

Report

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Result of 100 iterations:

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b07902068@b07902068-VirtualBox:~/Desktop/dsp_hw1$ make
gcc -o test src/test.c -std=c99 -O2 -lm -linc
b07902068@b07902068-VirtualBox:~/Desktop/dsp_hw1$ time ./train 100 model_init.txt data/train_seq_01.txt model_01.txt
real    0m41.349s
user    0m41.094s
sys     0m0.152s
b07902068@b07902068-VirtualBox:~/Desktop/dsp_hw1$ time ./train 100 model_init.txt data/train_seq_02.txt model_02.txt
real    0m42.182s
user    0m41.594s
sys     0m0.324s
b07902068@b07902068-VirtualBox:~/Desktop/dsp_hw1$ time ./train 100 model_init.txt data/train_seq_03.txt model_03.txt
real    0m41.997s
user    0m41.630s
sys     0m0.185s
b07902068@b07902068-VirtualBox:~/Desktop/dsp_hw1$ time ./train 100 model_init.txt data/train_seq_04.txt model_04.txt
real    0m42.415s
user    0m42.201s
sys     0m0.157s
b07902068@b07902068-VirtualBox:~/Desktop/dsp_hw1$ time ./train 100 model_init.txt data/train_seq_05.txt model_05.txt
real    0m43.377s
user    0m42.960s
sys     0m0.242s
b07902068@b07902068-VirtualBox:~/Desktop/dsp_hw1$ ./test modellist.txt data/test_seq.txt result.txt
accuracy = 0.846000
b07902068@b07902068-VirtualBox:~/Desktop/dsp_hw1$
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When calculating $\gamma_t(i), \epsilon_t(i, j)$, or updating $a_{ij}, b_j(k)$ of the hmm model, a value will be used as denominators of many entries, therefore, values used as denominators can be calculated first and stored, rather than recalculated many times for different entries. In this way, the execution time can be reduced.