

MACSE604 –Edge Intelligence

Week 5

Edge Impulse

Name: Rohit P

Roll No: 25MML0001

First Try (Failed)

- In my first attempt I have collected a total of 9 images across 4 classes
- I failed to account for the number of data required for the model to train properly

DATA COLLECTED

9 items

TRAIN / TEST SPLIT

78% / 22%

Dataset

Training (7)

Test (2)

Post-processing (0)

SAMPLE NAME	LABELS	ADDED	
Ring.6ebb3bi2	Ring	Jan 08 2026, 17:09:19	<div></div>
Watch.6ebb0ifn	watch	Jan 08 2026, 17:07:47	<div></div>
Watch.6ebavvut	watch	Jan 08 2026, 17:07:28	<div></div>
Shibu.6ebaud59	shibu	Jan 08 2026, 17:06:36	<div></div>
Spectacles.6ebatae5	spectacles	Jan 08 2026, 17:06:01	<div></div>
Spectacles.6ebasb0s	spectacles	Jan 08 2026, 17:05:29	<div></div>
Spectacles.6ebarduj	spectacles	Jan 08 2026, 17:04:59	<div></div>

1

Setup

- This is the impulse setup I used at first
- It is a classification problem with the goal of classifying the images
- One critical detail that I failed to account for is that I had a few images where their labels were present in the train dataset but not on test dataset. This would be a glaring issue during validation training

The screenshot displays the Impulse ML setup interface, which is organized into four main panels:

- Image data (Red Panel):** Contains settings for the input data. It shows "Input axes" as "image", "Image width" and "Image height" both set to "96", and "Resize mode" set to "Fit shortest".
- Image (White Panel):** Contains settings for the input image. It shows "Name" as "Image" and "Input axes (1)" as "image".
- Classification (Purple Panel):** Contains settings for the classification task. It shows "Name" as "Classifier", "Input features" as "Image" (checked), and "Output features" as "4 (Ring, Shibu, Spectacles, Watch)".
- Output features (Green Panel):** Contains the final output features, which are "4 (Ring, Shibu, Spectacles, Watch)".

A "Save Impulse" button is located at the bottom right of the interface.

Training

- The model was at 0% accuracy as expected as the number of data was too small and the train split was poor
- Even during the feature extraction step. Only 1 window was created
- Overall this version was a failure

Model

Model version: (?)

Quantized (int8) ▾

Last training performance (validation set)



ACCURACY
0.0%



LOSS
1.39

Confusion matrix (validation set)

	RING	SHIBU	SPECTACLES	WATCH
RING	-	-	-	-
SHIBU	-	-	-	-
SPECTACLES	0%	0%	0%	100%
WATCH	-	-	-	-
F1 SCORE			0.00	0.00

Metrics (validation set)



METRIC	VALUE
Weighted average Precision (?)	0.00
Weighted average Recall (?)	0.00
Weighted average F1 score (?)	0.00

Attempt 2

(My attempt at trying to develop a decent model)

The Idea:

- The biggest reason as to why my initial model failed was due to the lack of images
- Especially when considering 4 classes
- Furthermore, this second attempt was performed back at my hostel room so I couldn't add further training data (background differs considerably, will affect the model since overall it will remain small even if it's with 200 images, so it's essential for all images in a particular label to look as similar as possible)
- This prompted me into reducing the amount of labels to two : spectacles and not spectacles, essentially making it a binary classification problem
- This would assign enough images to the two classes and also simplify the problem at hand

