework of Mask R-CNN is based on two stages: first, it scans the image to generate proposals; which are areas with a high likelihood to contain an object. Second, it classifies these proposals and creates bounding boxes and masks.

The backbone architecture used here is the ResNet-50 . The data set used is the coco dataset.

In Figure 1(a) and (b), the model predicted the objects in the image with 100

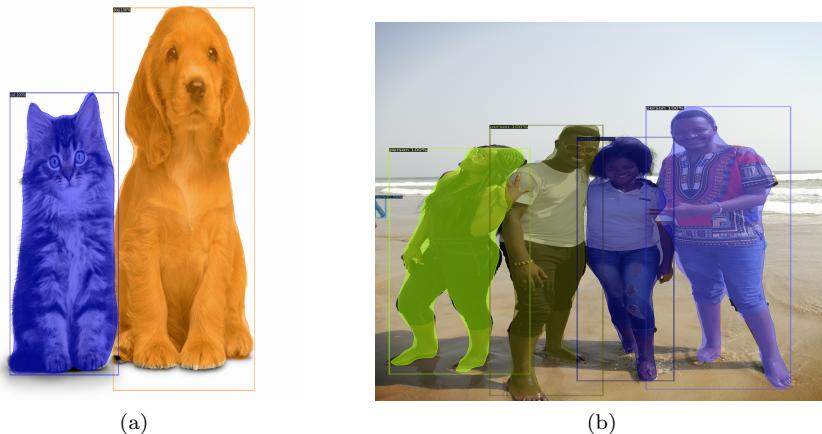


Figure 1: Instance Segmentation (True Prediction)

percent precision(confidence).

The model is able to detect each individual object within a cluster of (similar) objects, drawing the boundaries for each of them with 100 percent precision.

In Figure 2(a), the model segmented a buffalo as cow.

In Figure 2(b), the model segmented the tiger and lion as dogs.

### **Human Pose Estimation:**

We used Mask R-CNN on the coco data set to predict human pose.

In Figure 3(a), the model was able to predict the posture of the baby correctly.

In Figure 3(b), the model was able to predict the poster of the students(human) correctly.

In Figure 4(a), the pose(key points) of the player in white jersey are not detected well likewise the player in yellow jersey in Figure 4(b). There are false predictions.

### **Observations and Error Modes :**

The model failed to segment objects like pawpaw, wall painting, etc.

The model again detected/segmented lion, tiger and buffalo wrongly.

This can be as a result of these classes of objects not being in the coco data set. The model always missed out segmenting/detecting some objects in images with too many instances.

The model failed to detect correctly some human pose in images with too many instances.

The model failed to detect the pose of non human objects in images(Eg:Animals, Plants).

The model does not generalize perfectly on all types of data.



Figure 2: Instance Segmentation (False Prediction)

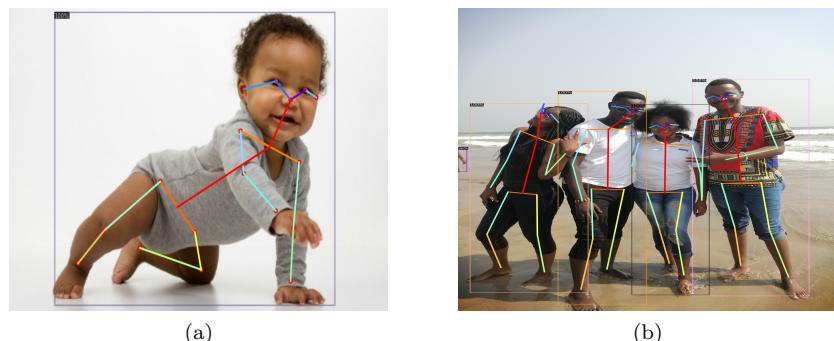


Figure 3: Human Pose Estimation (True Prediction)

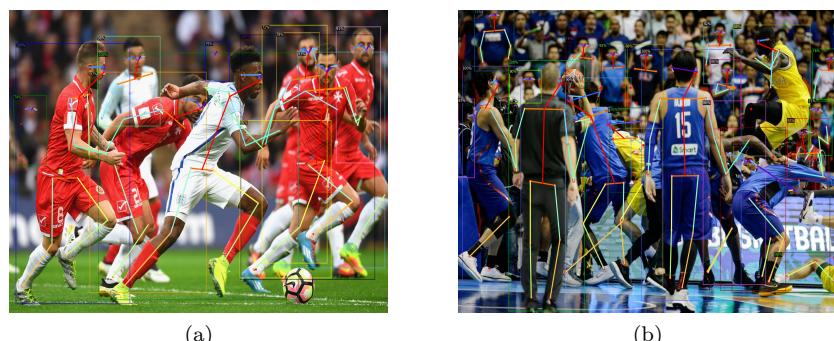


Figure 4: Human Pose Estimation (False Prediction)