

# DSP2018FALL HW2-1

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## Environment

CSIE workstation linux11(gcc 8.2)

## How to execute

bash 00\_clean\_all.sh

bash 01\_run\_HCopy.sh

bash 02\_run\_HCompV.sh

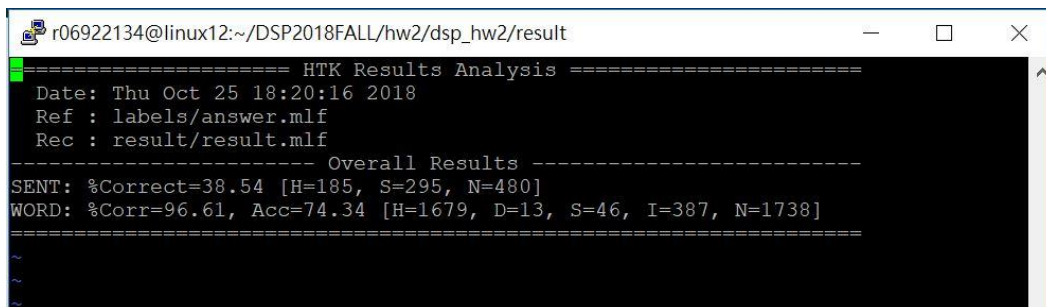
bash 03\_training.sh

bash 04\_testing.sh

cat result/accuracy

## Run Baseline

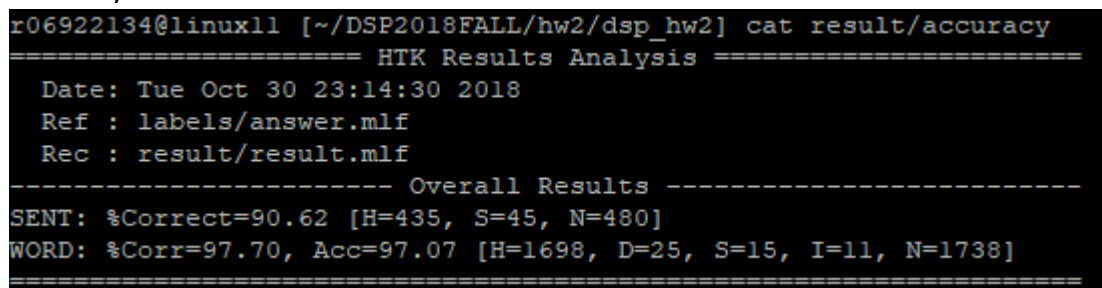
Accuracy = 74.34%



```
r06922134@linux12:~/DSP2018FALL/hw2/dsp_hw2/result
===== HTK Results Analysis =====
Date: Thu Oct 25 18:20:16 2018
Ref : labels/answer.mlf
Rec : result/result.mlf
----- Overall Results -----
SENT: %Correct=38.54 [H=185, S=295, N=480]
WORD: %Corr=96.61, Acc=74.34 [H=1679, D=13, S=46, I=387, N=1738]
=====
```

## Improve Accuracy

Accuracy= 97.07%



```
r06922134@linux11 [~/DSP2018FALL/hw2/dsp_hw2] cat result/accuracy
===== HTK Results Analysis =====
Date: Tue Oct 30 23:14:30 2018
Ref : labels/answer.mlf
Rec : result/result.mlf
----- Overall Results -----
SENT: %Correct=90.62 [H=435, S=45, N=480]
WORD: %Corr=97.70, Acc=97.07 [H=1698, D=25, S=15, I=11, N=1738]
=====
```

# Parameter

# of states = 12

```
r06922134@linux11:~/DSP2018FALL/hw2/dsp_hw2/lib
~o <VECSIZE> 39 <MFCC_Z_E_D_A>
~h "proto"
<BeginHMM>
<NumStates> 12
```

# of Gaussian mixtures

每一個都+8 Gaussian mixture 包括 state2 ~ state11

```
MU +8 {liN.state[2-11].mix}
MU +8 {#i.state[2-11].mix}
MU +8 {#er.state[2-11].mix}
MU +8 {san.state[2-11].mix}
MU +8 {sy.state[2-11].mix}
MU +8 {#u.state[2-11].mix}
MU +8 {liou.state[2-11].mix}
MU +8 {qi.state[2-11].mix}
MU +8 {ba.state[2-11].mix}
MU +8 {jiou.state[2-11].mix}
MU +8 {sil.state[2-11].mix}
```

# of iterations

6 iterations on step 01 [HERest]

```
$ re-adjust mean, var
echo "step 01 [HERest]: adjust mean, var..."
for i in 0 1 2 3 4 5 ;
do
    echo "iteration $i"
    HERest -C $config -I $label \
        -t 250.0 150.0 1000.0 -S $data_list \
        -H $macro -H $model -M $mmf_dir $model_list
done
```

6 iterations on step 03 [HERest]

```
$ re-adjust mean, var
echo "step 03 [HERest]: adjust mean, var..."
for i in 0 1 2 3 4 5 ;
do
    echo "iteration $i"
    HERest -C $config -I $label \
        -t 250.0 150.0 1000.0 -S $data_list \
        -H $macro -H $model -M $mmf_dir $model_list
done
```

13 iterations on step 05 [HERest]

```
$ re-adjust mean, var
echo "step 05 [HERest]: adjust mean, var..."
for i in 0 1 2 3 4 5 6 7 8 9 10 11 12 ;
do
    HERest -C $config -I $label \
        -t 250.0 150.0 1000.0 -S $data_list \
        -H $macro -H $model -M $mmf_dir $model_list
done
```