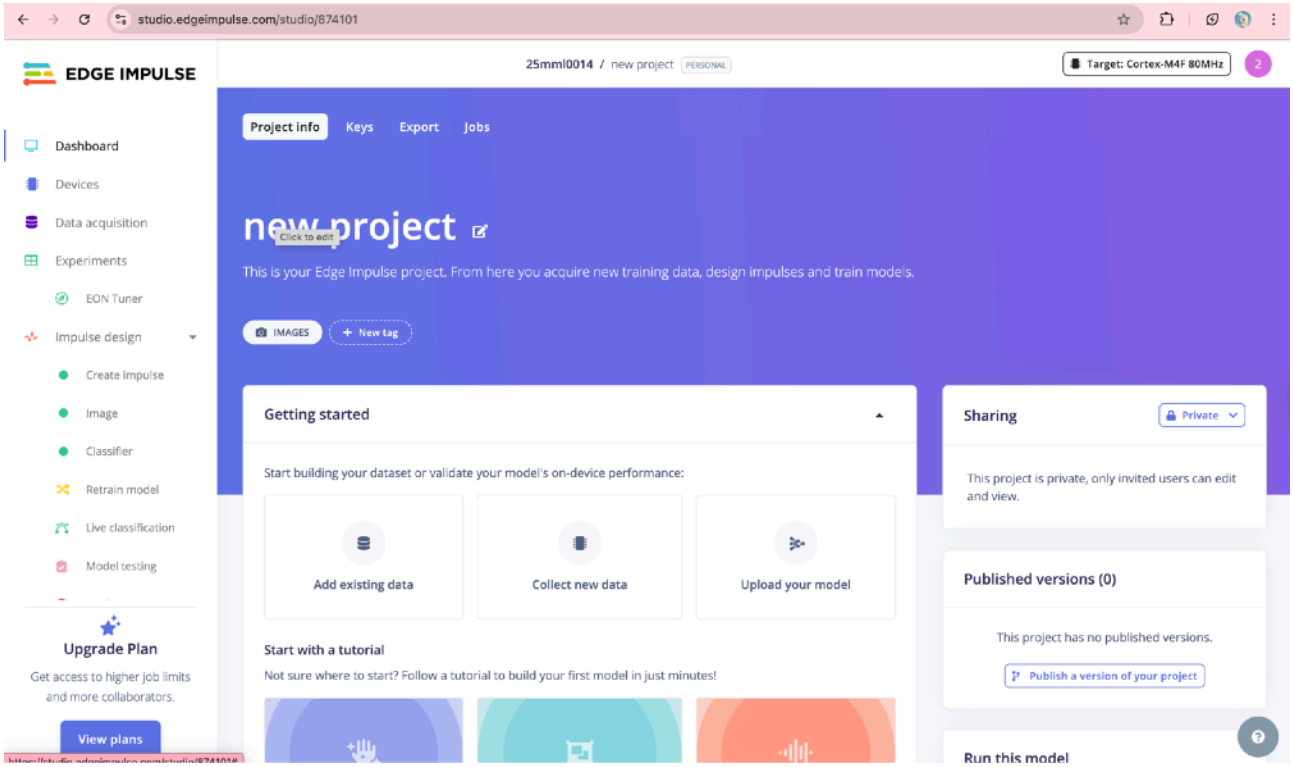
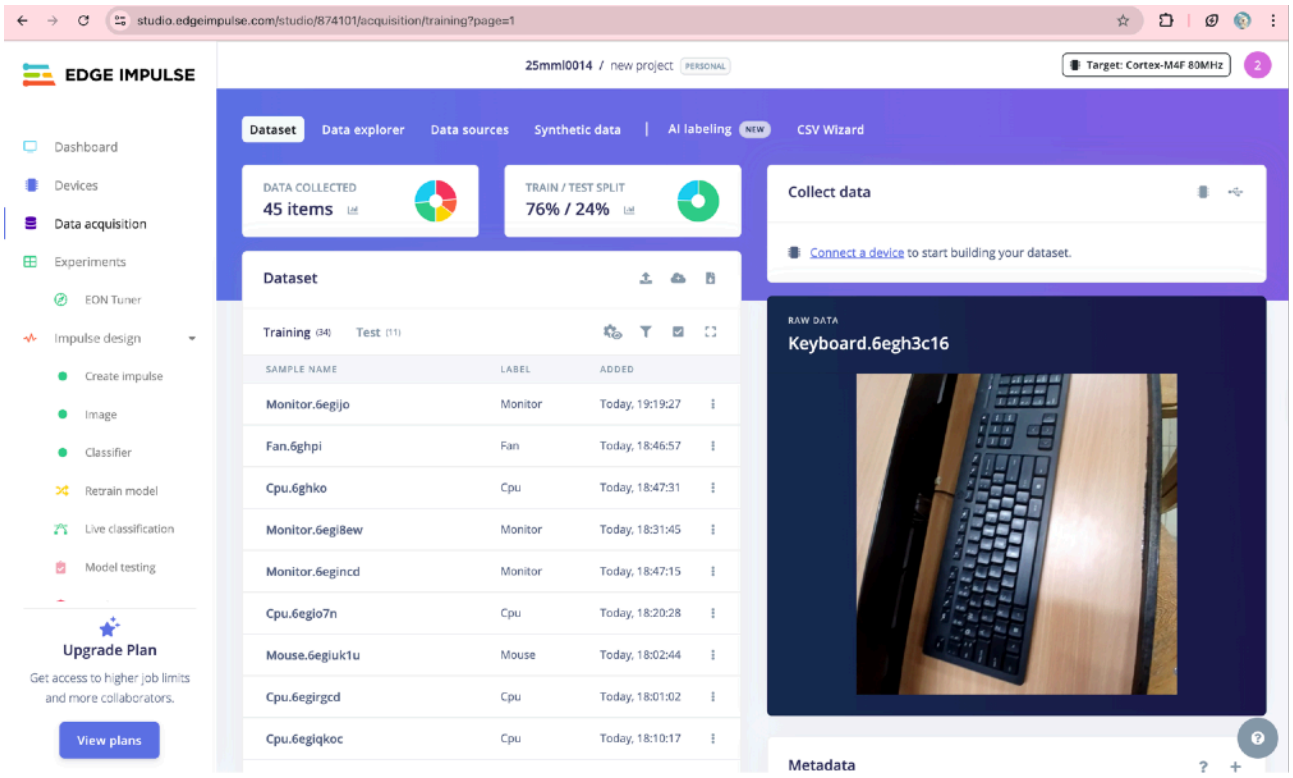
25MML0014
Anusree V

