

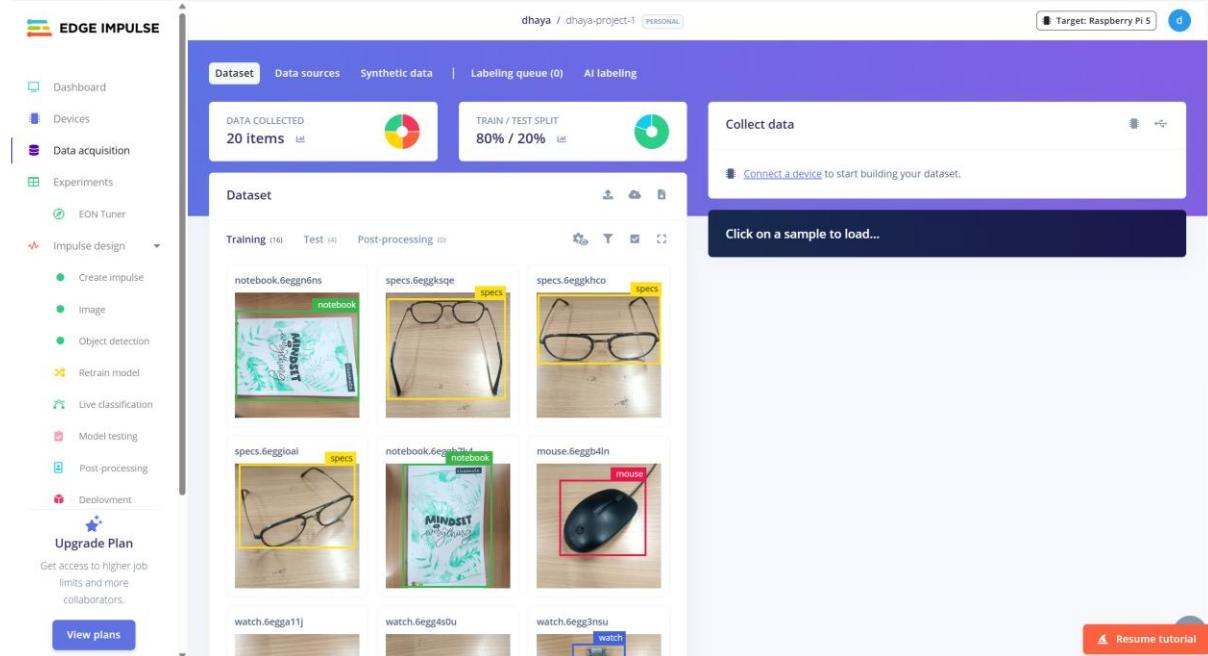
EDGE LAB 5 (10/01/26)

DHAYANIDHI R S

25MML0025

DATA ACQUISITION:

I collected 20 images with 5 images in each of the 4 different classes. This is then split into 80-20 ratio with 16 images in training data and 4 images in the testing data.



CREATING IMPULSE:

Choose the Image for the Processing block and Object detection for the Learning block since I used the bounding boxes method in the data acquisition process to label the images.

The screenshot shows the Edge Impulse web interface. On the left, a sidebar lists various project categories: Dashboard, Devices, Data acquisition, Experiments (EON Tuner), Impulse design (Create impulse, Image, Object detection, Retrain model, Live classification, Model testing, Post-processing), Deployment (Upgrade Plan), and a button for View plans.

The main area is titled "Impulse #4" and contains the following components:

- Image data**: Set to "image". Input axes: width 96, height 96. Resize mode: Fit shortest axis.
- Image**: Set to "Image". Input axes (1): Image.
- Object Detection (Images)**: Name: Object detection. Input features: Image checked. Output features: 4 (mouse, notebook, specs, watch).
- Output features**: 4 (mouse, notebook, specs, watch).

At the bottom right is a green "Save Impulse" button.

SAVING THE PARAMETERS:

Choose Grayscale and then saved the parameters.

The screenshot shows the Edge Impulse web interface with the sidebar visible. The main area displays the "Parameters" tab for the previously created impulse.

Raw data: Shows an image of a notebook.

Raw features: Shows raw feature data: 0x7b5a47, 0x7b5a47, 0x7a5946, 0x7c5b48, 0x7a5946, 0x795945, 0x795844, 0x785843, 0x785842, 0x785841, 0x785840, 0x785839, 0x785838, 0x785837, 0x785836, 0x785835, 0x785834, 0x785833, 0x785832, 0x785831, 0x785830, 0x785829, 0x785828, 0x785827, 0x785826, 0x785825, 0x785824, 0x785823, 0x785822, 0x785821, 0x785820, 0x785819, 0x785818, 0x785817, 0x785816, 0x785815, 0x785814, 0x785813, 0x785812, 0x785811, 0x785810, 0x785809, 0x785808, 0x785807, 0x785806, 0x785805, 0x785804, 0x785803, 0x785802, 0x785801, 0x785800.

Parameters: Set Color depth to "Grayscale".

DSP result: Shows an image of a notebook.

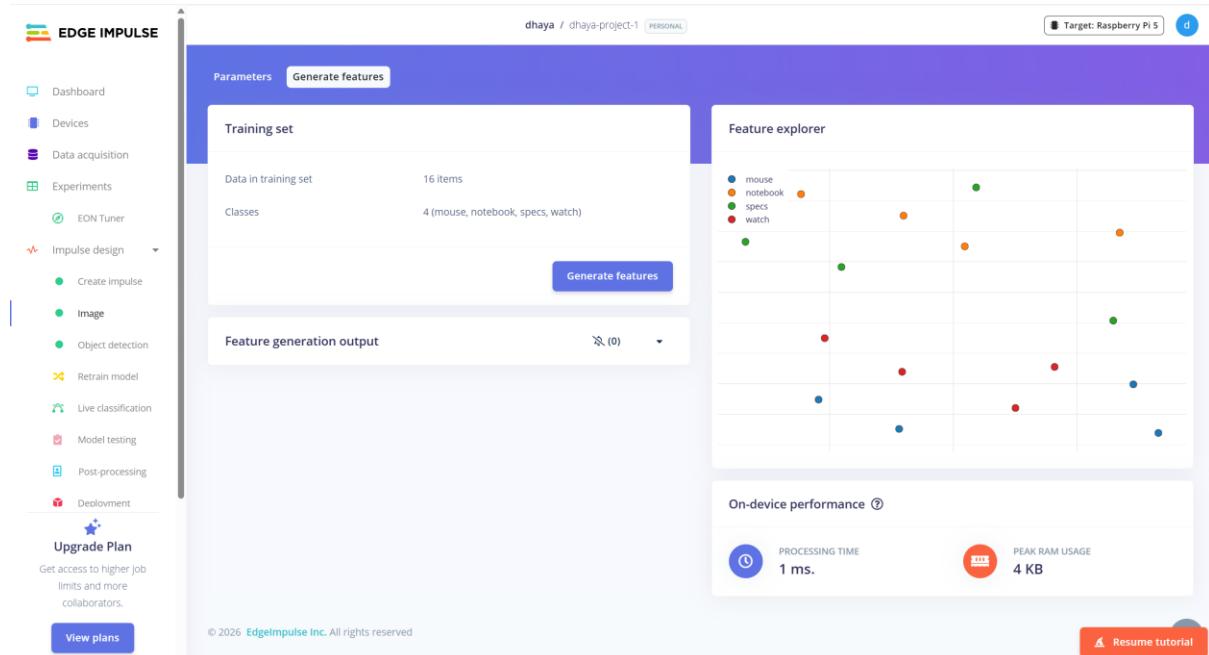
Processed features: Shows processed feature data: 0.3831, 0.3831, 0.3792, 0.3871, 0.3792, 0.3776, 0.3749, 0.3732, 0.3732, 0.3772, 0.3760, 0.3760.

On-device performance: Shows Processing time: 1 ms. and Peak RAM usage: 4 KB.

At the bottom right is a red "Save parameters" button.

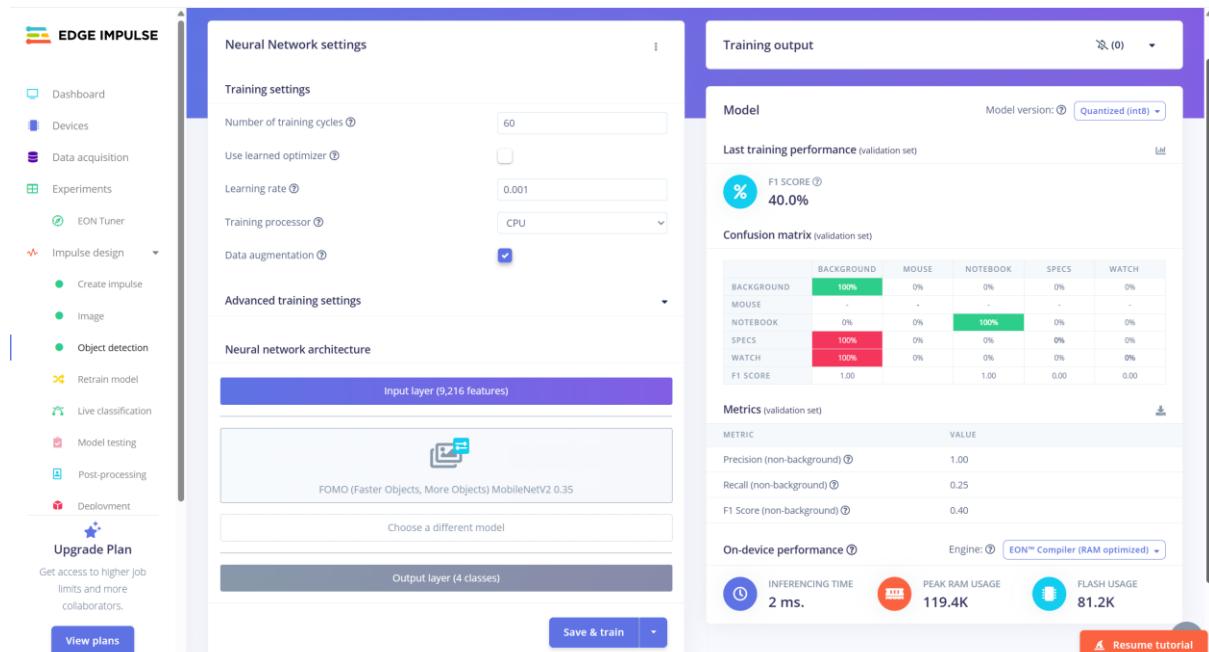
GENERATING FEATURES:

Now, generated the features



OBJECT DETECTION:

Choose the FOMO Object detection model since this works well for very small dataset and then trained for 60 epochs.



MODEL TESTING:

Testing of the model on the test set gave me an 50% Accuracy which may be later optimized by various preprocessing of the dataset.

