**Bổ xung thêm**

1. **In NLP, The algorithm decreases the weight for commonly used words and increases the weight for words that are not used very much in a collection of documents**  
   a. Term Frequency (TF)  
   b. Inverse Document Frequency (IDF)  
   c. Word2Vec  
   d. Latent Dirichlet Allocation (LDA)
2. **TF-IDF helps you to establish?**

a.most frequently occurring word in the document  
b.most important word in the document

c. most important word in sentence.

1. Answer the following multiple choice questions (2 points each) by writing the answer in the provided blank.

Suppose you have the following training data for Naïve Bayes:

I liked the movie [LABEL=+]

I hated the movie because it was an action movie [LABEL=-]

Really cool movie [LABEL=+]

1. Suppose we are given an unseen input sentence **the movie**. What is the joint probability P(−; the movie)?

A. 2/300 B. 4/98 C. 1/12 D. 1/3

1. What prediction will the model make on the movie?
2. Positive B. Negative
3. Given Hidden Markov Model as follows:

Q = {q1, q2}

Transition probabilities matrix A = {a11 = 0.5, a12 = 0.5, a21 = 0.3, a22 = 0.7}

Observation sequence includes o1, o2, o3 with oi  belongs O = {1,2,3}.

Emission probabilities matrix B = {b1(1) = 0.2, b1(2) = 0.5, b1(3) = 0.3, b2(1) = 0.4, b2(2) = 0.3, b2(3) = 0.3}

Initial state distribution states ᴨ = {ᴨq1 = 0.1, ᴨq2 = 0.9}

1. Using **Forwad algorithm**, calculate the probability P(o1o2o3=321) for this HMM?

A.0,0452 B. 0,1352 C. 0,2352 D. 0,0352

1. Using **Viterbi algorithm**, finding the best sequence of states for observation sequence o1o2o3=321?

A (q2, q2, q2) B . (q2, q1, q1) C. (q1, q2, q3) D. (q1, q3, q2)