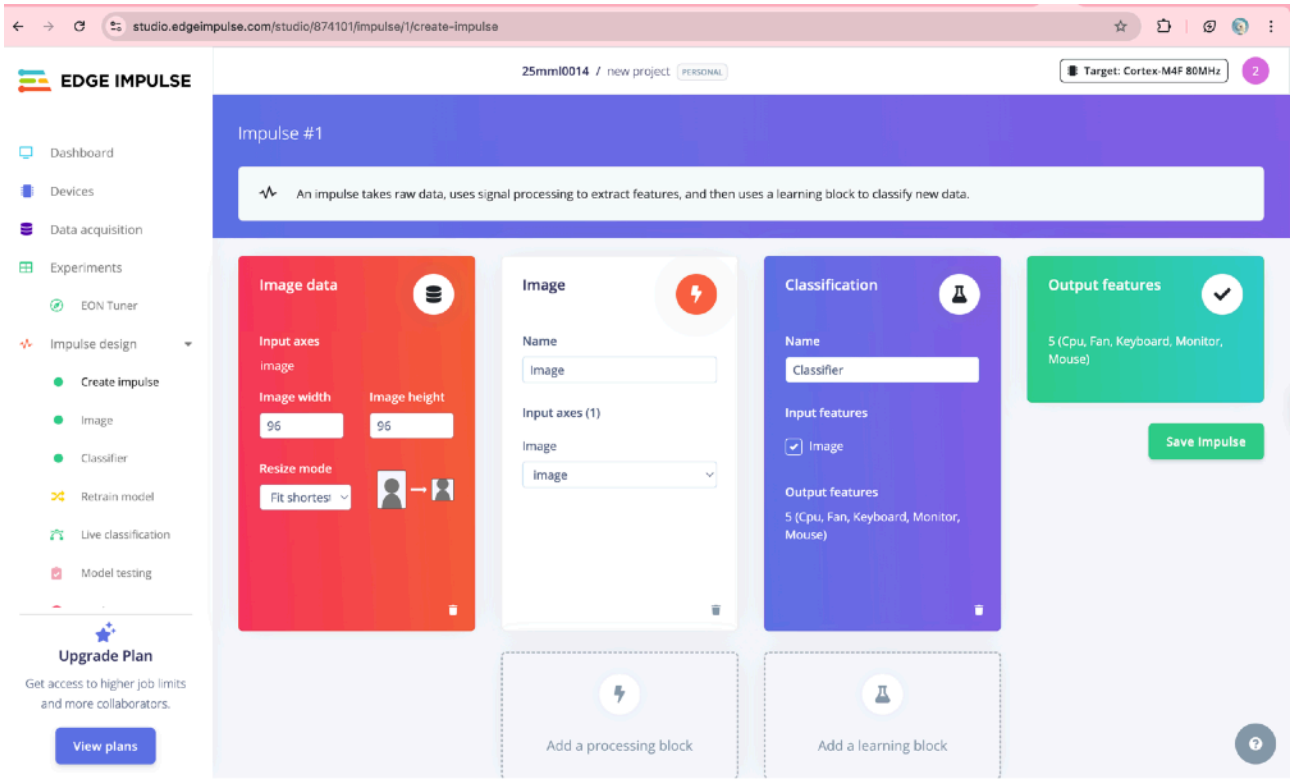
Lab 5

Create dataset of lab items like mouse, keyboard etc and classify the object

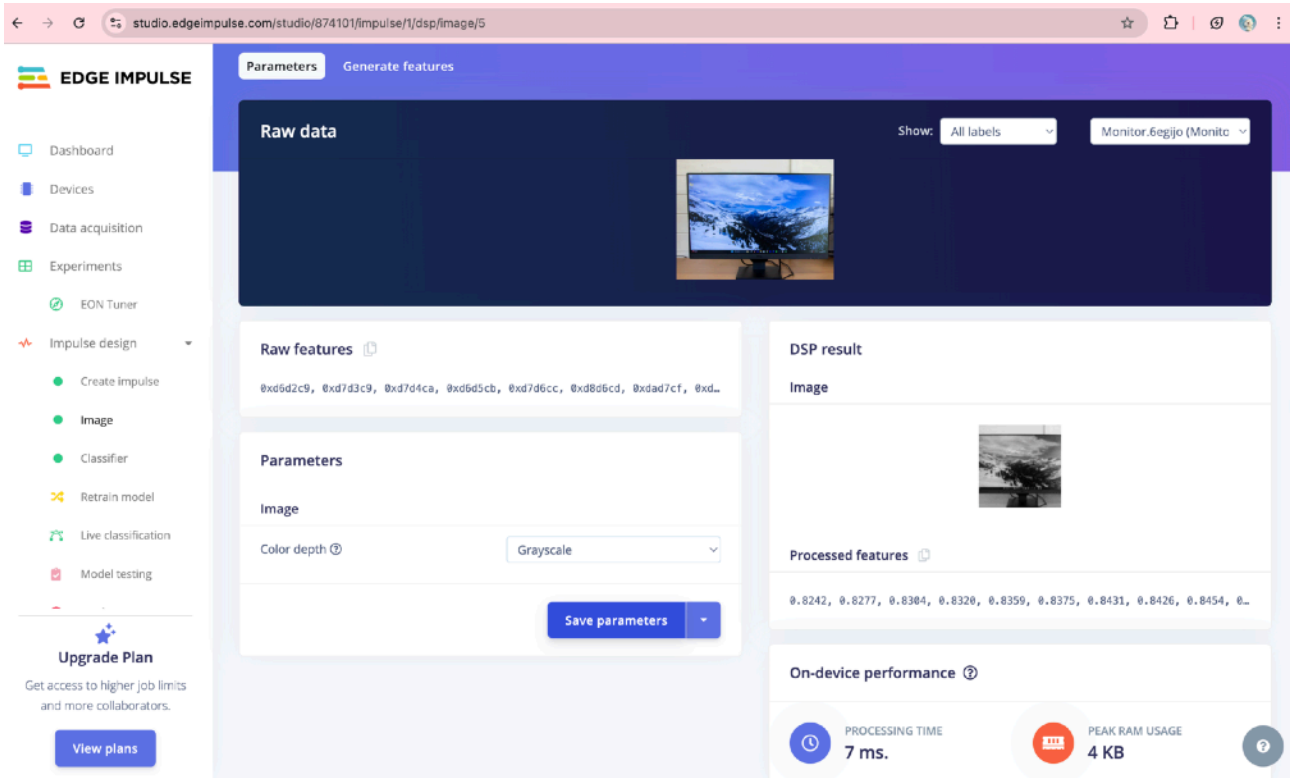




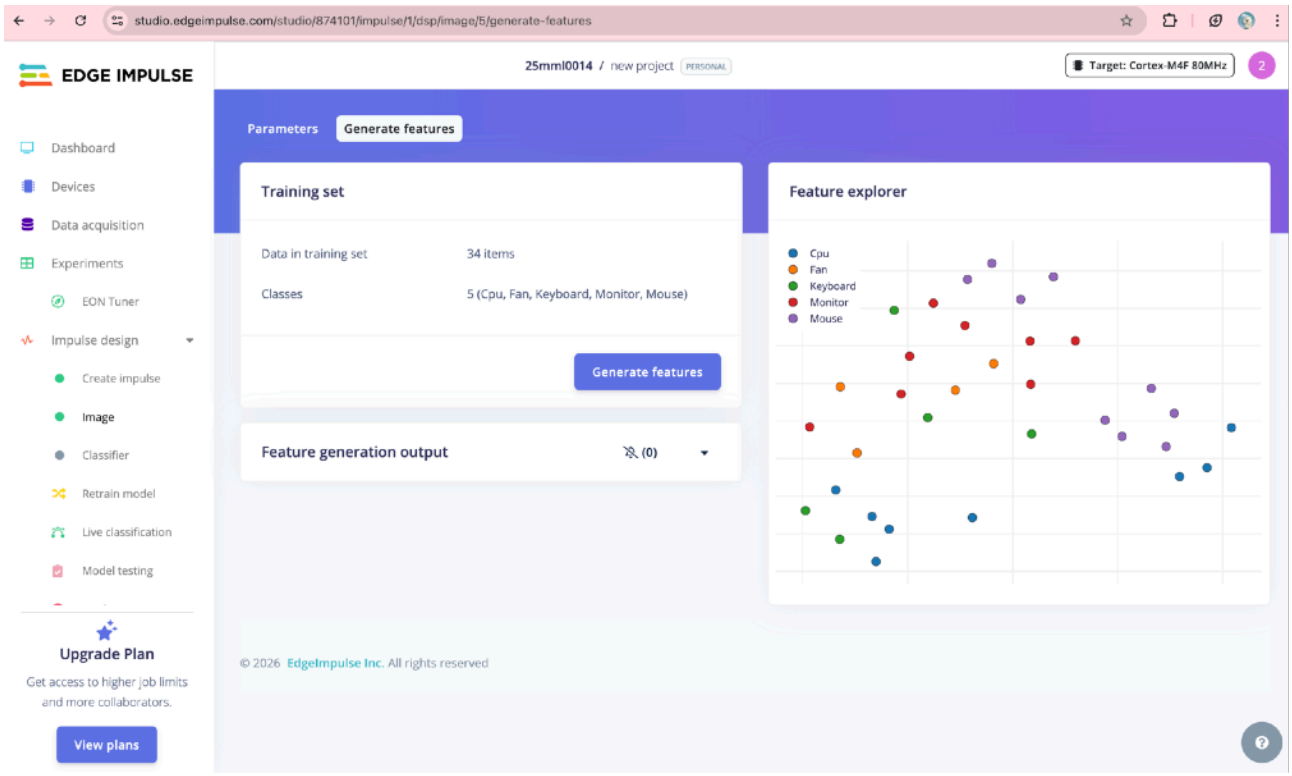
Create impulse



