นางสาวอุมาพร คำภิชัย

623020547-0 เลขที่ 30

กฎบ้าน

หา Info

$$\text{Info}(D) = I(9,5) = -\frac{9}{14}\log(2)\left(\frac{9}{14}\right) - \frac{5}{14}\log(2)\left(\frac{5}{14}\right)$$

$$= 0.94$$

หา $\text{Info}_{age}(D)$

$$\text{Info}_{age}(D) = \frac{5}{14}I(2,3) + \frac{4}{14}I(4,0) + \frac{5}{14}I(3,2)$$

$$I(2,3) = -\frac{2}{5}\log(2)\left(\frac{2}{5}\right) - \frac{3}{5}\log(2)\left(\frac{3}{5}\right) = 0.971$$

$$I(4,0) = -\frac{4}{4}\log(2)\left(\frac{4}{4}\right) - \frac{0}{4}\log(2)\left(\frac{0}{4}\right) = 0$$

$$I(3,2) = -\frac{3}{5}\log(2)\left(\frac{3}{5}\right) - \frac{2}{5}\log(2)\left(\frac{2}{5}\right) = 0.971$$

แทนค่า $\text{Info}_{age}(D) = \frac{5}{14}(0.971) + \frac{4}{14}(0) + \frac{5}{14}(0.971) = 0.694$

หา Gain (age)

$$\text{Gain}(age) = 0.94 - 0.694 = 0.246$$

หา $\text{Info}_{incame}(D)$

$$\text{Info}_{incame}(D) = \frac{4}{14}I(2,2) + \frac{6}{14}I(4,2) + \frac{4}{14}I(3,1)$$

$$I(2,2) = -\frac{2}{4}\log(2)\left(\frac{2}{4}\right) - \frac{2}{4}\log(2)\left(\frac{2}{4}\right) = 1$$

$$I(4,2) = -\frac{4}{6}\log(2)\left(\frac{4}{6}\right) - \frac{2}{6}\log(2)\left(\frac{2}{6}\right) = 0.918$$

$$I(3,1) = -\frac{3}{4}\log(2)\left(\frac{3}{4}\right) - \frac{1}{4}\log(2)\left(\frac{1}{4}\right) = 0.811$$

แทนค่า $\text{Info}_{incame}(D) = \frac{4}{14}(1) + \frac{6}{14}(0.918) + \frac{4}{14}(0.811) = 0.911$

หา Gain (incame)

$$\text{Gain}(incame) = 0.94 - 0.911 = 0.029$$

หา $\text{Info}_{student}(D)$

$$\text{Info}_{student}(D) = \frac{7}{14} I(6,1) + \frac{7}{14} I(3,4)$$

$$I(6,1) = -\frac{6}{7}\log(2)\left(\frac{6}{7}\right) - \frac{1}{7}\log(2)\left(\frac{1}{7}\right) = 0.592$$

$$I(3,4) = -\frac{3}{4}\log(2)\left(\frac{3}{4}\right) - \frac{4}{7}\log(2)\left(\frac{4}{7}\right) = 0.985$$

แทนค่า $\text{Info}_{student}(D) = \frac{7}{14}(0.592) + \frac{7}{14}(0.985) = 0.789$

หา Gain (student)

$$\text{Gain (Student)} = 0.94 - 0.789 = 0.151$$

$\text{Info}_{credit\_rating}(D)$

$$\text{Info}_{credit\_rating}(D) = \frac{8}{14} I(6,2) + \frac{6}{14} I(3,3)$$

$$I(6,2) = -\frac{6}{8}\log(2)\left(\frac{6}{8}\right) - \frac{2}{8}\log(2)\left(\frac{2}{8}\right) = 0.8111$$

$$I(3,3) = -\frac{3}{6}\log(2)\left(\frac{3}{6}\right) - \frac{3}{6}\log(2)\left(\frac{3}{6}\right) = 1$$

แทนค่า $\text{Info}_{credit\_rating}(D) = \frac{8}{14}(0.8111) + \frac{6}{14}(1) = 0.892$

หา Gain Credit-rating)

$$\text{Gain Credit-rating} = 0.94 - 0.892 = 0.048$$