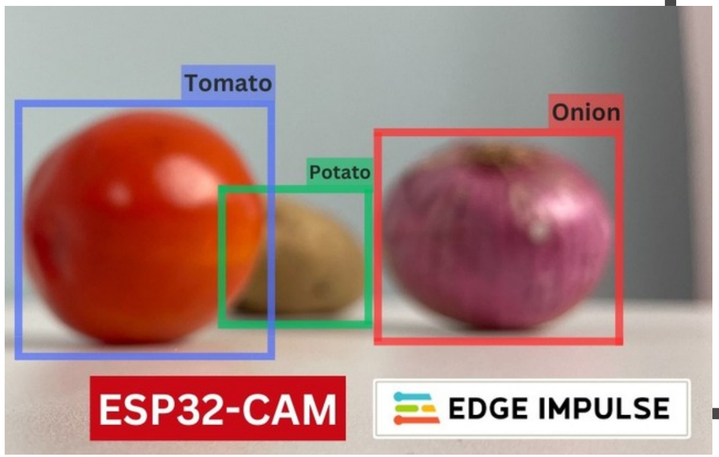
OBJECT DETECTION

REAL WORLD APPLICATIONS

- **Smart Homes** – Control appliances by detecting objects like remotes, bottles, or specific gestures.
- **Retail & Inventory** – Detect and count products on shelves for stock management.
- **Security & Surveillance** – Identify people, vehicles, or suspicious objects in restricted areas.
- **Environmental Monitoring** – Recognize plants, animals, or waste materials for ecological studies.
- **Traffic Management** – Detect vehicles and pedestrians for smart city solutions.
- **Education & Learning** – Interactive tools where students learn through real-time object recognition.

WORKING OF THE PROJECT

- The phone camera captures images or live video.
- Images are uploaded to Edge Impulse for data collection.
- Objects are labeled with bounding boxes to prepare training data.
  A YOLO model is trained to recognize and locate these objects.
- The trained model is deployed back to the phone or device.
- In real time, the model detects objects and marks them with bounding boxes on the camera feed.

