Adrián Silva Palafox

Microprocesadores avanzados

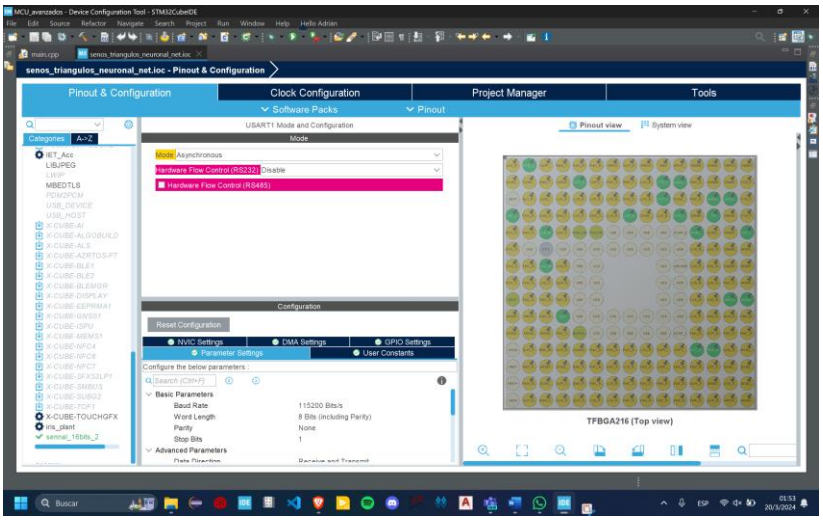
74799

Ing. Electrónica y telecomunicaciones

MAIN.CPP:

https://github.com/La-guajolota/STM32F411CEU-owo-STM32F746/blob/main/senos_triangulos_neuronal_net/Core/Src/main.cpp

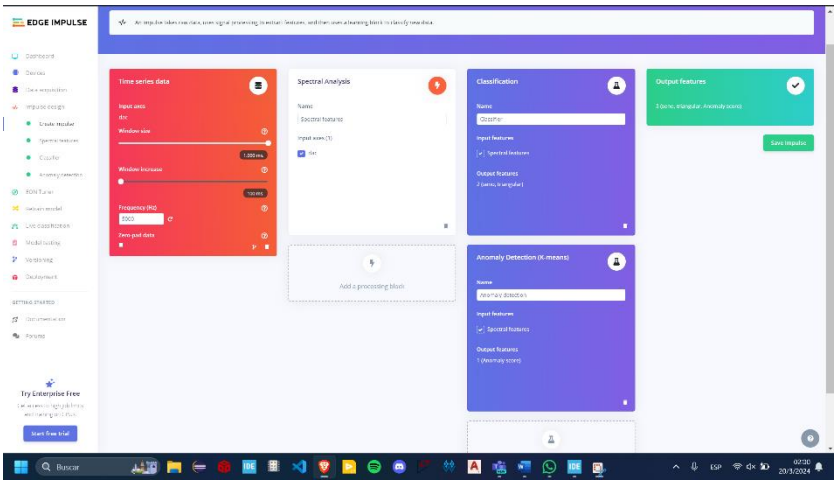
CUBE.MX:

