

PR1

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1. Hitung manual Information Gain dari data disamping

ID Information gain (class : online course)

ID Information gain (class : Education Background)

ID Information gain (class : working status)

ID hitung Entropy

Jumlah "pass" : 8

"fail" : 7

- jumlah data is entropy online course

$$H(S) = - \sum_{i=1}^c p_i \log_2 p_i$$

p_i = Probabilitas dari setiap kelas

$$H(S) = - \left(\frac{8}{15} \log_2 \frac{8}{15} + \frac{7}{15} \log_2 \frac{7}{15} \right)$$

$$p_{\text{pass}} = \frac{8}{15} = 0,5333$$

$$p_{\text{fail}} = \frac{7}{15} = 0,4667$$

$$H(S) = - (0,5333 \log_2 0,5333 + 0,4667 \log_2 0,4667)$$

$$H(S) = - (0,4898 - 0,5102)$$

$$H(S) = 1,0$$

Hitung entropy

$$\begin{array}{l} \text{ID Online Course} : X = 6 \text{ data} \\ \begin{array}{l} - \text{Pass} = 4 \\ - \text{Fail} = 2 \end{array} \end{array} \left\{ \begin{array}{l} N = 9 \text{ data} \\ - \text{Pass} = 4 \\ - \text{Fail} = 5 \end{array} \right.$$

Entropy univ4Y :

$$H(S/Y) = - \left(\frac{4}{6} \log_2 \frac{4}{6} + \frac{2}{6} \log_2 \frac{2}{6} \right)$$

$$\begin{aligned} H(S/Y) &= - (0,6667 \log_2 0,6667 + 0,3333 \log_2 0,3333) \\ &= (-0,3899 - 0,5283) \\ &= 0,9182 \end{aligned}$$

Entropy univ4N :

$$H(S/N) = - \left(\frac{4}{9} \log_2 \frac{4}{9} + \frac{5}{9} \log_2 \frac{5}{9} \right)$$

$$= - (0,444 \times -1,699 + 0,556 \times -0,8499)$$

$$= - (-0,5200 - 0,4693)$$

$$= 0,9893$$

ID online course

$$= H(S) - H(S | \text{online course})$$

$$= 1,6 - 0,9669 = 0,0391$$

ID edu has 9 rovd

$$= \frac{7}{15} \times 0,984 + \frac{4}{15} \times 0 + \frac{4}{15} \times 0$$

$$= 0,459$$

ID work status

$$= \frac{6}{15} \times 0,709 + \frac{9}{15} \times 0,918 = 0,833$$

PR 2

Jawaban

$$1. TP = 110 + 130 + 120 = 360$$

$$\text{Jumlah data} = 432$$

$$= \frac{4360}{432} = 0,833$$

$$ID + PGO = 61 = 130$$

$$16 + 10 = 26$$

$$= \frac{130}{130 + 26} = \frac{130}{156} = 0,833$$