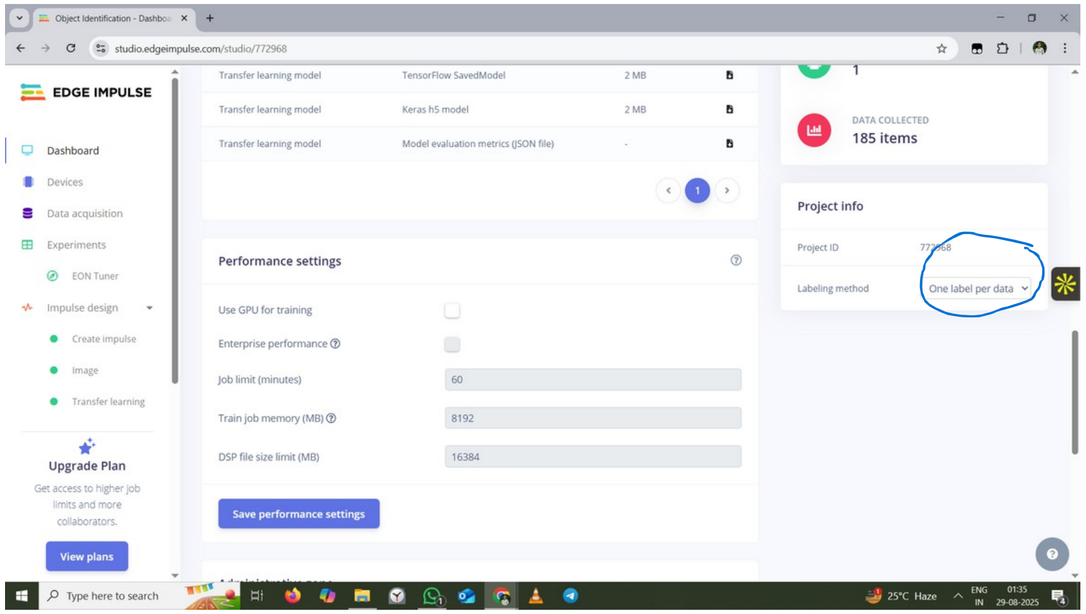


STEPS

STEP 1

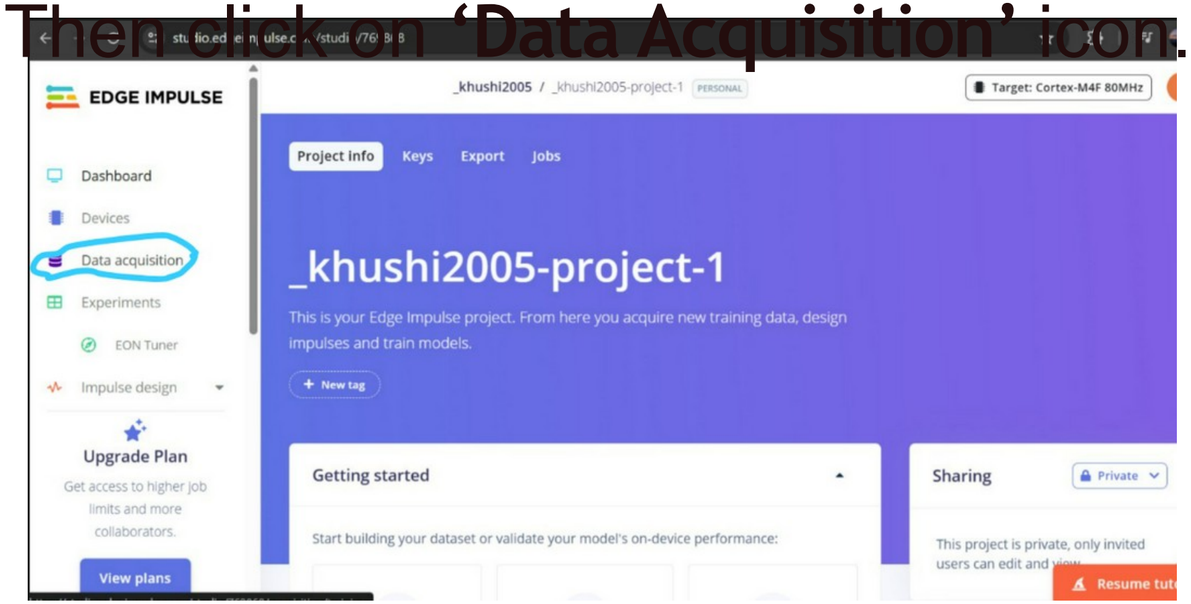
Open the **Edge Impulse** platform

In the dashboard scroll down and in labelling method select one label per data



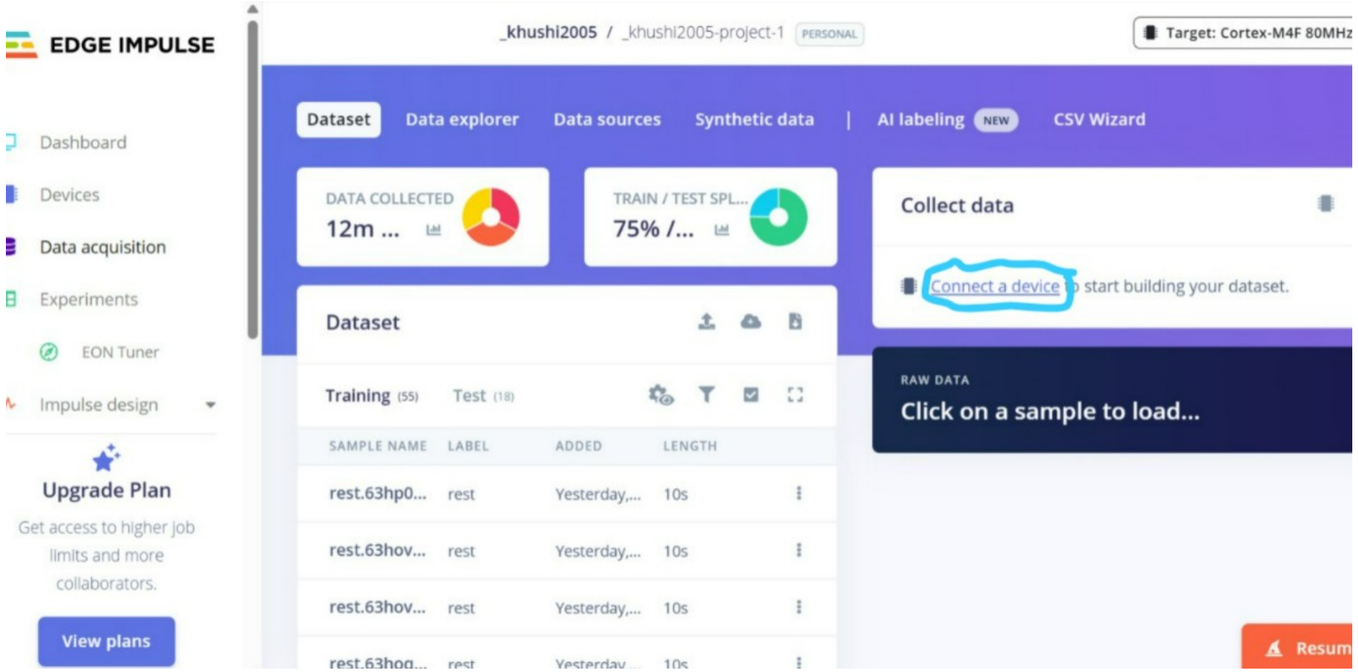
STEP 2

Then click on ‘Data Acquisition’ icon.



