#1 1DConv (16-32) batch 512

Neural Network settings

Training settings

Number of training cycles

200

Learning rate

0.005

Minimum confidence rating

0.60

Audio training options

Data augmentation

Neural network architecture

Architecture presets 1D Convolutional (Default) 2D Convolutional

Input layer (598 features)

Reshape layer (13 columns)

1D conv / pool layer (32 neurons, 3 kernel size, 3 layers)

Dropout (rate 0.25)

1D conv / pool layer (32 neurons, 3 kernel size, 3 layers)

Dropout (rate 0.25)

Flatten layer

Add an extra layer

Output layer (18 features)

Start training

Training output

```
540/540 - 10s - loss: 0.9720 - accuracy: 0.7299 - val_loss: 1.0380 - val_accuracy: 0.7185
Epoch 84/200
540/540 - 10s - loss: 0.9522 - accuracy: 0.7339 - val_loss: 1.0213 - val_accuracy: 0.7292
Epoch 85/200
540/540 - 10s - loss: 0.9457 - accuracy: 0.7360 - val_loss: 1.0280 - val_accuracy: 0.7137
Epoch 86/200
```

```
540/540 - 10s - loss: 0.9633 - accuracy: 0.7330 - val_loss: 0.9858 - val_accuracy: 0.7336
Epoch 87/200
540/540 - 10s - loss: 0.9941 - accuracy: 0.7246 - val_loss: 1.0104 - val_accuracy: 0.7194
Epoch 88/200
540/540 - 10s - loss: 0.9835 - accuracy: 0.7277 - val_loss: 1.0627 - val_accuracy: 0.7162
Epoch 89/200
540/540 - 10s - loss: 1.0036 - accuracy: 0.7210 - val_loss: 1.0171 - val_accuracy: 0.7435
Epoch 90/200
540/540 - 10s - loss: 0.9704 - accuracy: 0.7342 - val_loss: 0.9757 - val_accuracy: 0.7373
```

Model

Model version: Quantized (int8)

Last training performance (validation set)

ACCURACY
71.6%

LOSS
1.16

Confusion matrix (validation set)

	_N	_U	BA	FO	FO	FO	GO	LEFT	NO	OFF	ON	ONE	RIG	ST	TH	TWO	VIS	YES
_NOISE	**90.7%**	6.2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.4%	0%	0.4%	1.5%	0.8%
_UNKNOWN	7.3%	**37.5%**	2.3%	1.5%	1.2%	1.5%	4.2%	1.2%	3.9%	5.4%	2.7%	6.9%	3.9%	3.9%	3.9%	6.6%	5.0%	1.2%
BACKWARD	2.1%	10.3%	**81.1%**	0%	2.6%	0%	0%	1.7%	0%	0.4%	0%	0.4%	0.4%	0.4%	0.4%	0%	0%	0%
FOLLOW	3.2%	6.3%	0%	**75.8%**	1.6%	3.6%	2.0%	0%	0%	2.0%	3.2%	0.8%	0%	0.4%	0%	0.8%	0.4%	0%
FORWARD	3.6%	3.6%	0.4%	17.0%	**47.8%**	21.5%	1.2%	0%	0%	0.8%	2.8%	0.8%	0%	0%	0%	0%	0.4%	0%
FOUR	3.6%	4.5%	0%	10%	5.9%	**66.8%**	4.5%	0.5%	0%	0.9%	0.5%	0.5%	0%	0.5%	0%	0.9%	0%	0.9%
GO	3.9%	14.2%	0%	5.6%	1.3%	0.9%	**48.7%**	0%	10.8%	0%	0%	0%	0%	3.4%	0%	7.8%	2.6%	0.9%
LEFT	2.5%	10.5%	6.8%	0%	0.4%	2.1%	0%	**70.9%**	0%	0.4%	0%	0.8%	0.8%	0%	0%	0%	0.8%	3.8%
NO	3.1%	10.6%	0%	0%	0%	0.4%	9.0%	1.2%	**66.3%**	0.4%	0%	0%	0%	2.0%	0%	0.8%	5.1%	1.2%
OFF	4.3%	5.5%	0.4%	3.4%	0.9%	3.4%	0%	0.4%	0%	**74.0%**	3.8%	0%	0%	3.4%	0%	0%	0.4%	0%
ON	3.3%	6.1%	0%	5.2%	0.5%	2.8%	0%	0%	0%	7.1%	**70.3%**	3.3%	0.5%	0%	0.5%	0.5%	0%	0%
ONE	2.1%	5.0%	0%	0%	1.3%	6.7%	0.4%	2.5%	0.8%	0%	0.8%	**79.4%**	0.4%	0.4%	0%	0%	0%	0%
RIGHT	4.5%	6.5%	1.2%	0.4%	0.4%	0%	0%	5.3%	0%	0%	0.8%	4.5%	**75.2%**	0%	0.4%	0%	0.8%	0%
STOP	3.5%	11.9%	0.4%	0.9%	0%	0%	0.4%	0%	0.4%	3.1%	0.4%	0%	0%	**78.0%**	0.4%	0%	0.4%	0%
THREE	3.0%	8.5%	0%	0.4%	0.4%	0%	0.4%	0.4%	0%	0%	0%	0%	4.7%	0%	**76.2%**	3.0%	3.0%	0%
TWO	4.1%	7.8%	0%	1.6%	0%	0.4%	4.1%	0.4%	0%	0%	0%	0%	0%	0%	0.4%	**79.9%**	1.2%	0%
VISUAL	2.0%	4.4%	0%	0%	0%	0%	0%	0.4%	0%	0%	0%	0.4%	0%	0%	0.8%	2.0%	**90.1%**	0%
YES	3.8%	2.1%	1.3%	0%	0.8%	0.4%	1.3%	5.9%	0.8%	0%	0%	0.8%	0%	0%	0%	0.4%	1.3%	**81.0%**
F1 SCORE	0.74	0.30	0.83	0.69	0.58	0.62	0.55	0.74	0.73	0.76	0.75	0.80	0.81	0.80	0.83	0.79	0.85	0.85

Feature explorer (full training set)

- three - correct
- two - correct
- visual - correct
- yes - correct
- _noise - incorrect
- _unknown - incorrect
- backward - incorrect
- follow - incorrect
- forward - incorrect
- four - incorrect
- go - incorrect
- left - incorrect
- no - incorrect
- off - incorrect
- on - incorrect
- one - incorrect

On-device performance

INFERENCING TIME
29 ms.

PEAK RAM USAGE
12.9K

ROM USAGE
56.5K