DATA COLLECTED

13 items 



TRAIN / TEST SPLIT

85% / 15% 











Dataset



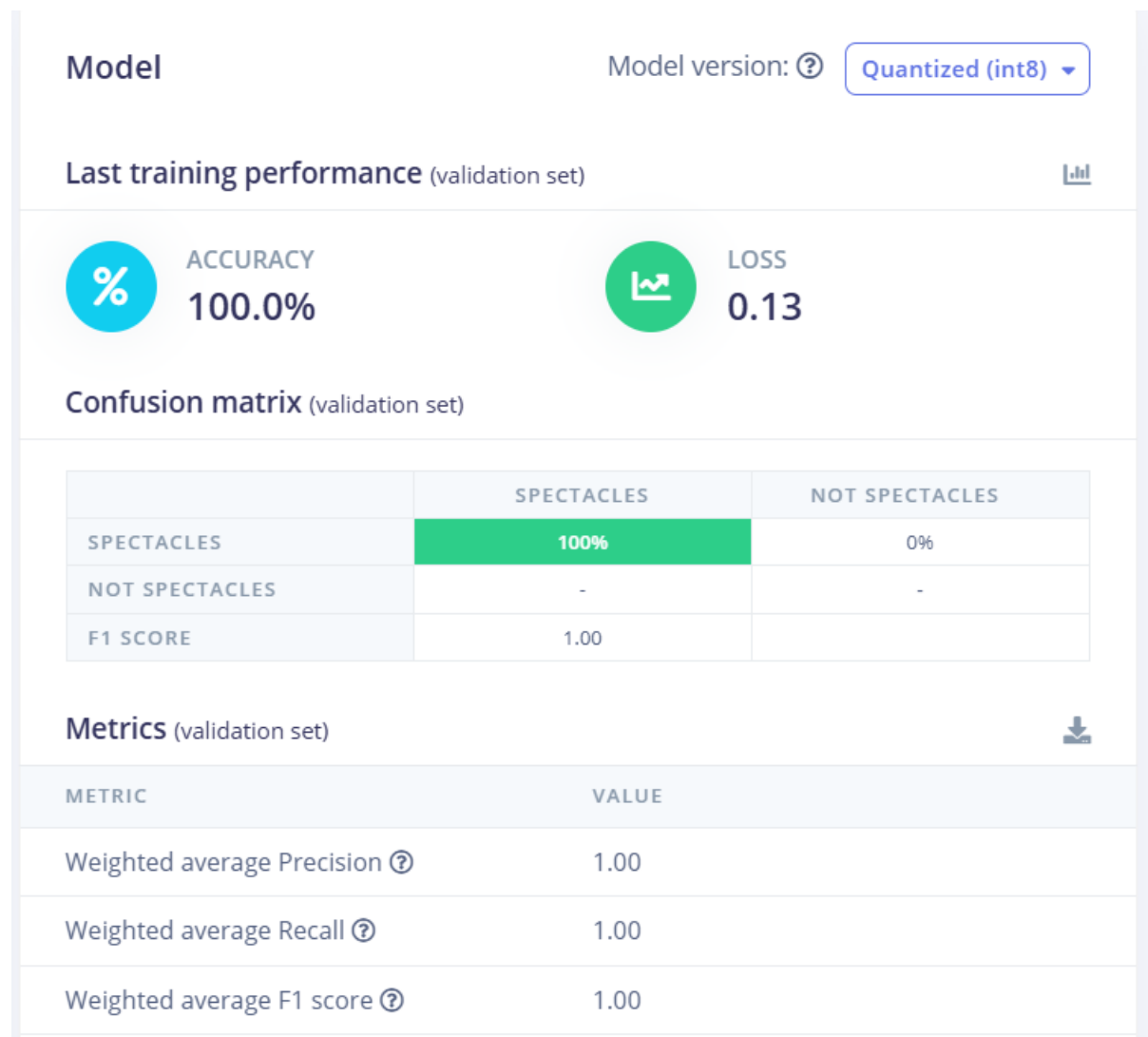
Training (11) Test (2)



SAMPLE NAME	LABEL	ADDED	
Watch.6ebb0ifn	not spectacles	Today, 18:54:06	
Ring.6ebb3bi2	not spectacles	Today, 18:47:32	
Spectacles.6ebasb0s	Spectacles	Today, 18:58:52	
Spectacles.6ebb8kst	Spectacles	Today, 18:58:56	
Ring.6ebb3bi2	not spectacles	Today, 18:50:35	
Watch.6ebb0ifn	not spectacles	Jan 08 2026, 17...	
Watch.6ebavvut	not spectacles	Jan 08 2026, 17...	
Shibu.6ebaud59	not spectacles	Jan 08 2026, 17...	

The Result:

- Surprisingly the model is now at a 100% accuracy
- It is able to correctly distinguish between what is a spectacle and what isn't
- This is largely due to the model now having to classify an image between two labels only
- This is a simpler process yes, but this was the only solution that I could come up with without having to add additional images as data



Metrics (validation set)



METRIC	VALUE
Weighted average Precision ?	1.00
Weighted average Recall ?	1.00
Weighted average F1 score ?	1.00

Data explorer (full training set) ?



On-device performance ?

Engine: ?

EON™ Compiler ▾



INFERENCEING ...
552 ms.



PEAK RAM USA...
182.8K



FLASH USAGE
70.4K