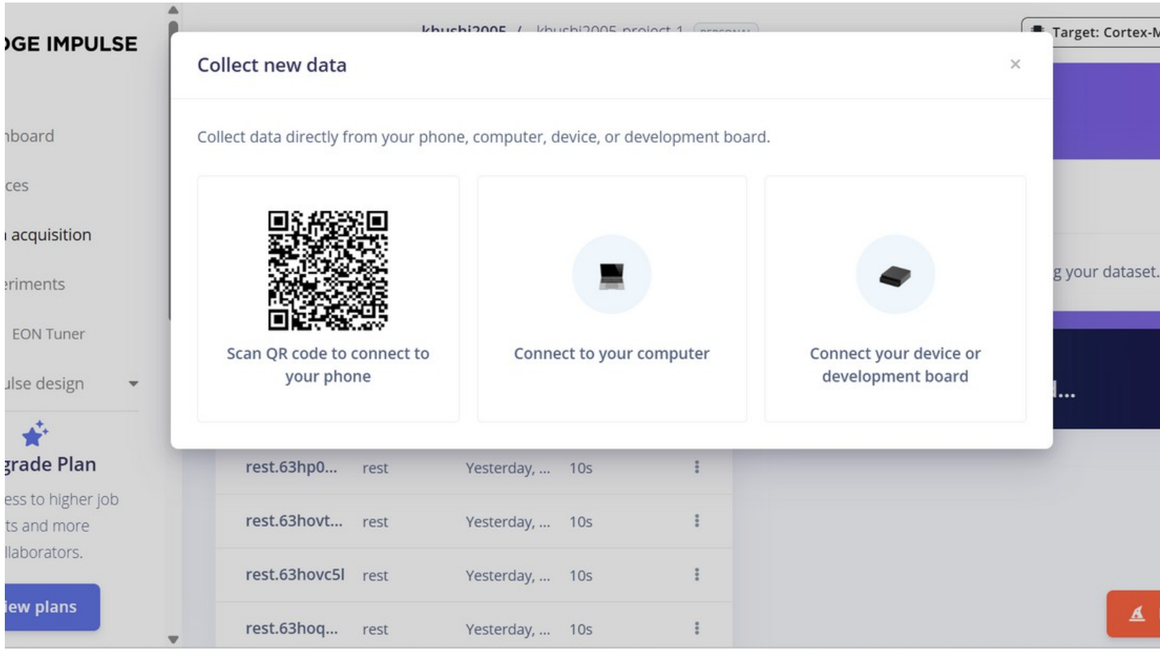
STEP 3

To click images using phone camera connect phone using **‘Connect a Device’.**



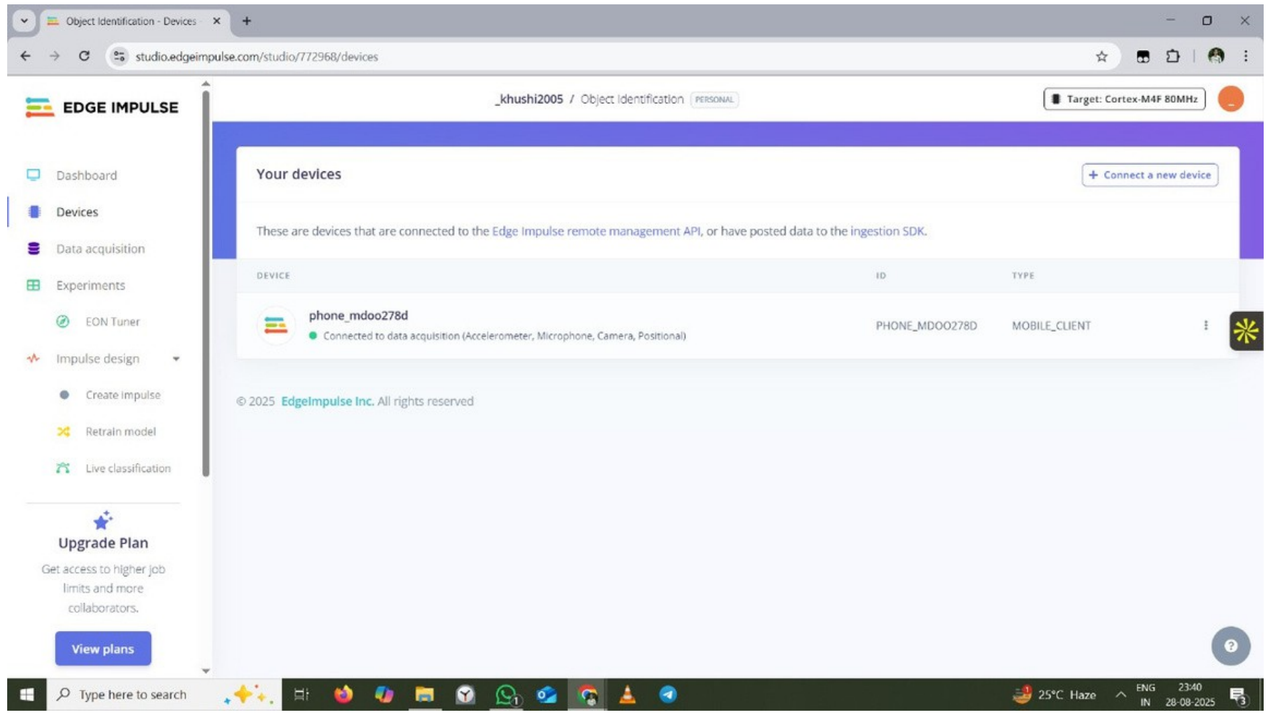
STEP 4

Scan **QR Code** using your phone to connect phone with Edge Impulse.



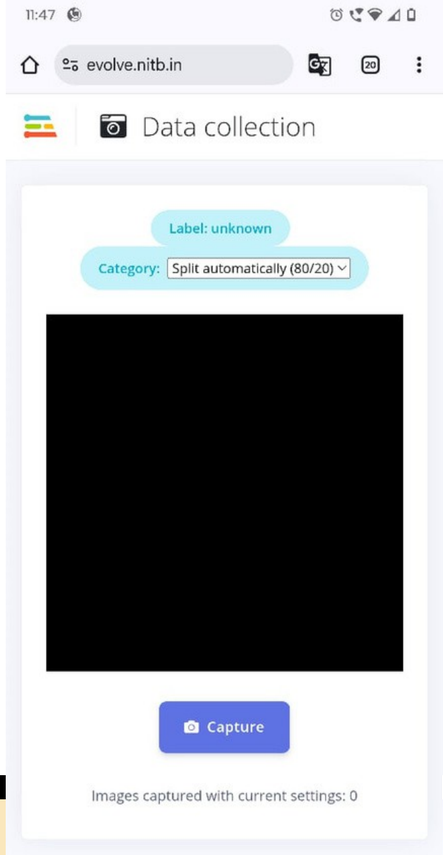
STEP 5

After connecting your device, it will be displayed in your tab.



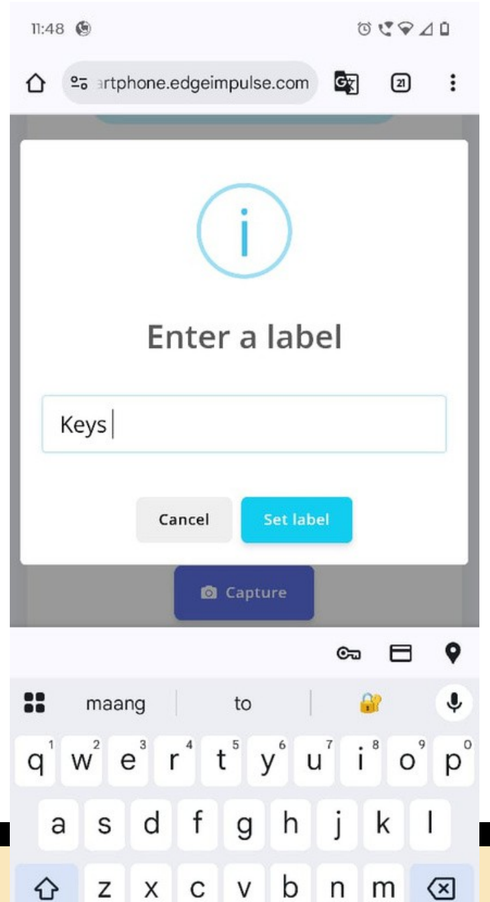
STEP 6

Capture and upload images using your phone camera.(Upload minimum 50 images of one object from different angles)