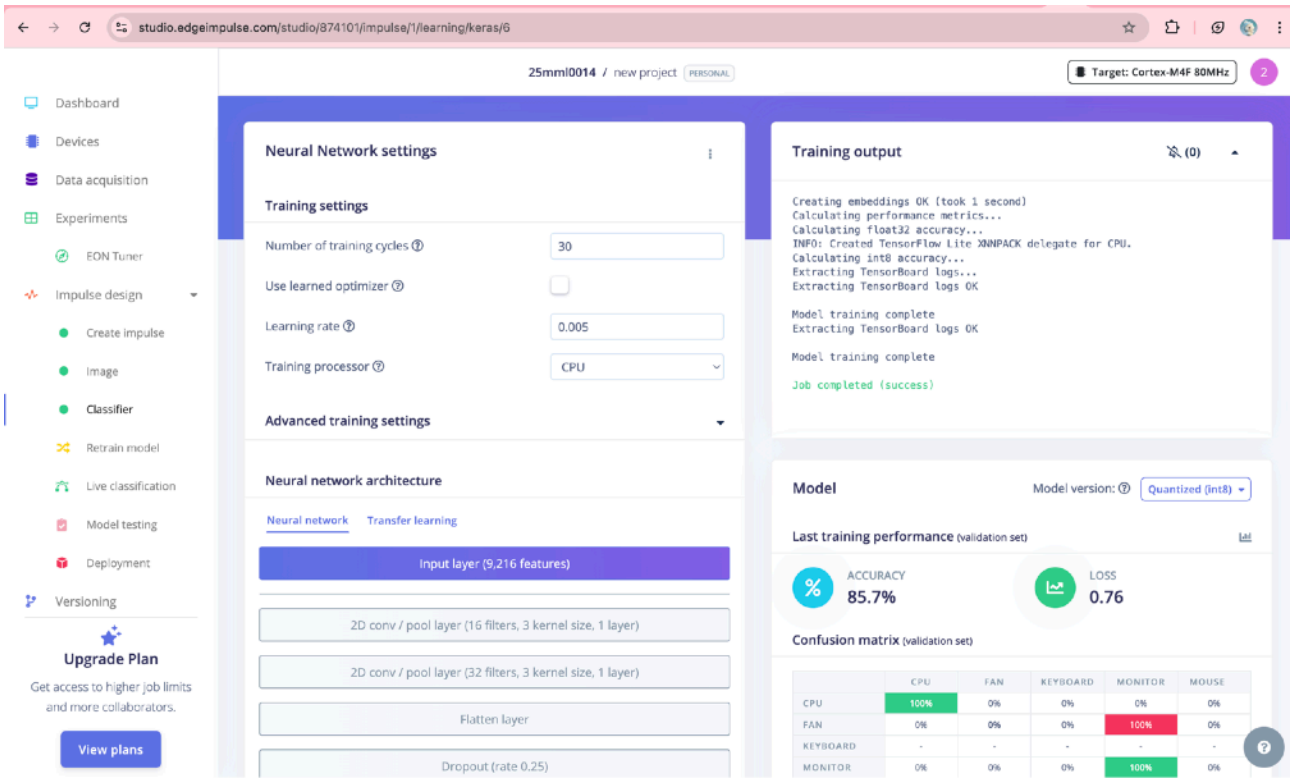
Image



Generate features



Classifer



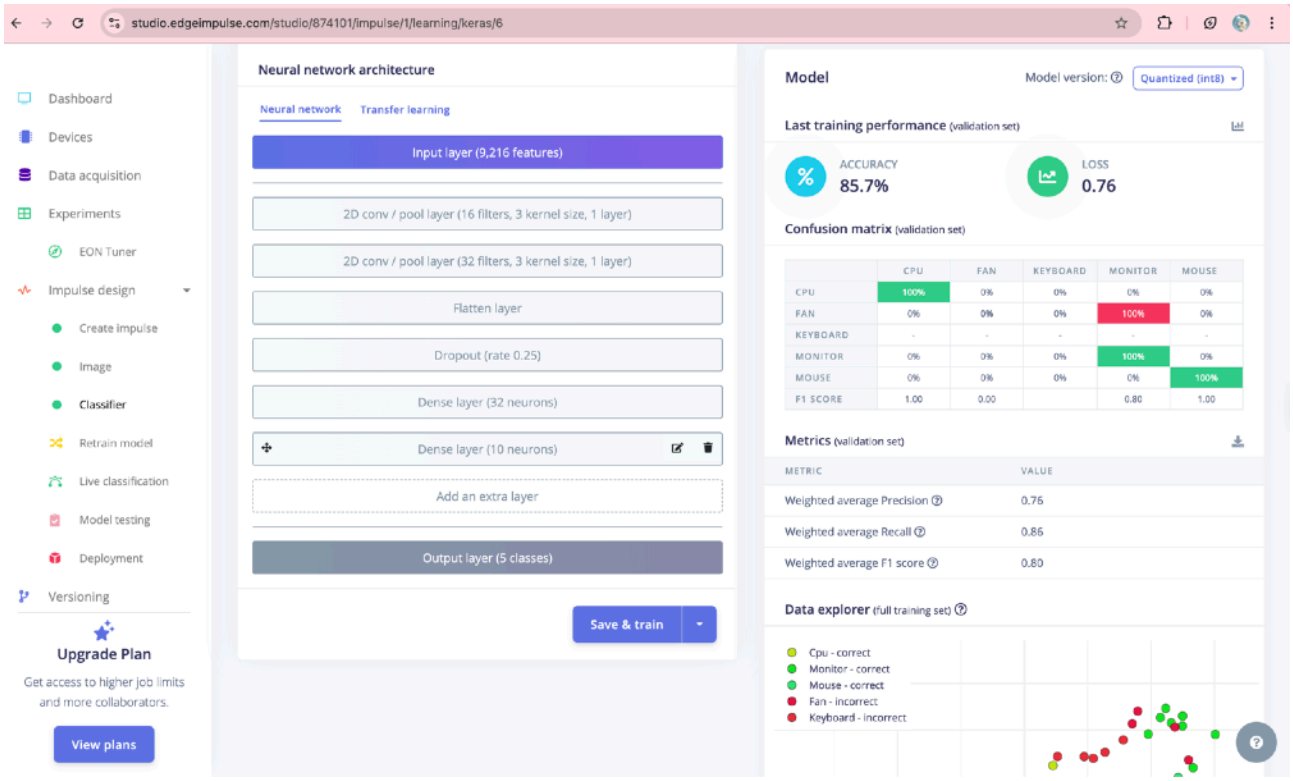
At first I got 42.7% accuracy, after doing these steps I got **85.7%** accuracy

I taken 30 training cycles

Droup out 0.3

