#1 Click to set a description for this version

Neural Network settings

Training settings

Minimum confidence rating

0.60

Neural network architecture

```
import tensorflow as tf
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense, InputLayer, Dropout, Conv1D,
    Conv2D, Flatten, Reshape, MaxPooling1D, MaxPooling2D,
    BatchNormalization
from tensorflow.keras.optimizers import Adam
sys.path.append('./resources/libraries')
import ei_tensorflow.training

# model architecture
model = Sequential()
model.add(Reshape((int(input_length / 13), 13), input_shape=(input_length
    , )))
model.add(Conv1D(16, kernel_size=3, activation='relu', padding='same'))
model.add(MaxPooling1D(pool_size=2, strides=2, padding='same'))
model.add(Dropout(0.25))
model.add(Conv1D(32, kernel_size=3, activation='relu', padding='same'))
model.add(MaxPooling1D(pool_size=2, strides=2, padding='same'))
model.add(Dropout(0.25))
model.add(Flatten())
model.add(Dense(classes, activation='softmax', name='y_pred'))

# this controls the learning rate
opt = Adam(lr=0.005, beta_1=0.9, beta_2=0.999)
# this controls the batch size, or you can manipulate the tf.data.Dataset
    objects yourself
BATCH_SIZE = 32
train_dataset, validation_dataset = ei_tensorflow.training.set_batch_size
    (BATCH_SIZE, train_dataset, validation_dataset)
callbacks.append(BatchLoggerCallback(BATCH_SIZE, train_sample_count))

# train the neural network
model.compile(loss='categorical_crossentropy', optimizer=opt, metrics
```

Start training

Training output

Model

Model version: Unoptimized (float32)

Last training performance (validation set)

ACCURACY
77.6%

LOSS
0.75

Confusion matrix (validation set)

	_N	_U	BA	FO	FO	FO	GO	LEFT	NO	OFF	ON	ONE	RIG	ST	TH	TWO	VIS	YES
_NOISE	**98.5%**	0%	0.4%	0%	0%	0%	0%	0%	0%	0%	0.8%	0%	0%	0%	0%	0.4%	0%	0%
_UNKNOWN	4.2%	**25.5%**	3.1%	2.7%	0%	1.2%	9.7%	1.5%	7.7%	8.5%	4.6%	4.6%	5.4%	4.2%	7.7%	4.6%	3.1%	1.5%

	_N	_U	BA	FO	FO	FO	GO	LEFT	NO	OFF	ON	ONE	RIG	ST	TH	TWO	VIS	YES
BACKWARD	1.7%	3.0%	**84.1%**	0.9%	0.9%	1.3%	0%	3.0%	0.4%	0.4%	0.9%	0.9%	0.4%	0.9%	0.9%	0.4%	0%	0%
FOLLOW	2.4%	1.6%	0%	**73.8%**	5.6%	1.2%	2.8%	0%	0%	2.4%	6.3%	1.2%	0%	1.2%	0.4%	1.2%	0%	0%
FORWARD	3.2%	0.4%	0.4%	8.1%	**61.5%**	16.6%	0%	0%	0%	0.8%	5.3%	1.6%	0.4%	0%	0%	0.8%	0.8%	0%
FOUR	2.3%	0.5%	0%	4.1%	5.9%	**73.6%**	1.4%	0%	0%	2.3%	2.3%	3.6%	0%	0.9%	0%	1.8%	0%	1.4%
GO	3.0%	1.7%	0%	3.4%	0.9%	3.0%	**66.8%**	0%	9.9%	2.6%	1.3%	0%	0%	3.0%	0.4%	2.2%	0.9%	0.9%
LEFT	1.7%	0.8%	0.8%	0%	0.4%	0.4%	0%	**73.0%**	1.3%	1.3%	0%	3.8%	1.7%	1.7%	0%	0%	2.5%	10.5%
NO	2.7%	0.4%	0%	0.4%	0%	0%	13.3%	0.8%	**74.5%**	0.4%	0.4%	0.8%	0%	2.0%	0%	0%	3.5%	0.8%
OFF	2.6%	0.4%	0%	0%	0.4%	6.0%	0.4%	0%	0%	**82.6%**	4.3%	0%	0%	2.6%	0%	0%	0%	0.9%
ON	1.4%	0.5%	0%	0.5%	0.9%	0.5%	0.5%	0%	0%	8.5%	**83.0%**	2.4%	0.5%	0.9%	0%	0%	0%	0.5%
ONE	2.1%	0.4%	0%	0.4%	0.8%	1.7%	0%	0.8%	0%	1.7%	2.1%	**87.4%**	1.7%	0.4%	0%	0%	0%	0.4%
RIGHT	2.8%	2.8%	1.2%	0.4%	0.4%	0%	0.8%	4.5%	0%	0%	0.4%	3.3%	**80.9%**	0%	1.6%	0.4%	0%	0.4%
STOP	2.6%	0.4%	0%	0.9%	0%	0.4%	1.3%	0%	0.9%	4.8%	0%	0%	0%	**87.2%**	0.4%	0.4%	0%	0.4%
THREE	3.0%	2.6%	0%	0%	0.4%	0%	0%	0%	0%	0.4%	0%	0%	2.1%	0%	**86.0%**	4.3%	1.3%	0%
TWO	4.5%	1.6%	0%	0.8%	0.4%	0.8%	3.3%	0.4%	0%	0%	0%	0%	0%	0.4%	1.2%	**84.4%**	2.0%	0%
VISUAL	3.6%	0.8%	0.8%	0%	0.4%	0%	0%	0.4%	0%	0.4%	0%	0.4%	0%	0.4%	1.2%	2.0%	**89.7%**	0%
YES	2.5%	0.4%	0%	0%	0%	0.4%	0%	3.8%	0%	0%	0%	2.5%	0%	0%	0.4%	0.8%	0.4%	**88.6%**
F1 SCORE	0.81	0.36	0.88	0.76	0.69	0.70	0.66	0.77	0.77	0.76	0.77	0.82	0.84	0.84	0.85	0.83	0.88	0.86

Feature explorer (full training set)

- _noise - correct
- _unknown - correct
- backward - correct
- follow - correct
- forward - correct
- four - correct
- go - correct
- left - correct
- no - correct
- off - correct
- on - correct
- one - correct
- right - correct
- stop - correct
- three - correct
- two - correct

On-device performance

INFERENCING TIME	PEAK RAM USAGE	ROM USAGE
71 ms.	11.1K	68.7K