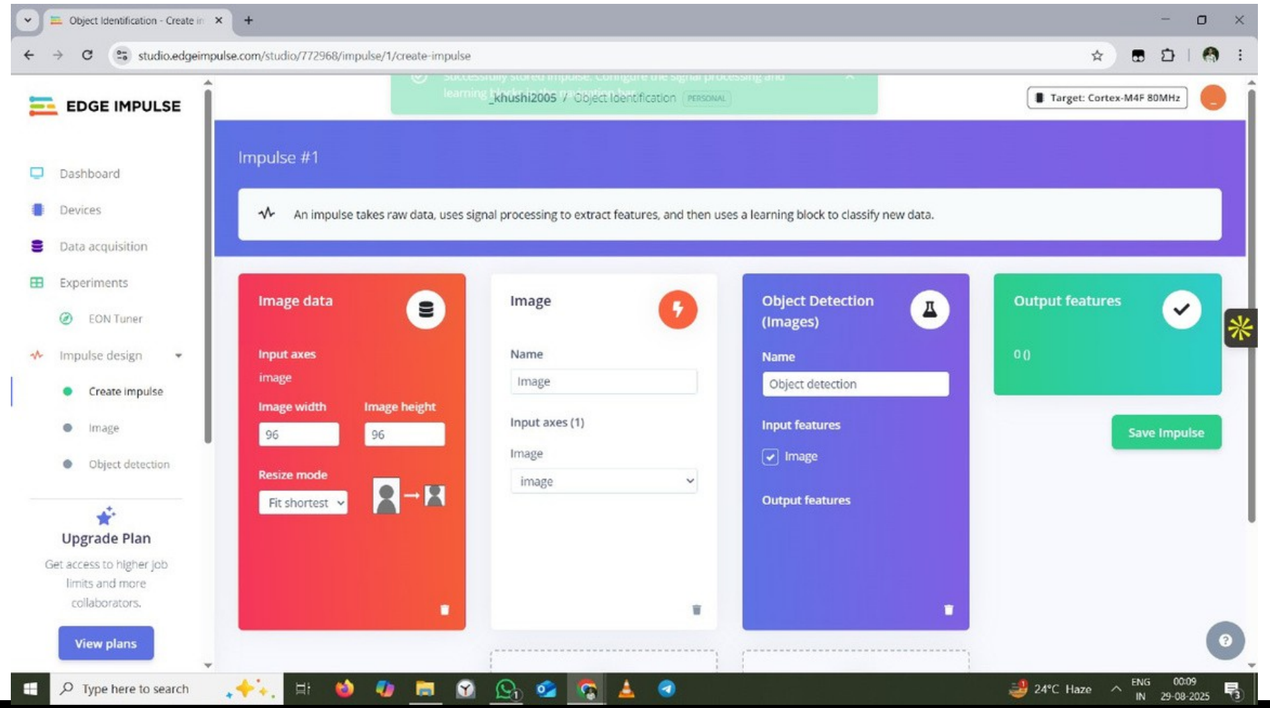
STEP 7

After the images are uploaded, adjust the frame using box and label the object.



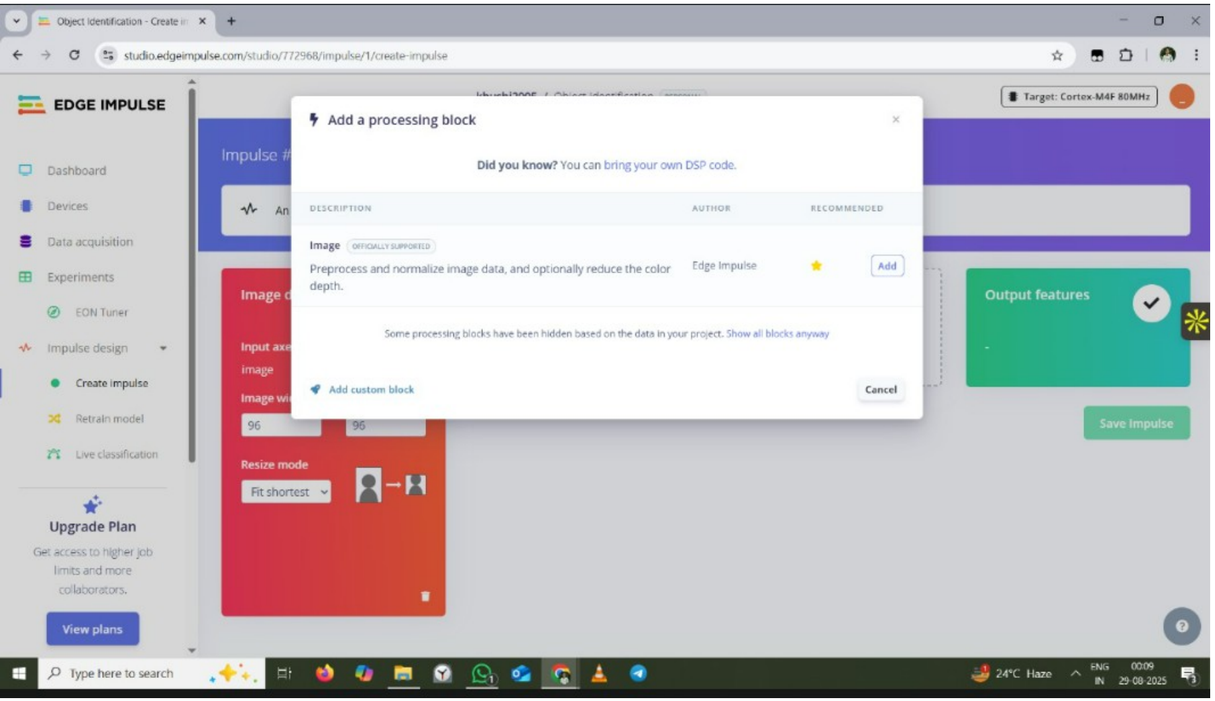
STEP 8

After labelling, click on **‘Create Impulse’** and adjust image height and image width to 96.



