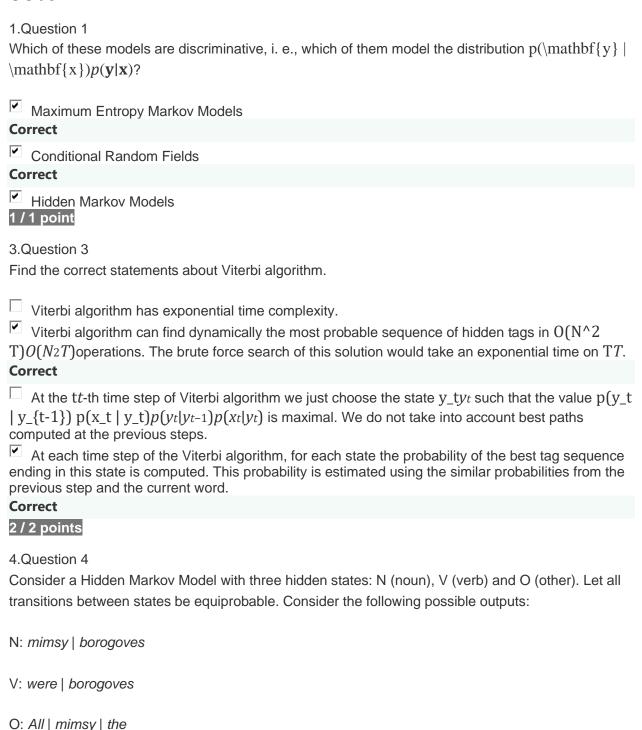
# Sequence tagging with probabilistic models

## LATEST SUBMISSION GRADE

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Consider the sentence "All mimsy were the borogoves" and choose the correct statement.

- There are four possible best tag sequences: ONVON, ONVOV, OOVON, OOVOV. All of them are equiprobable.
- The best tag sequence is OOVON.

Let all these outputs be also equiprobable.

- The best tag sequence is ONVOV.
- There are two possible best tag sequences: ONVON and ONVOV. They are equiprobable.
- The best tag sequence is OOVOV.
- The best tag sequence is ONVON.

#### Correct

Exactly! It's easier to generate "mimsy" from a noun than from a verb, so these two sequences are more probable than OOVON or OOVOV.

## 2 / 2 points

### 5.Question 5

As before, consider a Hidden Markov Model with three hidden states: N (noun), V (verb) and O (other). Let all transitions between states be equiprobable. Consider the following possible outputs:

N: mimsy | borogoves

V: were | borogoves

O: All | mimsy | the

Let all these outputs be also equiprobable.

**The probability** p (V | O) of a transition from O to V is  $\frac{1}{3}$ 1 in this model. Let's reestimate it on the sentence "*All mimsy were the borogoves*" using one iteration of Baum-Welch algorithm.

Find the new value of this probability and write it with **precision of 3 digits** after the decimal point.

<u>Hint:</u> there are four possible tag sequences: ONVON, ONVOV, OOVON, OOVOV. The first and the second sequences have the same probability, and so do the third and the fourth ones. You need to estimate these probabilities and find the ratio of the expectations for (O -> V) and (O->?) transition counts.

0.375

## Correct

You got it!