“Deep Convolutional Networks for Learning in Audio”

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This folder contains the necessary source code and datasets to run an example of the training and test procedure for a convolutional neural network trained with raw audio.

The dataset is a snippet of 420 examples from the ‘Magnatagatune’ dataset, they are 3 seconds long, and consist of 300 for the training set, 30 for the validation set, and 90 for the test set.

PLEASE NOTE: The Theano library is required to run this code. This is installed on the EECS computer server ‘exeter.eecs.qmul.ac.uk’. You will need to load the code onto a directory on ‘frank.eecs.qmul.ac.uk’ then `ssh` to ‘exeter.eecs.qmul.ac.uk’ to perform the tests.

Instructions for running example code:

__STEP 1_____

Once in the project folder train the model on the CPU run ‘raw_train_CNN.py’ by typing the following command line prompt:

```
-bash-4.1$ THEANO_FLAGS=device=cpu0,floatX=float32,nvcc.fastmath=True python raw_train_CNN.py
```

To train the model on the GPU run ‘raw_train_CNN.py’ by typing the following command line prompt:

```
-bash-4.1$ THEANO_FLAGS=device=gpu0,floatX=float32,nvcc.fastmath=True python raw_train_CNN.py
```

This will save the loss characteristics of the training to ‘predictions’, and the trained model parameters to the ‘model’ folder.

__STEP 2_____

To test the model on the CPU run ‘raw_test_CNN.py’ by typing the following command line prompt:

```
-bash-4.1$ THEANO_FLAGS=device=cpu0,floatX=float32,nvcc.fastmath=True python raw_test_CNN.py
```

To test the model on the GPU run ‘raw_test_CNN.py’ by typing the following command line prompt:

```
-bash-4.1$ THEANO_FLAGS=device=gpu0,floatX=float32,nvcc.fastmath=True python raw_test_CNN.py
```

This will save the predictions to the ‘predictions folder’

__STEP 3_____

Open MATLAB and use the ‘predictions’ folder as the current directory.

type `analysis` into the command line. You will see a cumulative distribution of scores for each tag and a plot of the error throughout the training procedure.

DISCLAIMER: The observed results are merely for demonstration purposes only, showing the code used for project research. It would be unfeasible to hand in the full 40GB dataset. Please refer to the report for a full analysis of the gathered results.

Many Thanks.