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## Environment:

csie workstation

## Final result:

15 states, 20 iterations, +10 Gaussian mixtures

accuracy: 98.22%

```
b04902044@linux13 [/tmp2/b04902044/dsp_hw2] cat result/accuracy
===== HTK Results Analysis =====
Date: Thu Nov 23 22:44:14 2017
Ref : labels/answer.mlf
Rec : result/result.mlf
----- Overall Results -----
SENT: %Correct=94.38 [H=453, S=27, N=480]
WORD: %Corr=98.27, Acc=98.22 [H=1708, D=27, S=3, I=1, N=1738]
=====
```

## Experiments:

### 1. *number of states:*

- 3 states: 74.34%
- 10 states: 93.67%
- 15 states: 95.63%

Increasing the number of states can improve the accuracy efficiently.

### 2. *number of training iterations (15 states):*

- 3 iterations: 95.63%
- 10 iterations: 96.20%
- 20 iterations: 96.26%
- 50 iterations: 96.95%

Increasing the iterations can improve the accuracy slightly, not very helpful.

### 3. *increasing the number of Gaussian mixture:*

(15 states, 20 iterations)

- +0: 96.26%
- +1: 97.07%
- +2: 97.70%
- +5: 97.70%
- +10: **98.22%**
- +15: 98.16%

Increasing the number of Gaussian mixture can improve the accuracy, even when the original accuracy is high. (Here, the accuracy increases by almost 2% even when the original accuracy is 96.26%.)