Naive Bayes classifier

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Prior Probability - Prob of yes & No

$P(yes) = 9/14 = 0.64$

$P(No) = 5/14 = 0.36$

Current Probability / Condelar probability for all attributes

outlook	Y	N
sunny	2/9	3/5
overheat	4/9	0
rain	3/9	2/5

humidity	Y	N
high	3/9	4/5
normal	6/9	1/5

temp	Y	N
hot	2/9	2/5
mild	4/9	2/5
cool	3/9	1/5

wind	Y	N
strong	3/9	3/5
weak	6/9	2/5

classify new yes/NO

(outlook = sunny, temperature = cool, humidity = high, wind = strong) = Given this condition check this instance belong to yes/No.

$$V_{NB} = \text{argmax}\left(P(v_j) \prod_i P(a_i | v_j) \right)$$

$$v_j \in [yes, no)$$

$$= \text{allgmax } P(v_j)\ P(\text{outlook} = \text{sunny} | v_j)$$

$$v_j \in (yes, NO)$$

$$P(\text{Temp} = \text{cool} | v_j)$$

sub yes in (v_j)

$$V_{NS}/yes) = P(yes)\ P(\text{sunny}/yes)$$

$$P(\text{cool}/yes)\ P(\text{high}/yes))$$

$$P(\text{Strong}/yes) = 0.053$$

sub NO in (v_j)

$$V_{NL}/NO = P(NO)\ P(\text{sunny}/no)\ P(\text{cool}/no)$$

$$P(\text{high}/no)\ P(\text{Strong}/no) = 0.0206$$

$$V_{NB}(yes) = \frac{V_{NB}(yes)}{V_{NB}(yes) + V_{NB}/no} = 0.205$$

$$V_{NB}(no) = \frac{V_{NB}(no)}{V_{NB}(yes) + V_{D}(no)} = 0.795$$

$P(yes) + P(No) = 0.205 + 0.795 = 1$

since Prob(No) > Prob(yes)

then Person want be able to play tennis