



	Cat	Documents
Training	-	just plain boring
	-	entirely predictable and lacks energy
	-	no surprises and very few laughs
	+	very powerful
	+	the most fun film of the summer
Test	?	predictable with no fun

vocabulary: just, plain, boring, entirely, predictable, and, lacks, energy, no, surprises, very, few, laughs, powerful, the, most, fun, film, of, summer.

+ : P                      Prob(P) = 2/5

- : N                      Prob(N) = 3/5

Positive:	very	1	fun	1	
	powerful	1	film	1	(+1) for
	the	2	of	1	all vocab
	most	1	summer	1	words

Negative:	just	1	lacks	1	
	plain	1	energy	1	(+1) for
	boring	1	no	1	all vocab
	entirely	1	surprises	1	words
	predictable	1	very	1	
	and	2	few	1	
			laughs	1	

$$P(P|\text{sentence}) = \frac{P(\text{sentence}|P) \cdot P(P)}{P(\text{sentence})}$$

$$P(N|\text{sentence}) = \frac{P(\text{sentence}|N) \cdot P(N)}{P(\text{sentence})}$$

$$\Rightarrow P(P|S) \propto P(S|P) \cdot P(P) \quad \& \quad P(N|S) \propto P(S|N) \cdot P(N)$$

$$\begin{aligned} P(S|P) &= P(\text{predictable}|P) \cdot P(\text{with}|P) \cdot P(\text{no}|P) \cdot P(\text{fun}|P) \\ &= \left(\frac{1}{29}\right) \cdot \left(\frac{1}{29}\right) \cdot \left(\frac{1}{29}\right) \cdot \left(\frac{2}{29}\right) \end{aligned}$$

$$\therefore P(P|S) \propto \frac{2}{(29)^4} \cdot \frac{2}{5}$$

$$\begin{aligned} P(S|N) &= P(\text{predictable}|N) \cdot P(\text{with}|N) \cdot P(\text{no}|N) \cdot P(\text{fun}|N) \\ &= \left(\frac{2}{34}\right) \cdot \left(\frac{1}{34}\right) \cdot \left(\frac{2}{34}\right) \cdot \left(\frac{1}{34}\right) \end{aligned}$$

$$\therefore P(N|S) \propto \frac{4}{(34)^4} \cdot \frac{3}{5}$$

$$\begin{aligned} \frac{P(P|S)}{P(N|S)} &= \frac{(34)^4 \cdot \cancel{5} \cdot \cancel{4} \cdot 1}{\cancel{4} \cdot 3 \cdot (29)^4 \cdot \cancel{5}} \cdot \left(\frac{34}{29}\right)^4 \cdot \frac{1}{3} \\ &= \frac{(1.1724)^4}{3} = \frac{1.88939}{3} < 1 \end{aligned}$$

$$\Rightarrow \frac{P(P|S)}{P(N|S)} < 1 \Rightarrow P(P|S) < P(N|S)$$

$\therefore$  we'll classify the test sample negative.