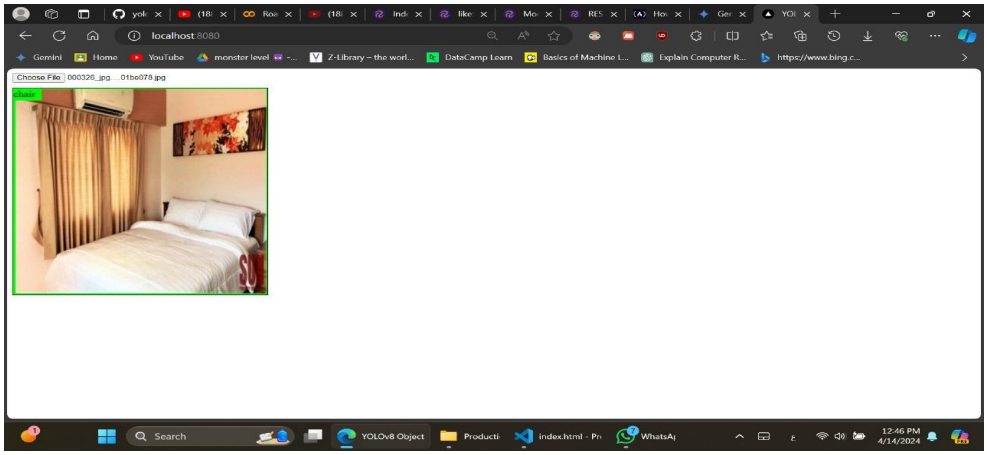
Task 2: Object Detection with Segmentation for Furniture

For this task I used Roboflow ready to use segmented dataset (od dataset) which contains 4656 images to detect bed , chair , lamp , rest , sofa , stool , table , window using YOLO on the custom dataset.

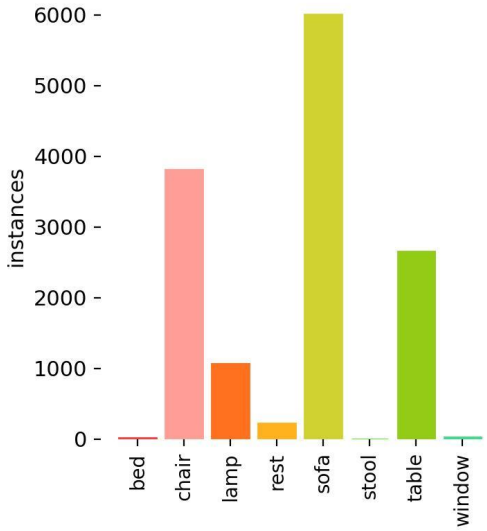
I tried several approaches so I can get the best result I can using the dataset.

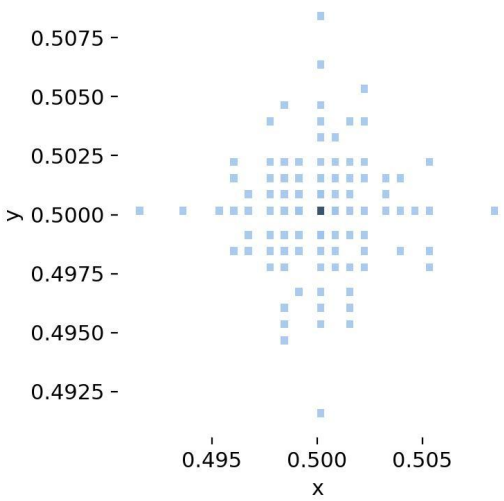
1. The first approach was using the api of the pretrained model of the dataset and it gave me good results for only 2 classes