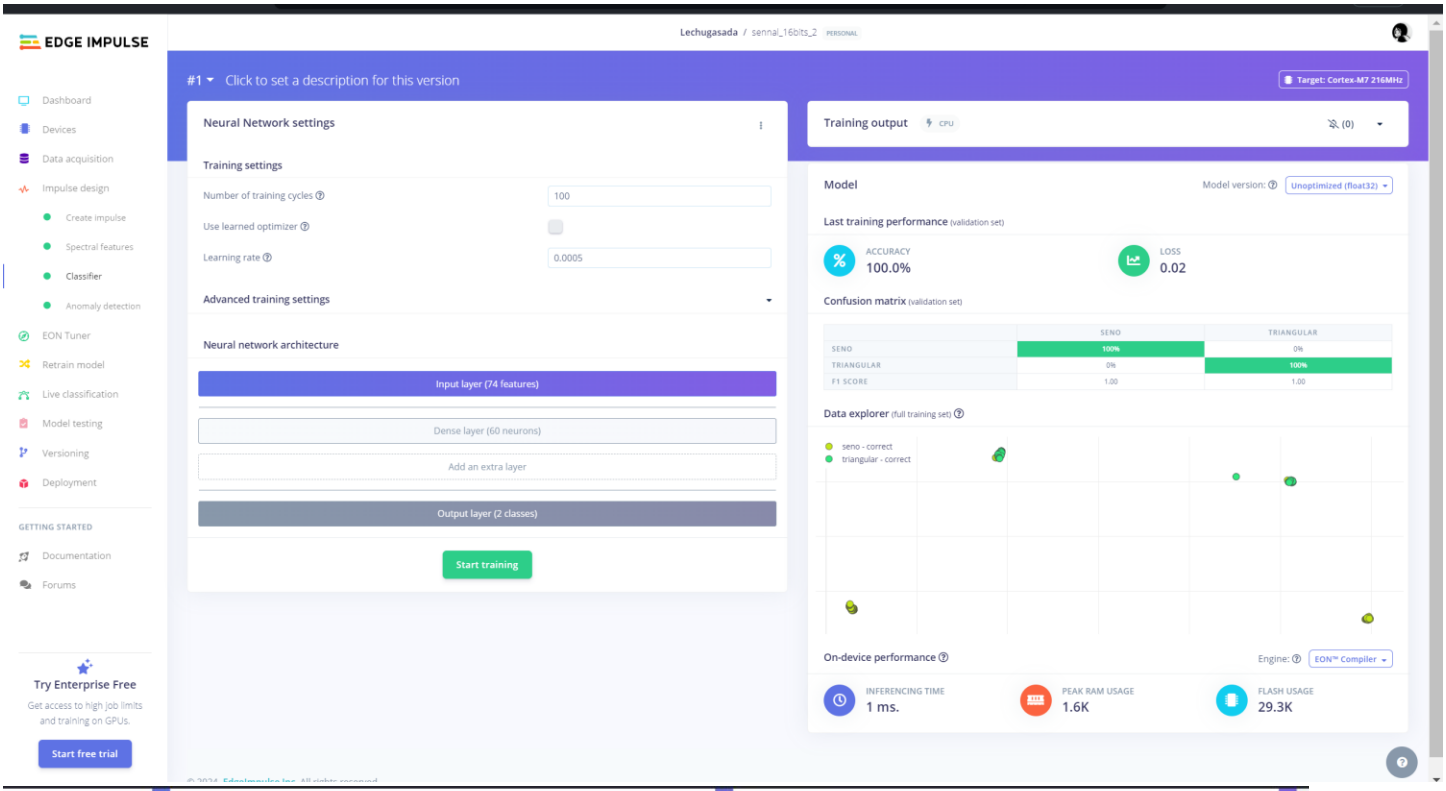


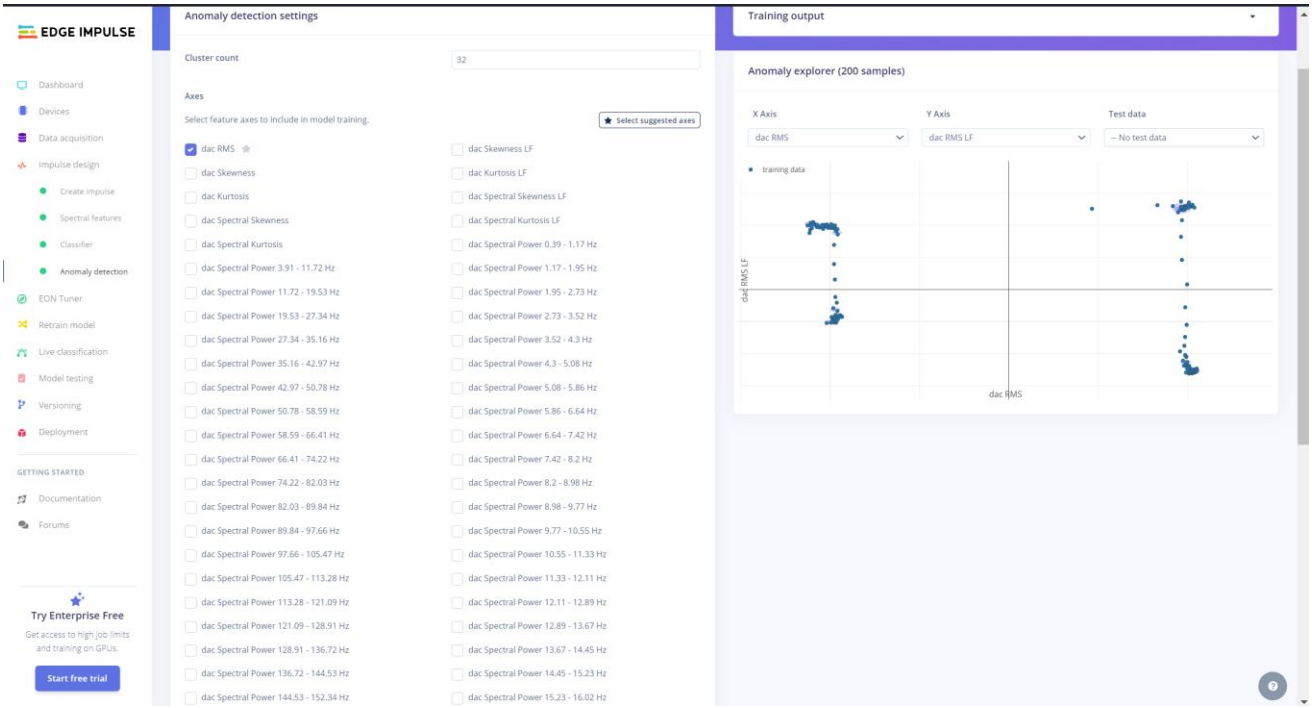
EDGE_IMPULSE:

