

# DSP HW1

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**Environment:** Linux.

## Execution

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1. Type `make` to compile the `test.c` and `train.c` programs.
2. To train the five models, type the following commands (in any order):

```
./train 2000 model_init.txt seq_model_01.txt model_01.txt
./train 2000 model_init.txt seq_model_02.txt model_02.txt
./train 2000 model_init.txt seq_model_03.txt model_03.txt
./train 2000 model_init.txt seq_model_04.txt model_04.txt
./train 2000 model_init.txt seq_model_05.txt model_05.txt
```

3. To test accuracy, type the following commands (in any order):

```
./test modellist.txt testing_data1.txt result1.txt
./test modellist.txt testing_data2.txt result2.txt
```

## Results

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The five models were trained using the Baum–Welch algorithm as specified in class. The testing program, using the Viterbi algorithm, predicted input sequences (from `testing_data1.txt` ) with an accuracy of  $0.8696 = 86.96\%$ .

The specific values of each model are specified in their respective `model_0x.txt` file.

