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function VITERBI(observations of len  $T$ , state-graph) returns best-path

  num-states  $\leftarrow$  NUM-OF-STATES(state-graph)
  Create a path probability matrix viterbi[num-states+2,  $T$ +2]
  viterbi[0,0]  $\leftarrow$  1.0
  for each time step  $t$  from 0 to  $T$  do
    for each state  $s$  from 0 to num-states do
      for each transition  $s'$  from  $s$  specified by state-graph
        new-score  $\leftarrow$  viterbi[ $s$ ,  $t$ ] *  $a[s,s']$  *  $b_{s'}(o_t)$ 
        if ((viterbi[ $s'$ ,  $t+1$ ] = 0) || (new-score > viterbi[ $s'$ ,  $t+1$ ]))
          then
            viterbi[ $s'$ ,  $t+1$ ]  $\leftarrow$  new-score
            back-pointer[ $s'$ ,  $t+1$ ]  $\leftarrow$   $s$ 
    Backtrace from highest probability state in the final column of viterbi[ $t$ ] and
    return path

```