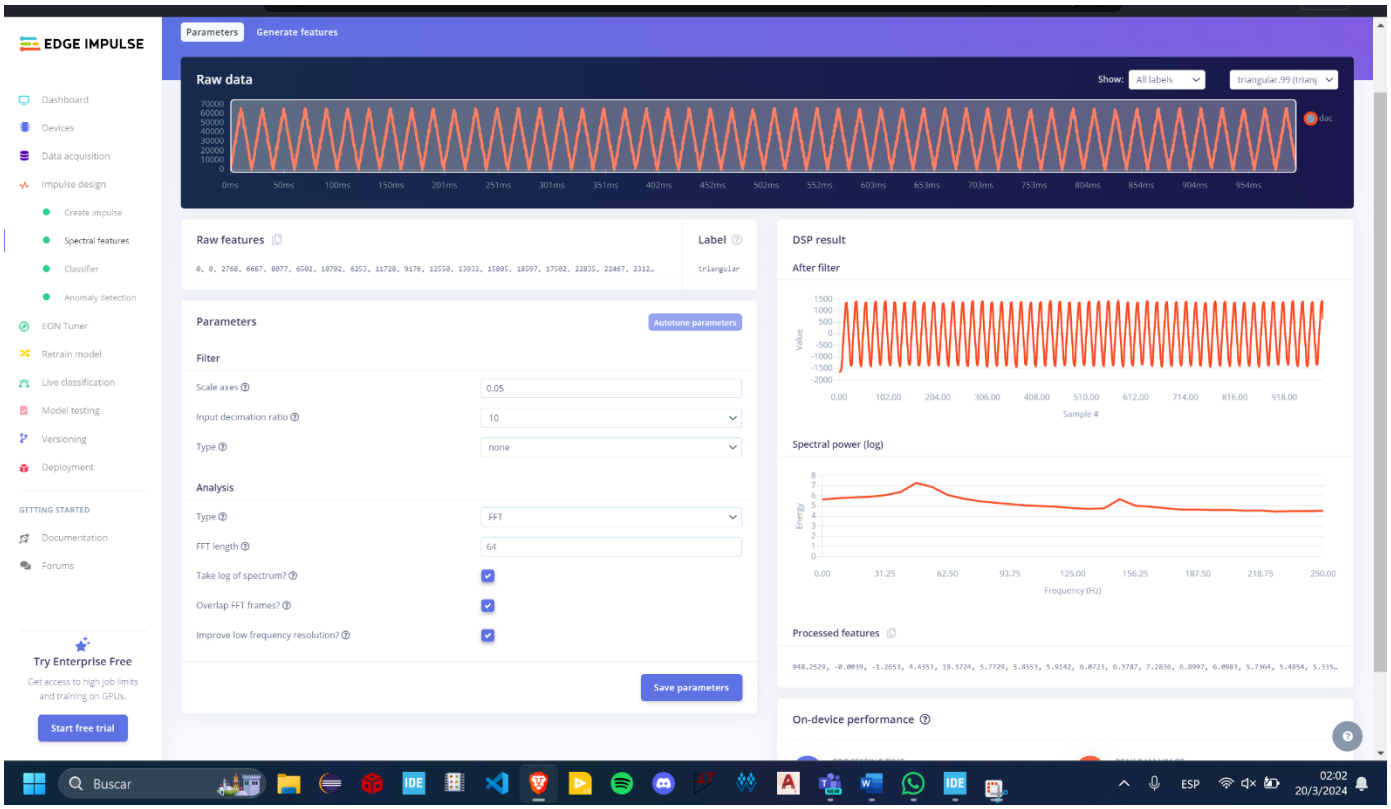
Scripts de pyhton que se escribieron para generar los trainings y tests. https://github.com/La-guajolota/STM32F411CEU-owo-STM32F746/tree/main/redes_pyhton/Senos_Triangulares_senalesRuidosas