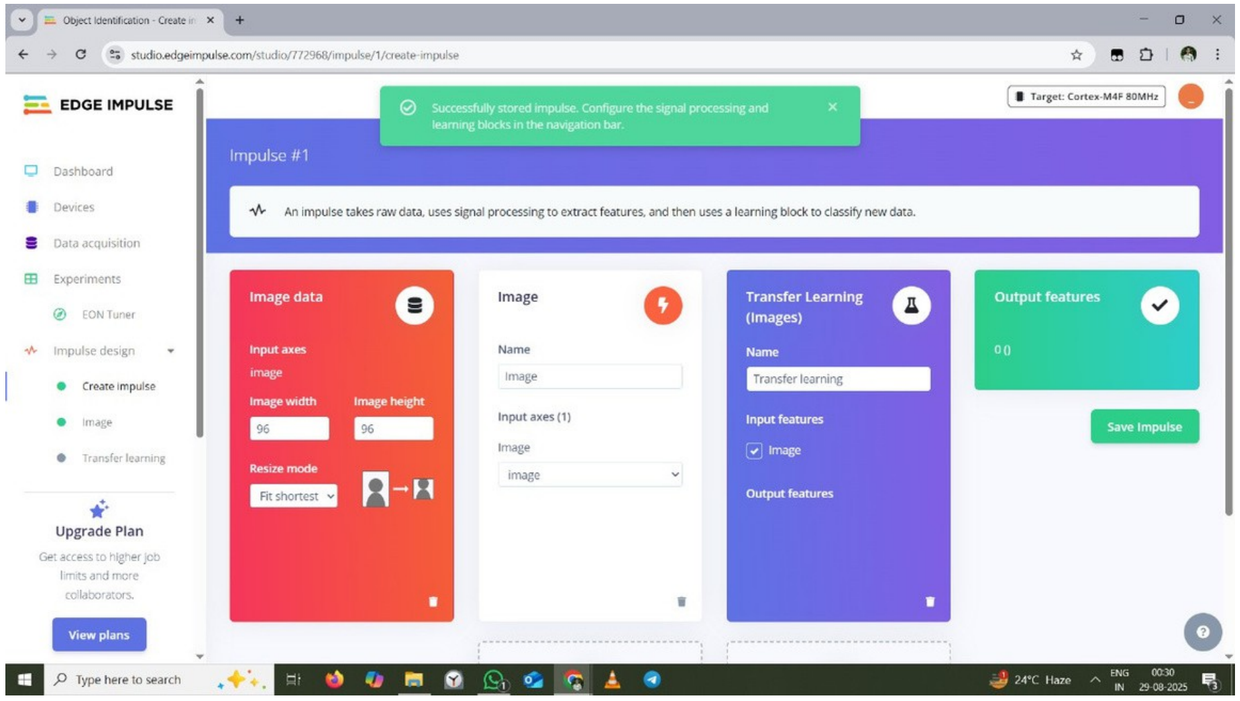
STEP 9

Add a **Processing Block**.



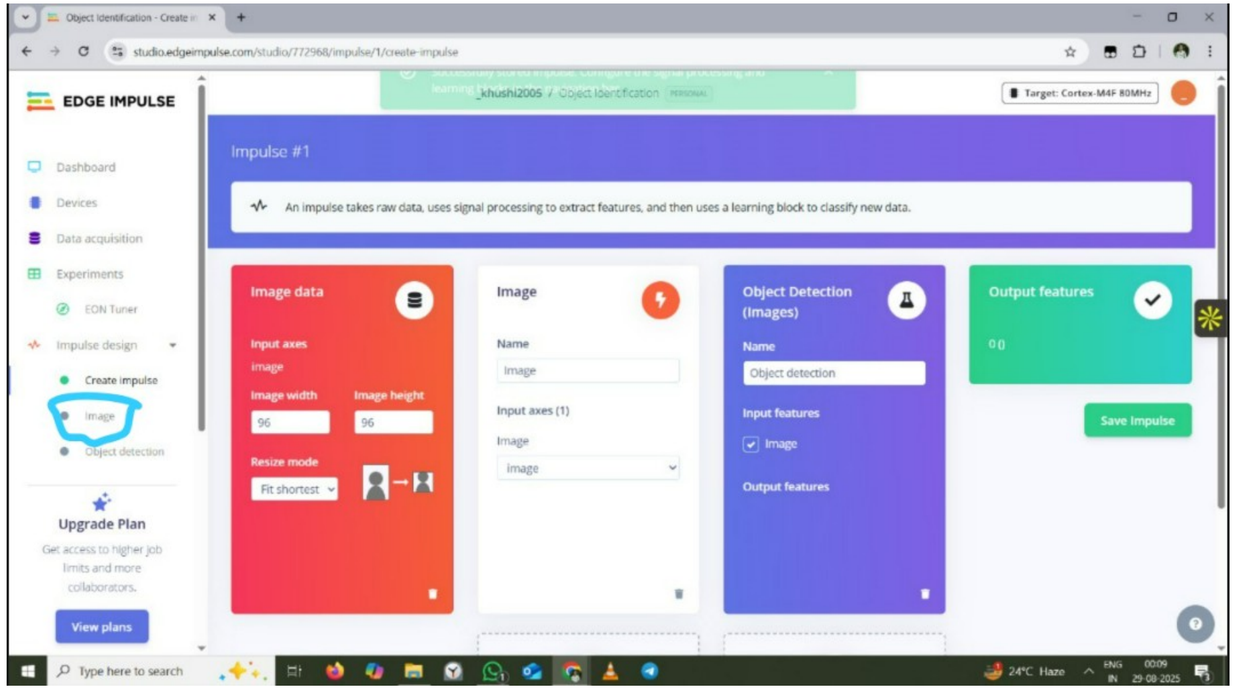
STEP 10

Add a **Learning Block** named as Transfer Learning.It will be shown in the all blocks option.



