**Natural Language Processing – Exercise 3**

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Given Data:

Hidden states – {H, L}





Given sequence: **S = ACCGTGCA**

Starting state = H.

Viterbi Algorithm:

K=0:

We know that the starting state is H, and there are no back pointers yet.

K=1: A nucleotide was emitted

K=2: C nucleotide was emitted

K=3: C nucleotide was emitted

K=4: G nucleotide was emitted

K=5: T nucleotide was emitted

K=6: G nucleotide was emitted

K=7: C nucleotide was emitted

K=8: A nucleotide was emitted

As we can see the best end state is L as shown in K=8:

We will follow the back pointers and reach to the best state-sequence:

Best sequence probability calculation: