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Hw3

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1. P(Pittsburgh | true) = 4+1/7+6 = 5/3

P(Pittsburgh | false) = 1+1/3+6 = 2/9

P(Pitt | true) = 1+1/7+6 = 2/13

P(Pitt | false) = 0+1/3+6 = 1/9

P(true) = ¾

P(false) = ¼

**P(true | test) = ¾(5/13 \* 5/13 \* 5/13 \* 2/13) = .0065649**

P(false | test) = ¼(2/9 \* 2/9 \* 2/9 \* 1/9) = .0003

Yes, you can tell that this test set document is about Pittsburgh because the probability that those words appear in a document about Pittsburgh vs. one that is not about Pittsburgh is much higher.

1. Idf:

Car: 806791/18,165 = 44.4

Auto: 806791/6723 = 120.004

Insurance: 806791/19241 = 41.93

Tf-idf:

Doc1:

Car = 44.4 \* 27 = 1198.8

Auto = 120.004 \* 3 = 360.012

Insurance = 41.93 \* 0 = 0

Doc2:

Car = 44.4 \* 4 = 177.6

Auto = 120.004 \* 33 = 3,960.132

Insurance = 41.93 \* 33 = 1383.69

Cosine Similarity(V, W) =

([1\* 0) + (0\*1) + (1\*1) + (0\*0) + (0\*0) + (0\*0)] / [sqrt(1+1) + sqrt(1+1)] = ½

Positive Examples: Negative Examples:

(brown, quick) (brown, where) (brown, forever)

(brown, the) (brown, dear) (brown, coaxial)

(brown, fox) (brown, puddle) (brown, aardvark)

(brown, jumps) (brown, twelve) (brown, hello)

L() = log (1/1+e^-c\*t) + sum(1/1+e^n\*t)

1. Information Extraction:

RegExp : [A-Z]{3} // maybe WordShape = XXX to represent three capital letters

1. PropBank Arguments:

Arg0 – proto-agent (volitional involvement in event)

Arg1-- proto-patient (what undergoes the event)

With the word sell, this would be what is being sold

* Chooses all verbs as predicates and closer to a syntactic parse

FrameNet:

* The roles are specified to a frame and a background knowledge structure that defines set elements
* Creates relations between frames
* Chooses words that were labeled as targets in training date
* Identifies the entities involved and then the relationships between the entities
* Defines sell as a verb – to exchange an item for money or its equivalent

Both have common final stage of joint interference

1. Selection Requirements:
2. followed by a Noun (the item to be sold)
3. an actor that is doing the selling
4. an instrument being used to sell the item
5. a Proper Noun where the selling is being done

Examples:

Brands are finding new ways to sell their image

Sell your car in Pittsburgh

Airbnb backyard will sell houses in 2019

Rules did not represent advertisements