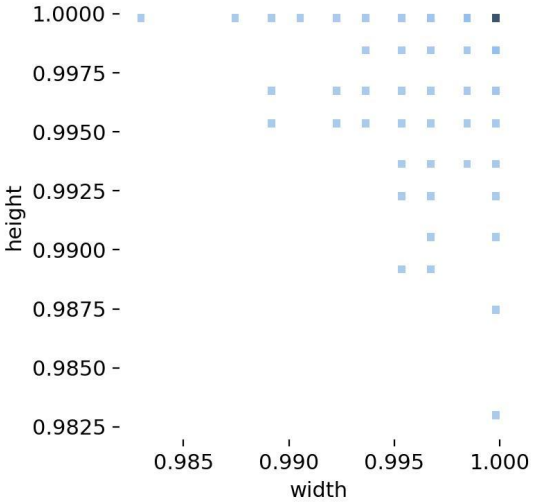


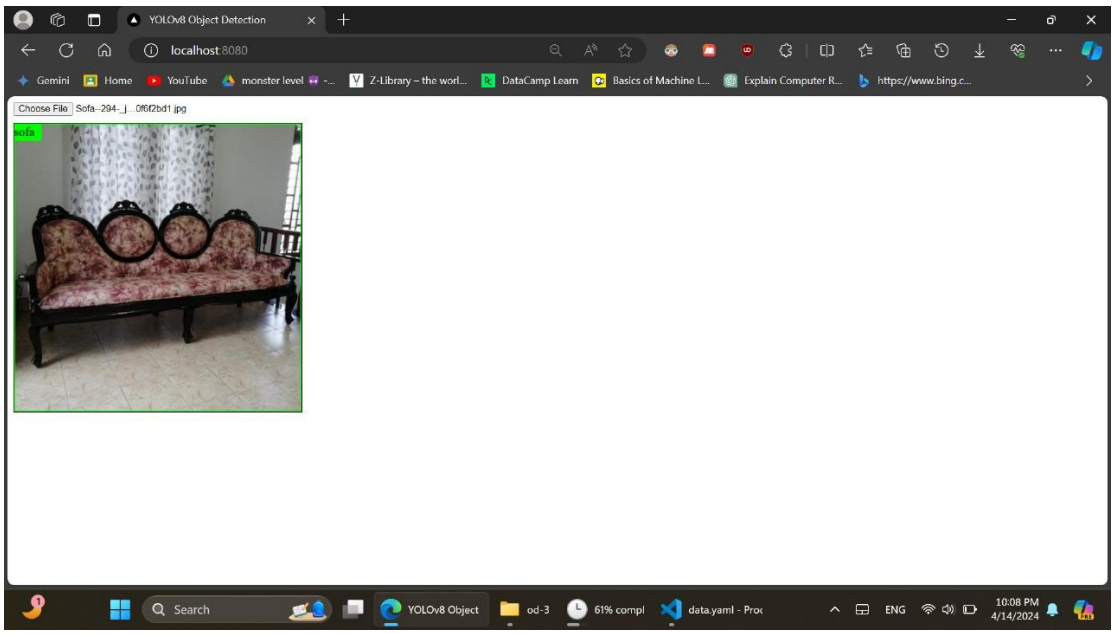
2. The second approach was to train the model for each image after splitting the dataset into 30 epochs so I can get the best weights for the production step using YOLO model , and it gave me better results than the pretrained model I used before.