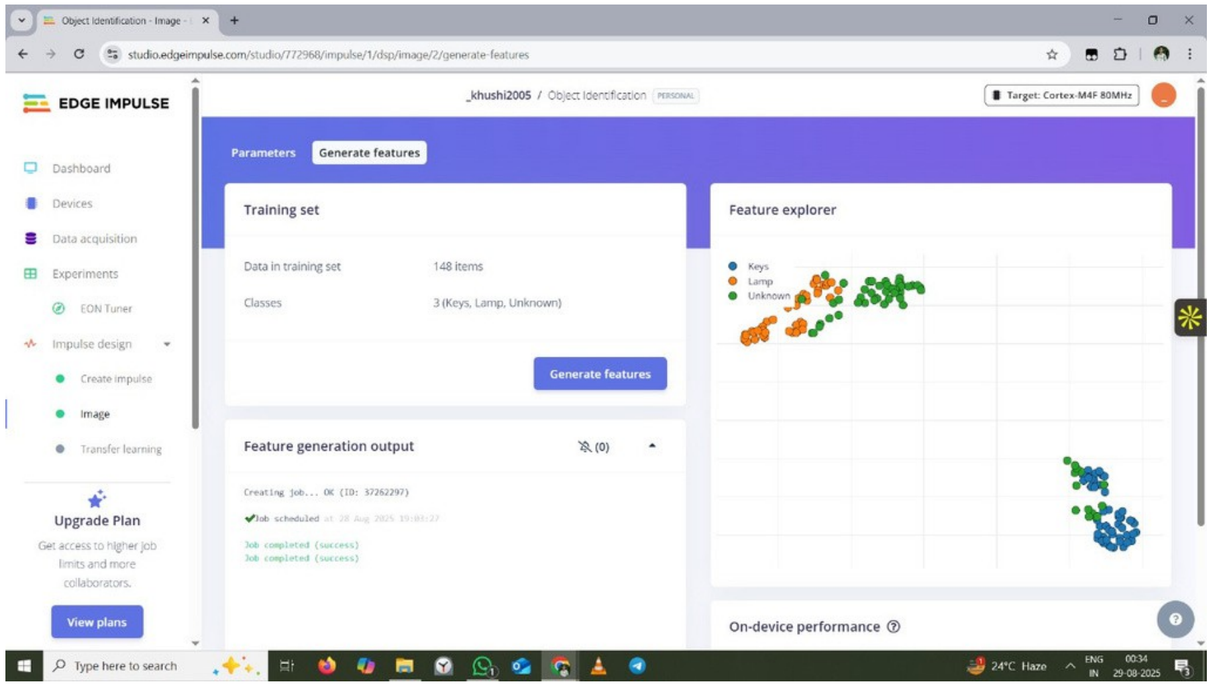
STEP 11

Click **Images** in the menu on the left to configure the processing block and change RGB to Gray Scale and save it.



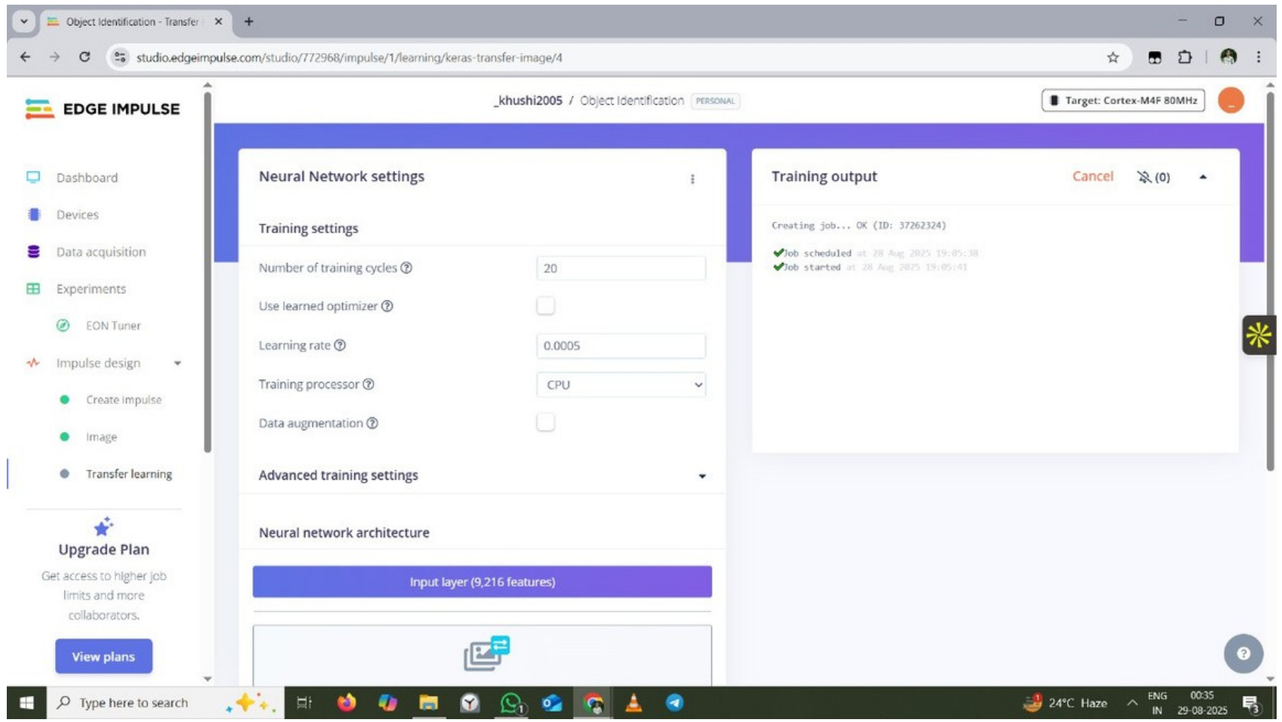
STEP 12

You will be send to the **'Feature generation'** screen.Click on **'Generate Features'**.