Proyecto donde se entrenó la red: https://studio.edgeimpulse.com/public/365511/live




EDGE IMPULSE
Lechugasada / sennal_16bits_2 PERSONAL
#1 Click to set a description for this version
Target: Cortex-M7 216MHz
Dashboard
Devices
Data acquisition
Impulse design
Create impulse
Spectral features
Classifier
Anomaly detection
EON Tuner
Retrain model
Live classification
Model testing
Versioning
Deployment
GETTING STARTED
Documentation
Forums
Try Enterprise Free
Get access to high job limits and training on GPUs.
Start free trial
Neural Network settings
Training settings
Number of training cycles 100
Use learned optimizer
Learning rate 0.0005
Advanced training settings
Neural network architecture
Input layer (74 features)
Dense layer (60 neurons)
Add an extra layer
Output layer (2 classes)
Start training
Training output CPU
Model
Model version: Unoptimized (float32)
Last training performance (validation set)
ACCURACY 100.0%
LOSS 0.02
Confusion matrix (validation set)
SENO TRIANGULAR
SENO 100% 0%
TRIANGULAR 0% 100%
F1 SCORE 1.00 1.00
Data explorer (full training set)
seno - correct
triangular - correct
On-device performance
Engine: EON™ Compiler
INFERENCING TIME 1 ms.
PEAK RAM USAGE 1.6K
FLASH USAGE 29.3K


EDGE IMPULSE
Anomaly detection settings
Cluster count 32
Axes
Select feature axes to include in model training.
Select suggested axes
dac RMS
dac Skewness
dac Kurtosis
dac Spectral Skewness
dac Spectral Kurtosis
dac Spectral Power 3.91 - 11.72 Hz
dac Spectral Power 11.72 - 19.53 Hz
dac Spectral Power 19.53 - 27.34 Hz
dac Spectral Power 27.34 - 35.16 Hz
dac Spectral Power 35.16 - 42.97 Hz
dac Spectral Power 42.97 - 50.78 Hz
dac Spectral Power 50.78 - 58.59 Hz
dac Spectral Power 58.59 - 66.41 Hz
dac Spectral Power 66.41 - 74.22 Hz
dac Spectral Power 74.22 - 82.03 Hz
dac Spectral Power 82.03 - 89.84 Hz
dac Spectral Power 89.84 - 97.66 Hz
dac Spectral Power 97.66 - 105.47 Hz
dac Spectral Power 105.47 - 113.28 Hz
dac Spectral Power 113.28 - 121.09 Hz
dac Spectral Power 121.09 - 128.91 Hz
dac Spectral Power 128.91 - 136.72 Hz
dac Spectral Power 136.72 - 144.53 Hz
dac Spectral Power 144.53 - 152.34 Hz
dac Skewness LF
dac Kurtosis LF
dac Spectral Skewness LF
dac Spectral Kurtosis LF
dac Spectral Power 0.39 - 1.17 Hz
dac Spectral Power 1.17 - 1.95 Hz
dac Spectral Power 1.95 - 2.73 Hz
dac Spectral Power 2.73 - 3.52 Hz
dac Spectral Power 3.52 - 4.3 Hz
dac Spectral Power 4.3 - 5.08 Hz
dac Spectral Power 5.08 - 5.86 Hz
dac Spectral Power 5.86 - 6.64 Hz
dac Spectral Power 6.64 - 7.42 Hz
dac Spectral Power 7.42 - 8.2 Hz
dac Spectral Power 8.2 - 8.98 Hz
dac Spectral Power 8.98 - 9.77 Hz
dac Spectral Power 9.77 - 10.55 Hz
dac Spectral Power 10.55 - 11.33 Hz
dac Spectral Power 11.33 - 12.11 Hz
dac Spectral Power 12.11 - 12.89 Hz
dac Spectral Power 12.89 - 13.67 Hz
dac Spectral Power 13.67 - 14.45 Hz
dac Spectral Power 14.45 - 15.23 Hz
dac Spectral Power 15.23 - 16.02 Hz
Training output
Anomaly explorer (200 samples)
X Axis
Y Axis
Test data
dac RMS
dac RMS LF
– No test data
training data
dac RMS LF
dac RMS



Conecciones y el Uart: