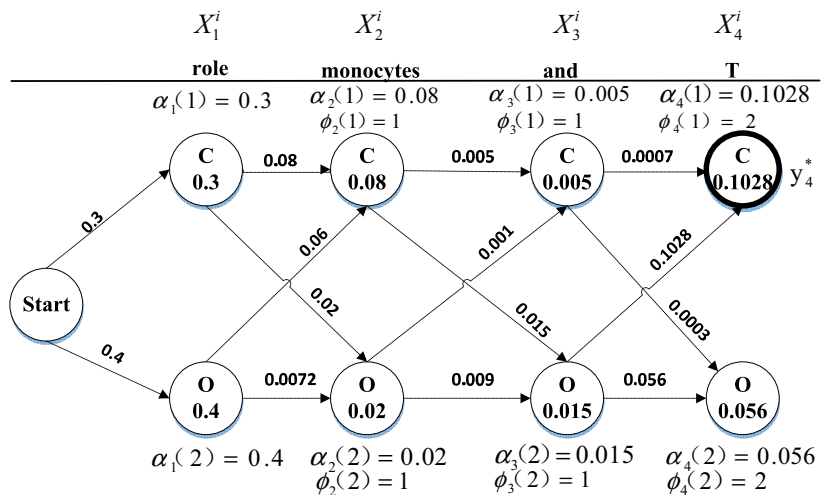
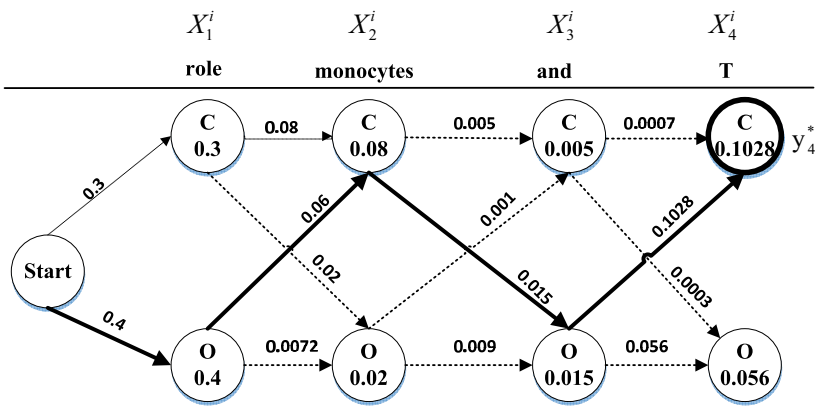


Fig. 2: The process of L-BFGS algorithm



(a) Steps 1-3



The state sequence: $y_1^i = O, y_2^i = C, y_3^i = O, y_4^i = C$.

(b) Step 4

Fig. 3: An example for the process of the Viterbi algorithm

TABLE 1: The software and hardware configurations in the Hadoop cluster

| The node type | Operating system | CPU | Memory | Quantity |
|---------------|------------------|------------------|--------|----------|
| NameNode | Open suse 11 | 4-core, 3.07 GHz | 8G | 1 |
| DataNode | Open suse 11 | 4-core, 2.70 GHz | 8G | 40 |

TABLE 2: Key configuration in the Hadoop cluster

| Configuration items | Configuration properties | Value |
|---------------------|---|-------|
| Map slots | mapred.tasktracker.map.tasks.maximum | 4 |
| Reduce slot | mapred.tasktracker.Reduce.tasks.maximum | 2 |
| Copy thread | mapred.reduce.parallel.copies | 5 |
| HDFS replications | dfs.replication | 1 |
| Input file size | dfs.block.size | 64 M |
| DataNode heartbeat | dfs.heartbeat.interval | 3 s |