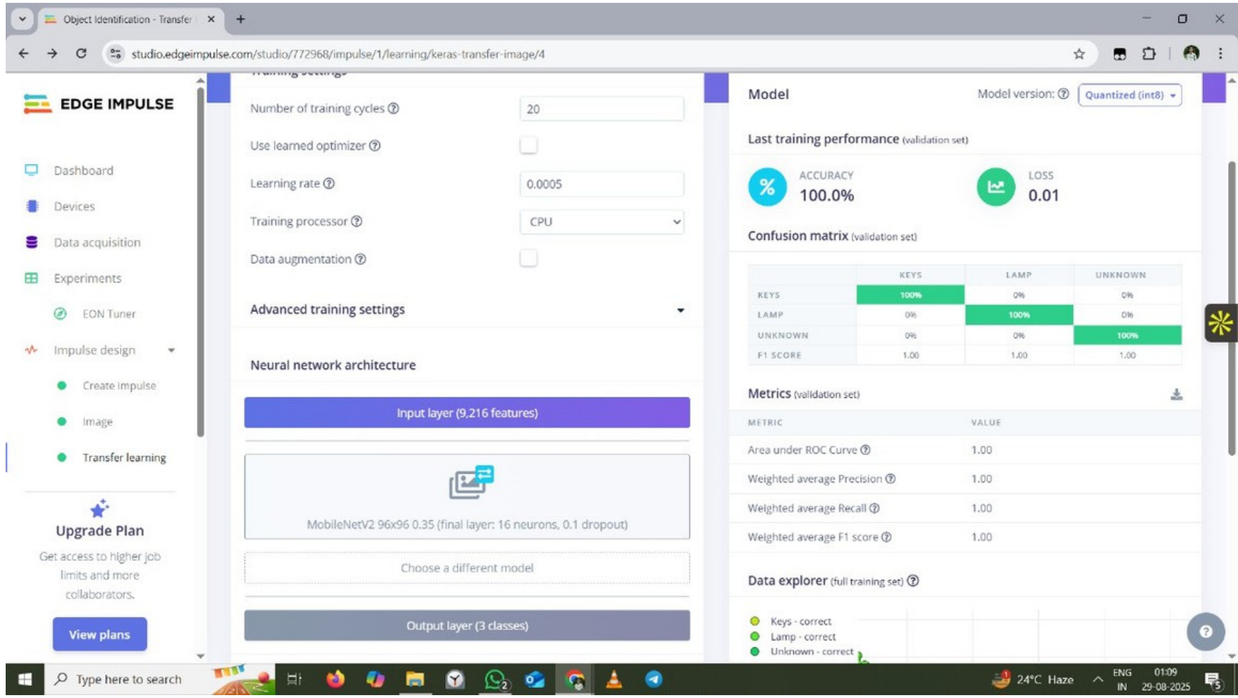
STEP 13

Go to the **‘transfer learning option’** and select the MobileNetV12 in choose another model option and set training cycles as 20.



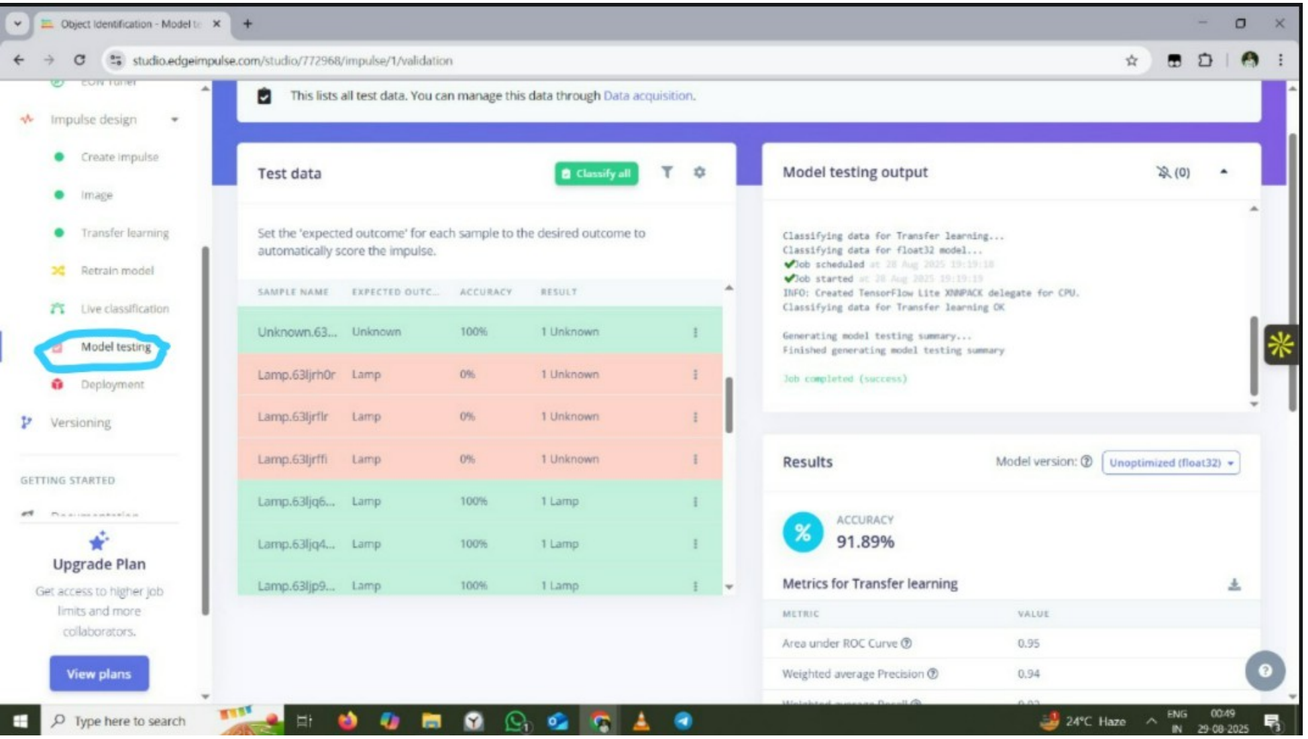
STEP 14

You will be presented with data training outputs which can be analysed.