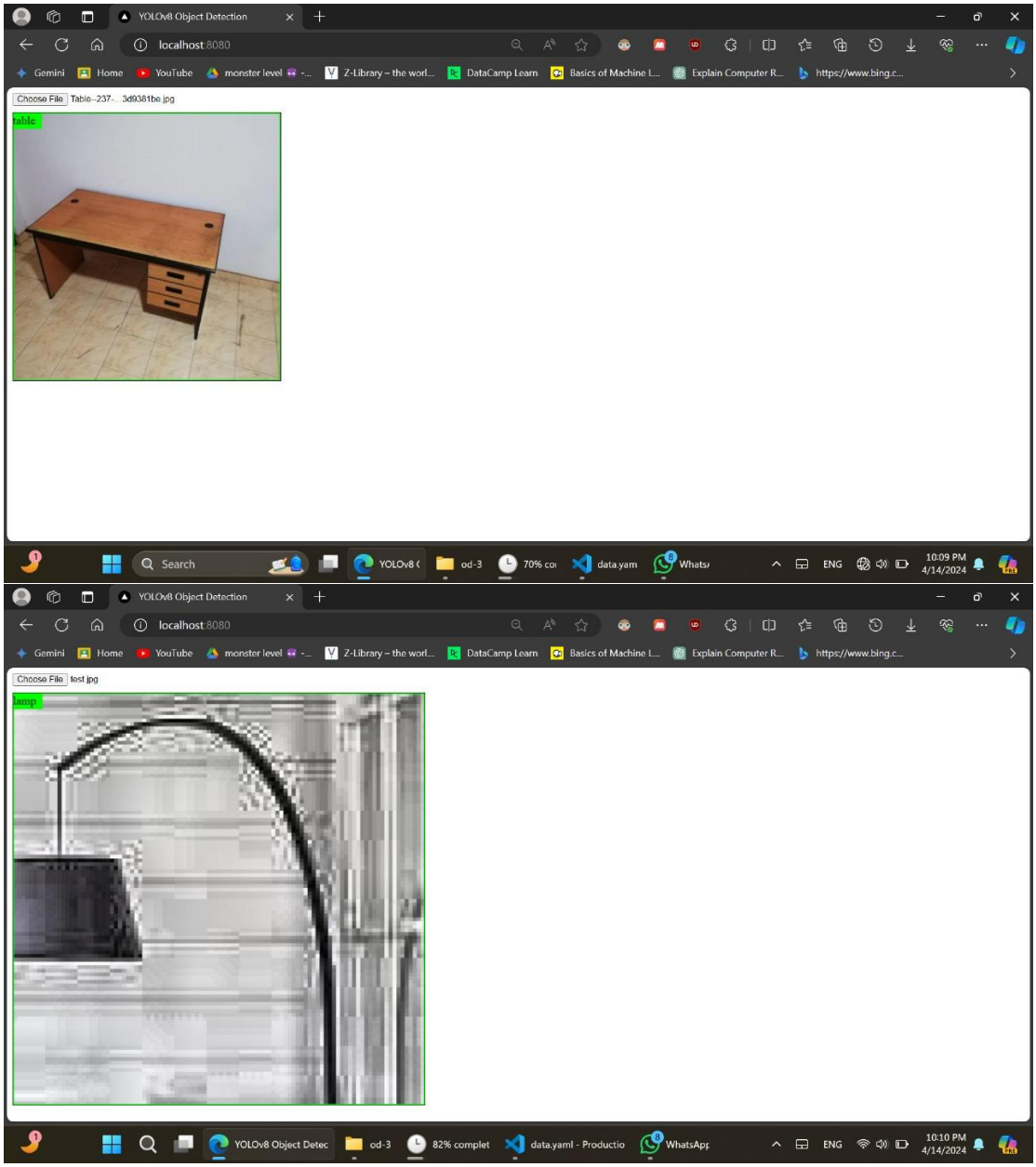
For production for this step I get the best.pt file which contains the weights I will use , using simple html and javascript code I managed to make a simple web application where you can upload an image and get the classification and segmentation of it .


6000
5000
4000
3000
2000
1000
0
instances
bed
chair
lamp
rest
sofa
stool
table
window


0.5075
0.5050
0.5025
0.5000
0.4975
0.4950
0.4925
y
0.495
0.500
0.505
x


1.0000
0.9975
0.9950
0.9925
0.9900
0.9875
0.9850
0.9825
height
0.985
0.990
0.995
1.000
width


YOLOv8 Object Detection
localhost:8080
Gemini
Home
YouTube
monster level
Z-Library – the worl...
DataCamp Learn
Basics of Machine L...
Explain Computer R...
https://www.bing.c...
Choose File
Sofa--294-_j...0f6f2bd1.jpg
sofa
Search
YOLOv8 Object
od-3
61% compl
data.yaml - Proc
ENG
10:08 PM
4/14/2024



As you can see form the chart the dataset tured out not containing images for beds, window or stool images so the model couldn't predict them , but it gave correct classification for the other classes we used to train in the model before.

Resources :

1. Custom dataset used :
od Dataset > Overview (roboflow.com)

2.
YOLOv8 for Object Detection Explained [Practical Example] | by Encord | Encord | Medium

3.
How to Detect Objects in Images Using the YOLOv8 Neural Network (freecodecamp.org)

4.Dataset used for testing : Furniture Detection Dataset > Overview (roboflow.com)