

#1 [Click to set a description for this version](#)

Neural Network settings



Training settings

Minimum confidence rating ⓘ

Neural network architecture

```
1 import tensorflow as tf
2 from tensorflow.keras.models import Sequential
3 from tensorflow.keras.layers import Dense, InputLayer, Dropout, Conv1D,
  Conv2D, Flatten, Reshape, MaxPooling1D, MaxPooling2D,
  BatchNormalization
4 from tensorflow.keras.optimizers import Adam
5 sys.path.append('./resources/libraries')
6 import ei_tensorflow.training
7
8 # model architecture
9 model = Sequential()
10 model.add(Reshape((int(input_length / 13), 13), input_shape=(input_length
  , )))
11 model.add(Conv1D(8, kernel_size=3, activation='relu', padding='same'))
12 model.add(MaxPooling1D(pool_size=2, strides=2, padding='same'))
13 model.add(Dropout(0.25))
14 model.add(Conv1D(16, kernel_size=3, activation='relu', padding='same'))
15 model.add(MaxPooling1D(pool_size=2, strides=2, padding='same'))
16 model.add(Dropout(0.25))
17 model.add(Flatten())
18 model.add(Dense(classes, activation='softmax', name='y_pred'))
19
20 # this controls the learning rate
21 opt = Adam(lr=0.005, beta_1=0.9, beta_2=0.999)
22 # this controls the batch size, or you can manipulate the tf.data.Dataset
  objects yourself
23 BATCH_SIZE = 512
24 train_dataset, validation_dataset = ei_tensorflow.training.set_batch_size
  (BATCH_SIZE, train_dataset, validation_dataset)
25 callbacks.append(BatchLoggerCallback(BATCH_SIZE, train_sample_count))
26
27 # train the neural network
28 model.compile(loss='categorical_crossentropy', optimizer=opt, metrics
```

Start training

Training output

Model

Model version: ⓘ

Quantized (int8) ▾

Last training performance (validation set)

%

ACCURACY
87.8%LOSS
0.35

Confusion matrix (validation set)

	_NOISE	_UNKNOWN	GO	STOP
_NOISE	95.9%	1.6%	0%	2.4%
_UNKNOWN	3.1%	77.1%	12.3%	7.5%



	_NOISE	_UNKNOWN	GO	STOP
GO	1.7%	11.1%	86.0%	1.3%
STOP	0.4%	6.3%	2.0%	91.3%
F1 SCORE	0.96	0.78	0.86	0.91

Feature explorer (full training set) ?

- _noise - correct
- _unknown - correct
- go - correct
- stop - correct
- _noise - incorrect
- _unknown - incorrect
- go - incorrect
- stop - incorrect

On-device performance ?



INFERENCE TIME
4 ms.



PEAK RAM USAGE
5.3K



ROM USAGE
36.2K

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