Dense layer 32

Dense layer 10

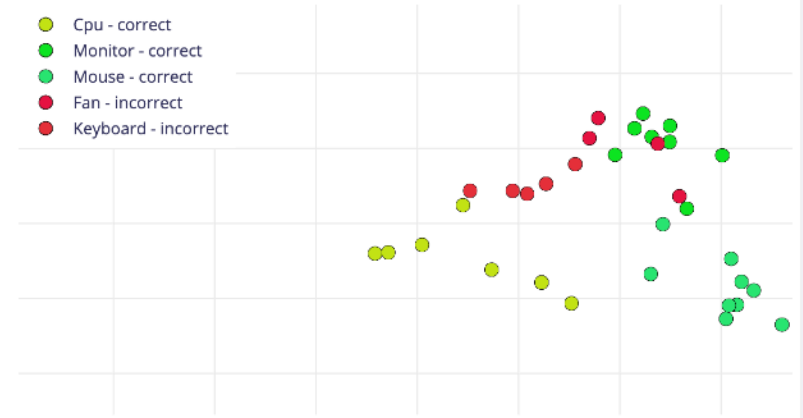


F1 SCORE	1.00	0.00		0.80	1.00

Metrics (validation set)

METRIC	VALUE
Weighted average Precision	0.76
Weighted average Recall	0.86
Weighted average F1 score	0.80

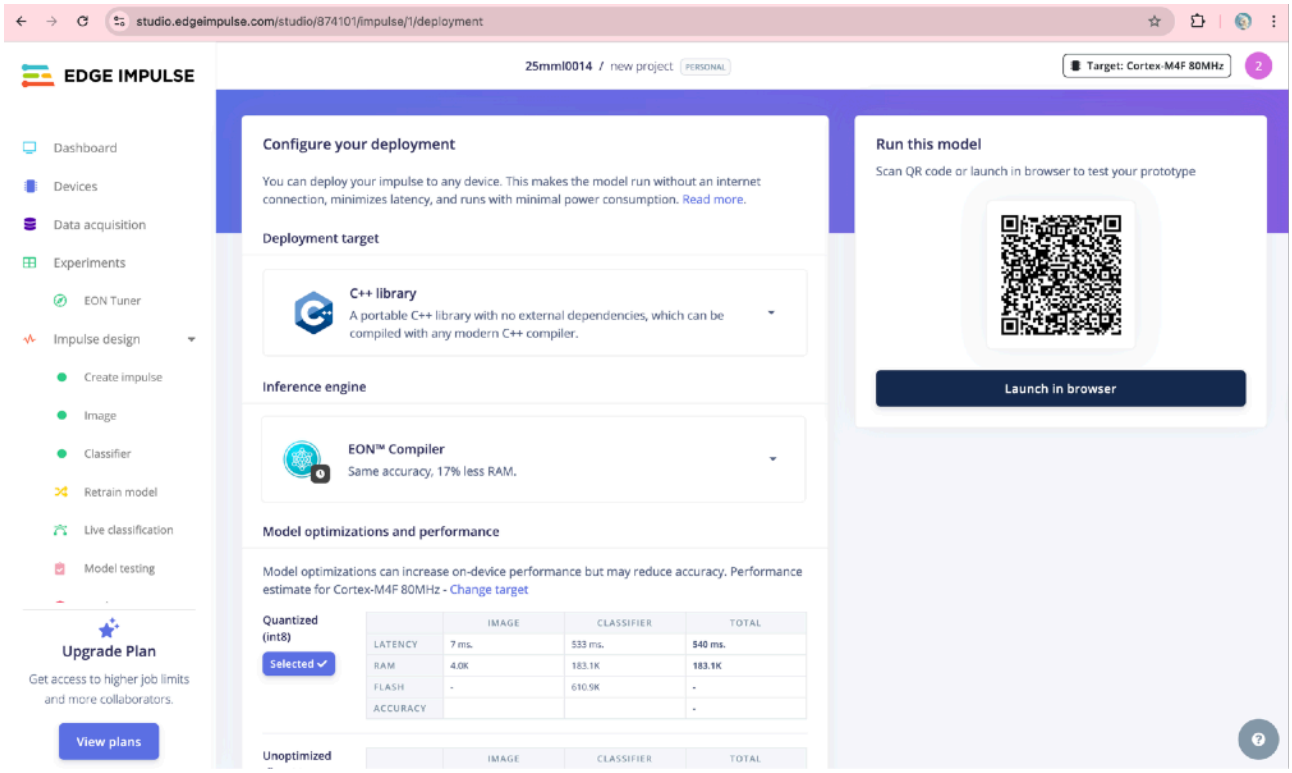
Data explorer (full training set)



