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Week 2Naive Bayes Introduction

# Naive Bayes Introduction

To build a classifier, we will first start by creating conditional probabilities given the following table:

Positive tweets  
I am happy because I am learning NLP  
I am happy, not sad.

Negative tweets  
I am sad, I am not learning NLP  
I am sad, not happy

word	Pos	Neg
I	3	3
am	3	3
happy	2	1
because	1	0
learning	1	1
NLP	1	1
sad	1	2
not	1	2
N <sub>class</sub>	13	12

This allows us compute the following table of probabilities:

word	Pos	Neg
I	0.24	0.25
am	0.24	0.25
happy	0.15	0.08
because	0.08	0
learning	0.08	0.08
NLP	0.08	0.08
sad	0.08	0.17
not	0.08	0.17

Once you have the probabilities, you can compute the likelihood score as follows

Tweet: I am happy today; I am learning.

$$\prod_{i=1}^m \frac{P(w_i|pos)}{P(w_i|neg)} = \frac{0.14}{0.10} = 1.4 > 1$$

~~$\frac{0.20}{0.20}$~~  \*  ~~$\frac{0.20}{0.20}$~~  \*  $\frac{0.14}{0.10}$  \*  ~~$\frac{0.20}{0.20}$~~  \*  ~~$\frac{0.20}{0.20}$~~  \*  ~~$\frac{0.10}{0.10}$~~

word	Pos	Neg
I	0.20	0.20
am	0.20	0.20
happy	0.14	0.10
because	0.10	0.05
learning	0.10	0.10
NLP	0.10	0.10
sad	0.10	0.15
not	0.10	0.15

A score greater than 1 indicates that the class is positive, otherwise it is negative.

Mark as completed

