

age	income	student	credit_rating	buys_computer
<=30	high	no	fair	no
<=30	high	no	excellent	no
31...40	high	no	fair	yes
>40	medium	no	fair	yes
>40	low	yes	fair	yes
>40	low	yes	excellent	no
31...40	low	yes	excellent	yes
<=30	medium	no	fair	no
<=30	low	yes	fair	yes
>40	medium	yes	fair	yes
<=30	medium	yes	excellent	yes
31...40	medium	no	excellent	yes
31...40	high	yes	fair	yes
>40	medium	no	excellent	no

input age 31-40

$$C1 : P(\text{buys_computer} = \text{"yes"}) = 9/14 = 0.643$$

$$C2 : P(\text{buys_computer} = \text{"no"}) = 5/14 = 0.357$$

Compute $P(x|C1, C2)$ for each class

$$C1 (\text{age} = \text{"31...40"} | \text{buys_computer} = \text{"yes"}) = 4/9 = 0.444 = \frac{5}{11} = 0.454$$

$$C2 (\text{age} = \text{"31...40"} | \text{buys_computer} = \text{"no"}) = 0/5 = 0 = \frac{1}{7} = 0.142$$

$$C1 (\text{income} = \text{"medium"} | \text{buys_computer} = \text{"yes"}) = 2/9 = 0.222$$

$$C2 (\text{income} = \text{"medium"} | \text{buys_computer} = \text{"no"}) = 2/5 = 0.4$$

$$C1 (\text{Student} = \text{"student"} | \text{buys_computer} = \text{"yes"}) = 6/9 = 0.667$$

$$C2 (\text{Student} = \text{"student"} | \text{buys_computer} = \text{"no"}) = 1/5 = 0.2$$

$$C1 (\text{Student} = \text{"credit_rat"} | \text{buys_computer} = \text{"yes"}) = 6/9 = 0.667$$

$$C2 (\text{Student} = \text{"credit_rat"} | \text{buys_computer} = \text{"no"}) = 6/9 = 0.4$$

$$C1 (\text{Student} = \text{"buy_com"} | \text{buys_computer} = \text{"yes"}) =$$

$$C2 (\text{Student} = \text{"buy_com"} | \text{buys_computer} = \text{"no"}) =$$

$$0.643 \times 0.028 = 0.018$$

$$0.357 \times 0.002 = 0.0002$$

therefore, x belongs to class ("buy_com = Yes")