On-device performance Engine: EON™ Compiler

INFERENCING ...	PEAK RAM USA...	FLASH USAGE
533 ms.	183.1K	610.9K

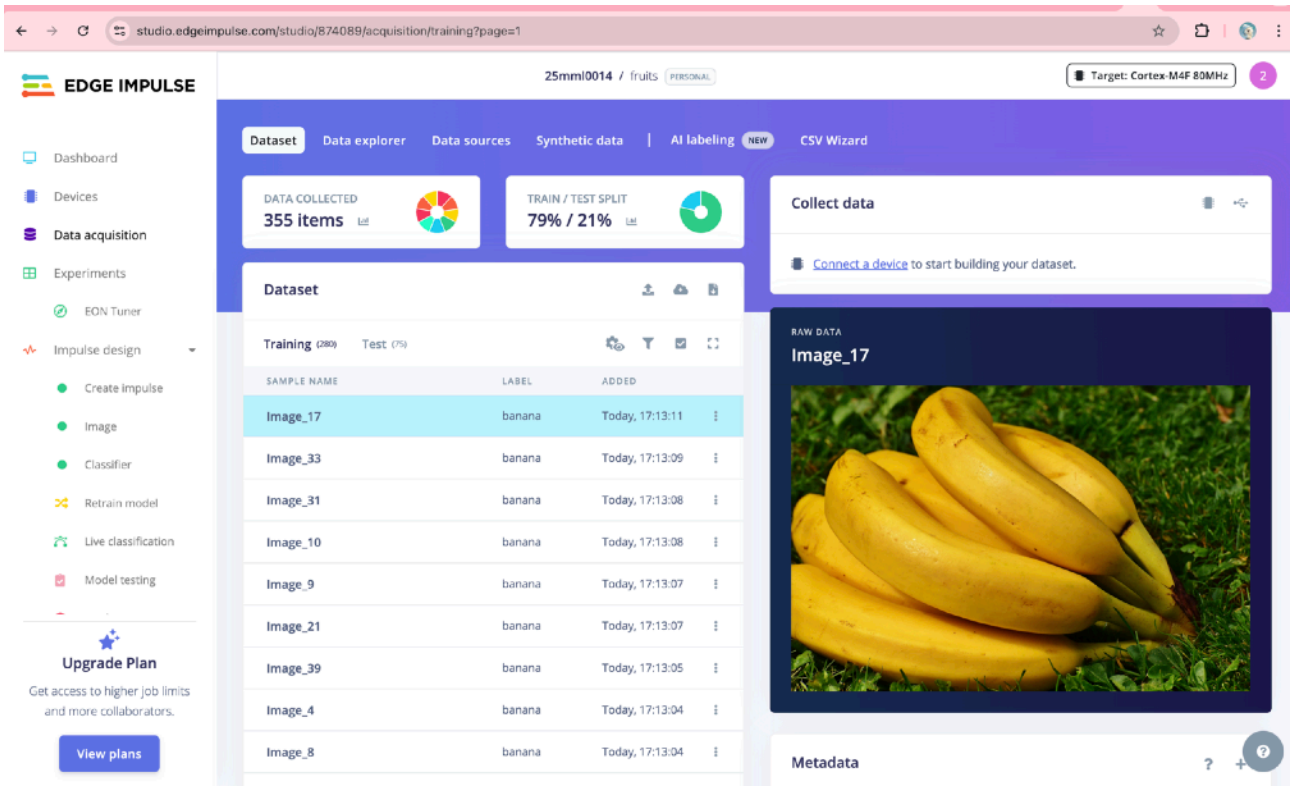
Deployment

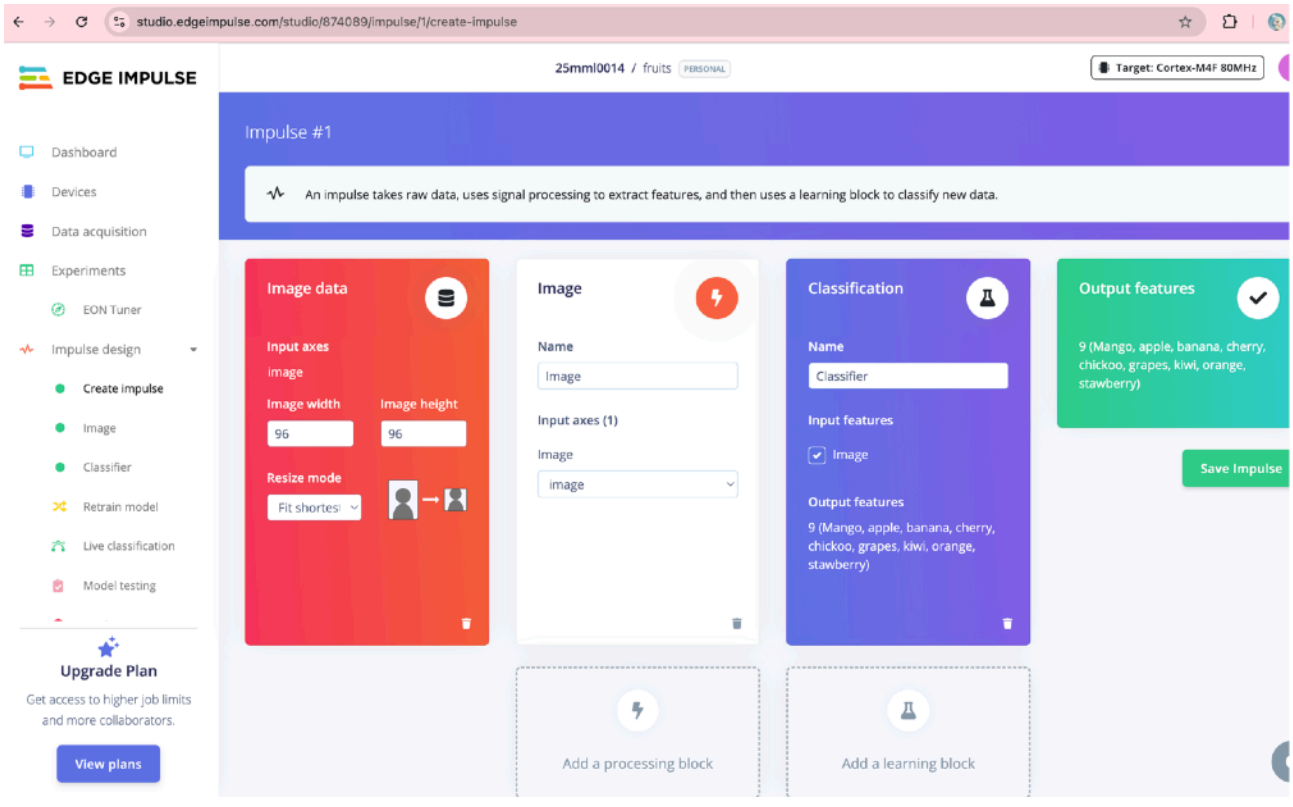


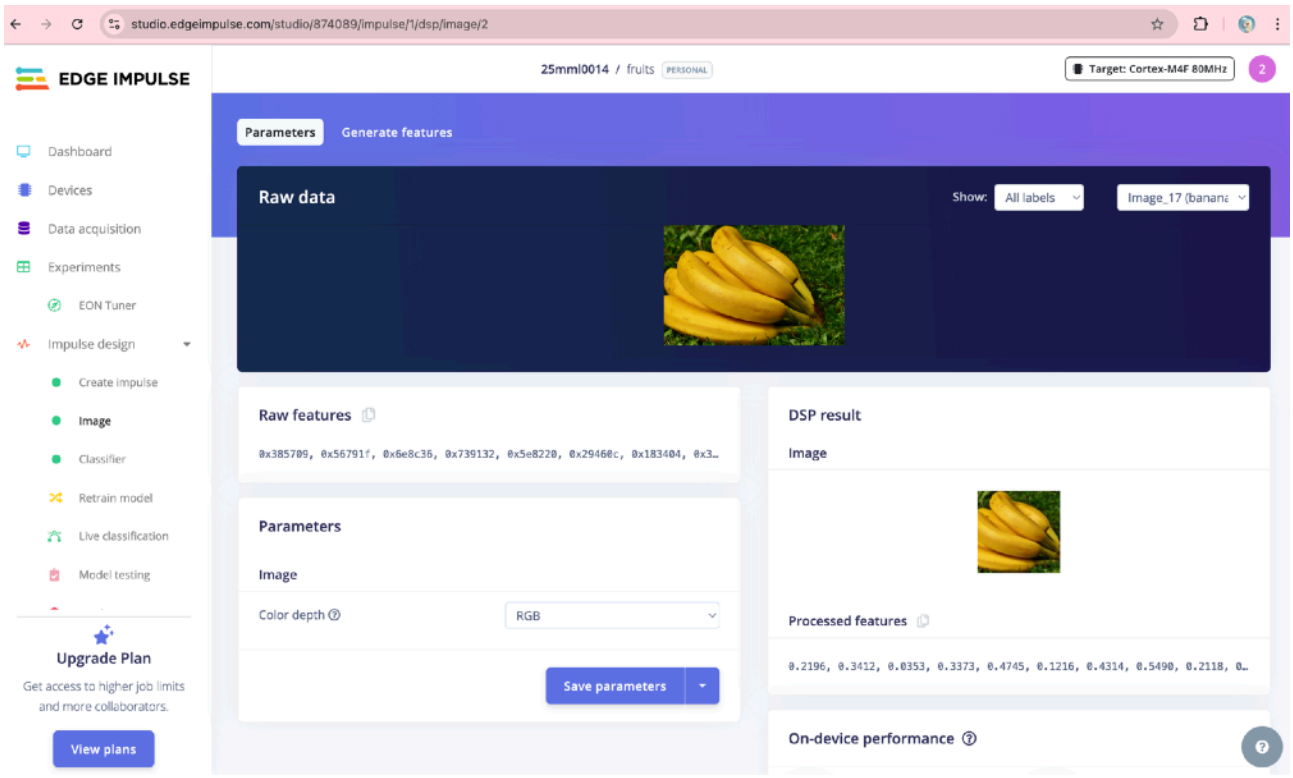
Task 2:

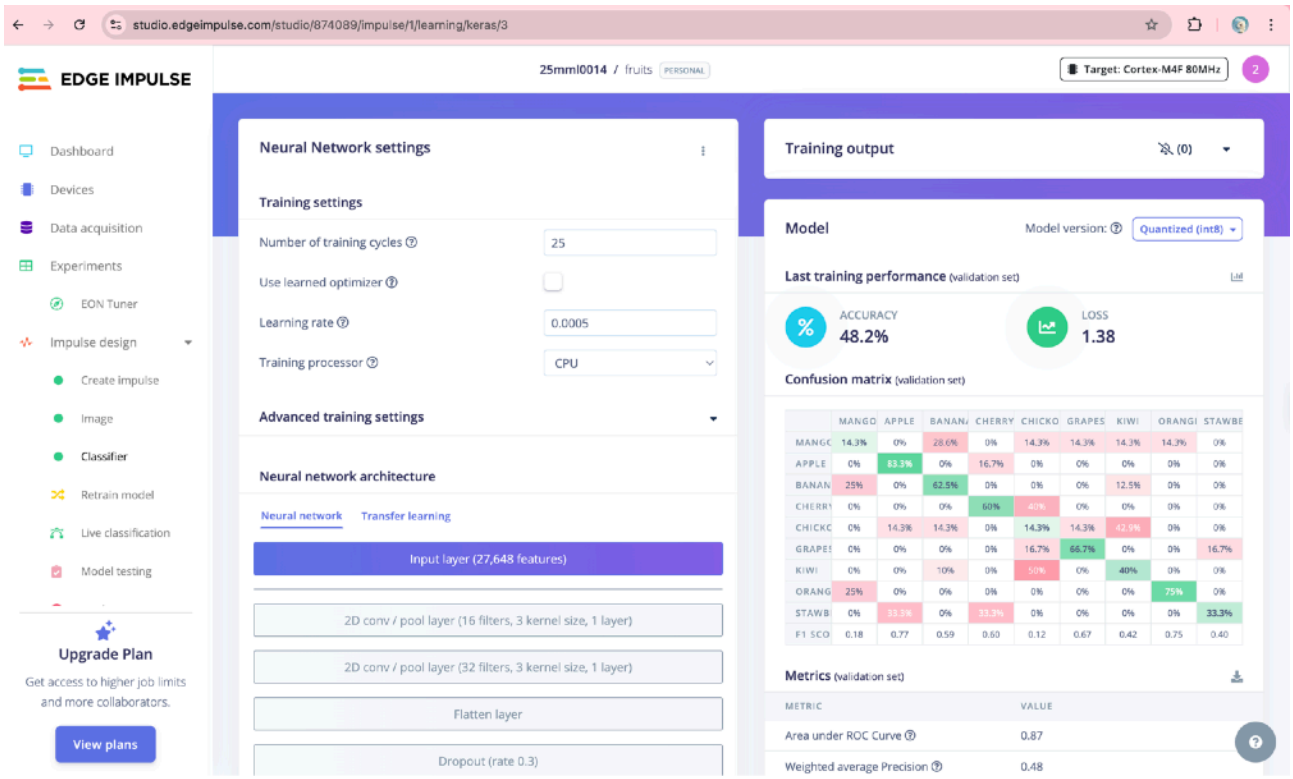
Obtain gaggle dataset and upload and classify the object

I took fruits dataset






studio.edgeimpulse.com/studio/874089/impulse/1/dsp/image/2
EDGE IMPULSE
25mml0014 / fruits PERSONAL
Target: Cortex-M4F 80MHz
Dashboard
Devices
Data acquisition
Experiments
EON Tuner
Impulse design
Create impulse
Image
Classifier
Retrain model
Live classification
Model testing
Upgrade Plan
Get access to higher job limits and more collaborators.
View plans
Parameters
Generate features
Raw data
Show: All labels
Image_17 (banana
Raw features
0x385709, 0x56791f, 0x6e8c36, 0x739132, 0x5e8220, 0x29460c, 0x183404, 0x3…
Parameters
Image
Color depth
RGB
Save parameters
DSP result
Image
Processed features
0.2196, 0.3412, 0.0353, 0.3373, 0.4745, 0.1216, 0.4314, 0.5490, 0.2118, 0…
On-device performance


studio.edgeimpulse.com/studio/874089/impulse/1/learning/keras/3
EDGE IMPULSE
25mml0014 / fruits PERSONAL
Target: Cortex-M4F 80MHz
Dashboard
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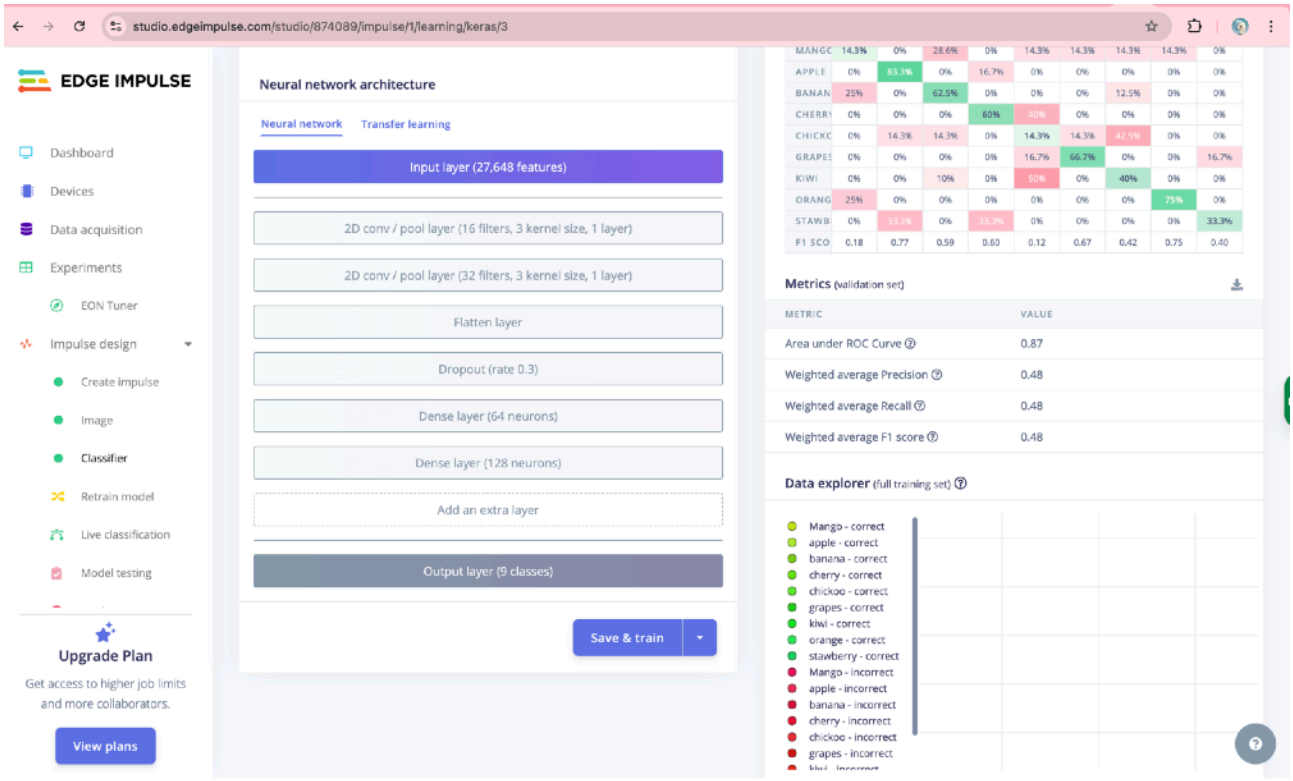
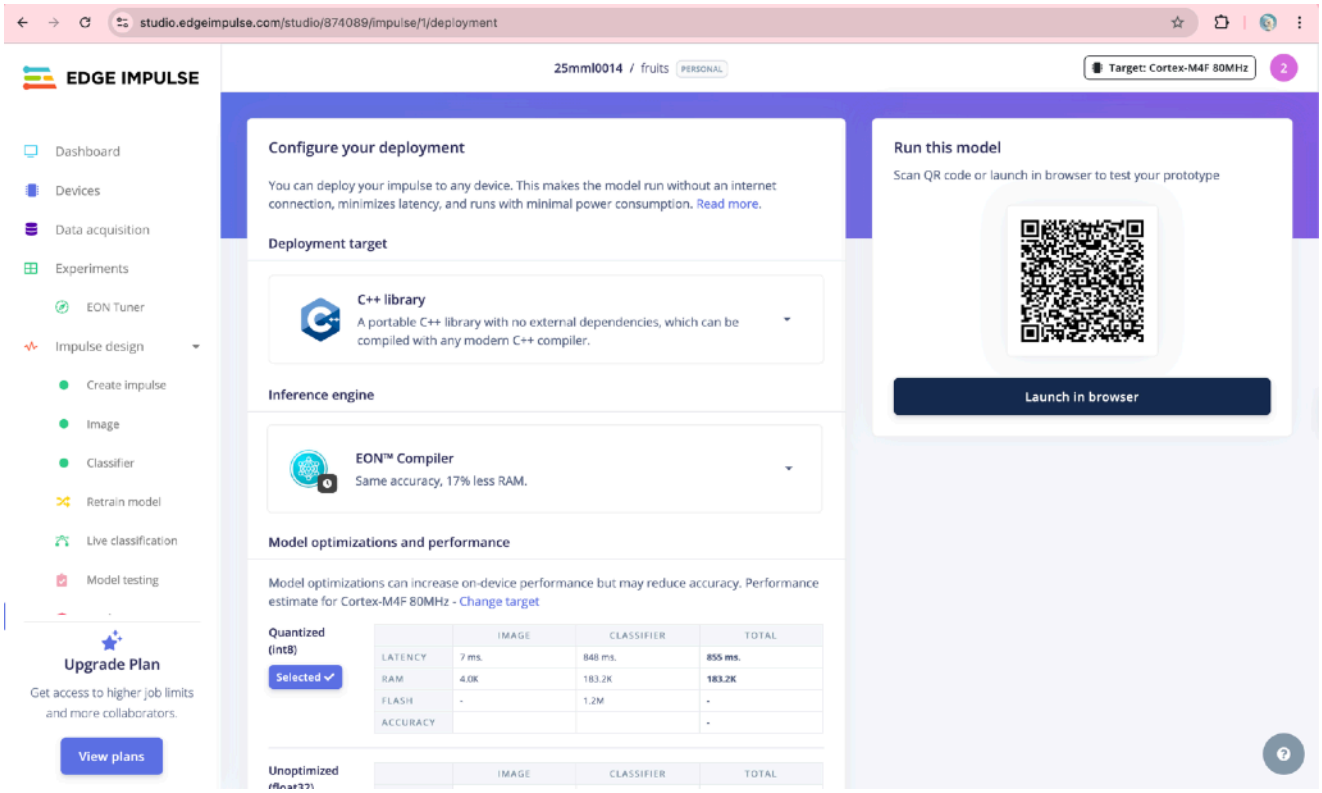
Impulse design
Create impulse
Image
Classifier
Retrain model
Live classification
Model testing
Upgrade Plan
Get access to higher job limits and more collaborators.
View plans
Neural Network settings
Training settings
Number of training cycles 25
Use learned optimizer
Learning rate 0.0005
Training processor CPU
Advanced training settings
Neural network architecture
Neural network
Transfer learning
Input layer (27,648 features)
2D conv / pool layer (16 filters, 3 kernel size, 1 layer)
2D conv / pool layer (32 filters, 3 kernel size, 1 layer)
Flatten layer
Dropout (rate 0.3)
Training output
Model
Model version: Quantized (int8)
Last training performance (validation set)
ACCURACY
48.2%
LOSS
1.38
Confusion matrix (validation set)
MANGO APPLE BANANA CHERRY CHICKO GRAPES KIWI ORANGE STRAWBE
MANGO 14.3% 0% 28.6% 0% 14.3% 14.3% 14.3% 14.3% 0%
APPLE 0% 83.3% 0% 16.7% 0% 0% 0% 0% 0%
BANAN 25% 0% 62.5% 0% 0% 0% 12.5% 0% 0%
CHERRY 0% 0% 0% 60% 40% 0% 0% 0% 0%
CHICKO 0% 14.3% 14.3% 0% 14.3% 14.3% 42.9% 0% 0%
GRAPES 0% 0% 0% 0% 16.7% 66.7% 0% 0% 16.7%
KIWI 0% 0% 10% 0% 50% 0% 40% 0% 0%
ORANG 25% 0% 0% 0% 0% 0% 0% 75% 0%
STRAWB 0% 33.3% 0% 33.3% 0% 0% 0% 0% 33.3%
F1 SCO 0.18 0.77 0.59 0.60 0.12 0.67 0.42 0.75 0.40
Metrics (validation set)
METRIC VALUE
Area under ROC Curve 0.87
Weighted average Precision 0.48



Dense layer 64 and 128 are added

Drop out 0.3

Deployment is scanned through mobile phone I scanned and object with uploaded gaggle dataset



Finaly deployed model