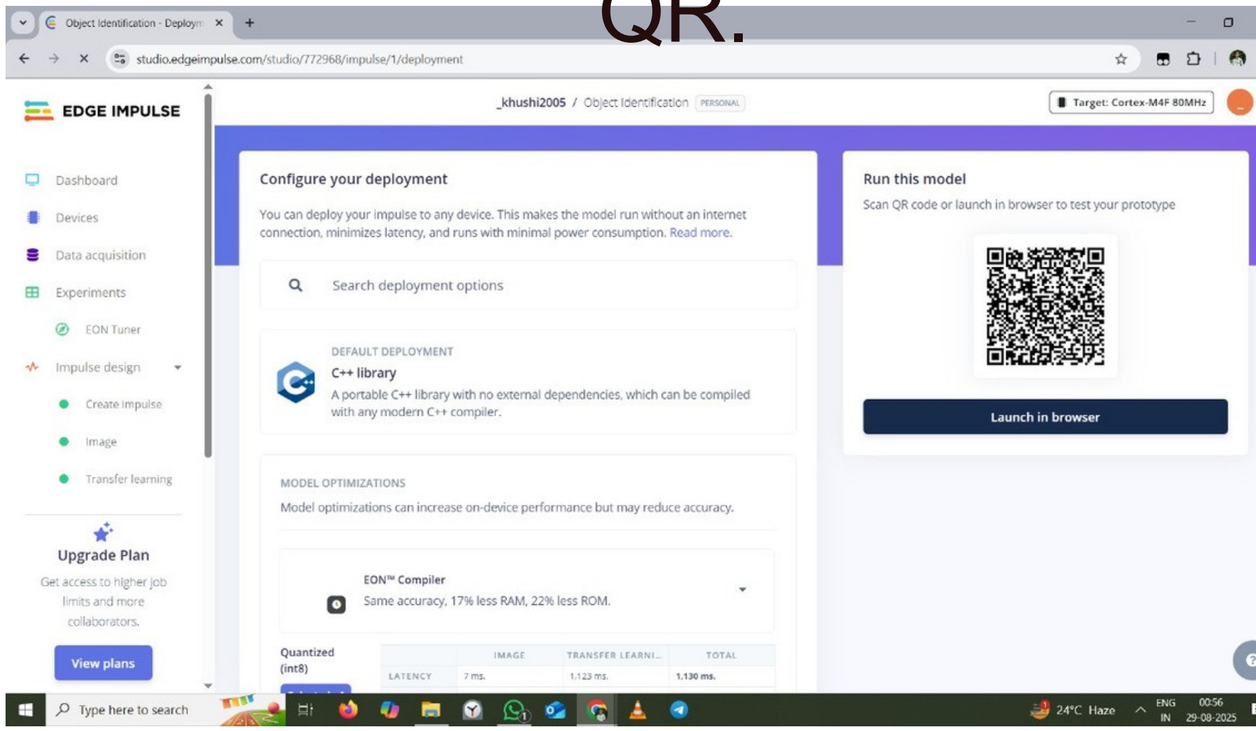
STEP 15

Go to the’**Model Testing** and click on the classify all button to test your model which will give your model test results.

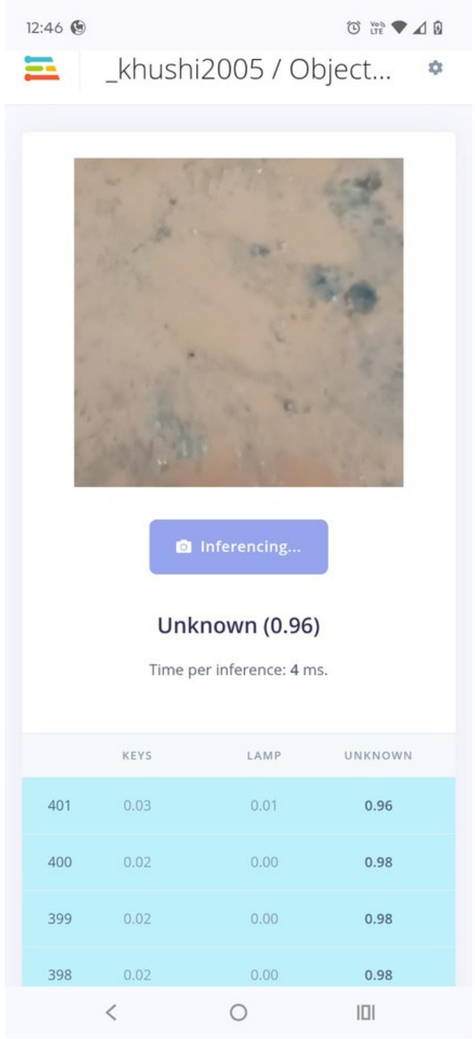


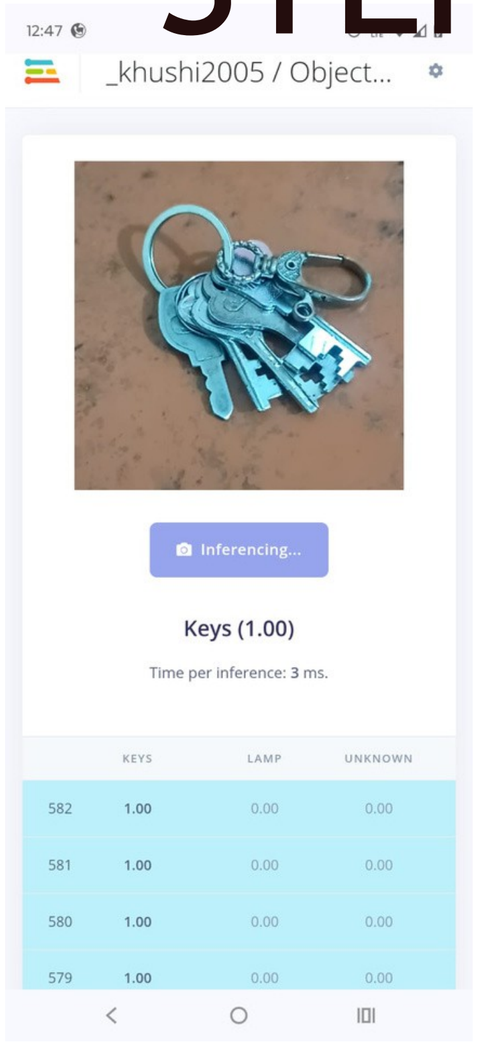
STEP 16

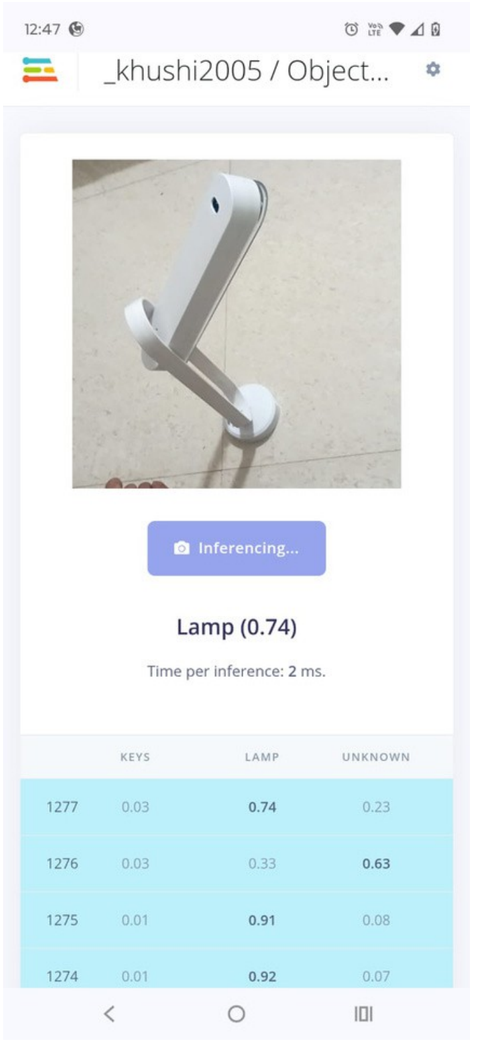
Deploy the model by scanning QR.



STEP 17







Now scan with your phone and see your model detecting the objects. .

THANK YOU!!