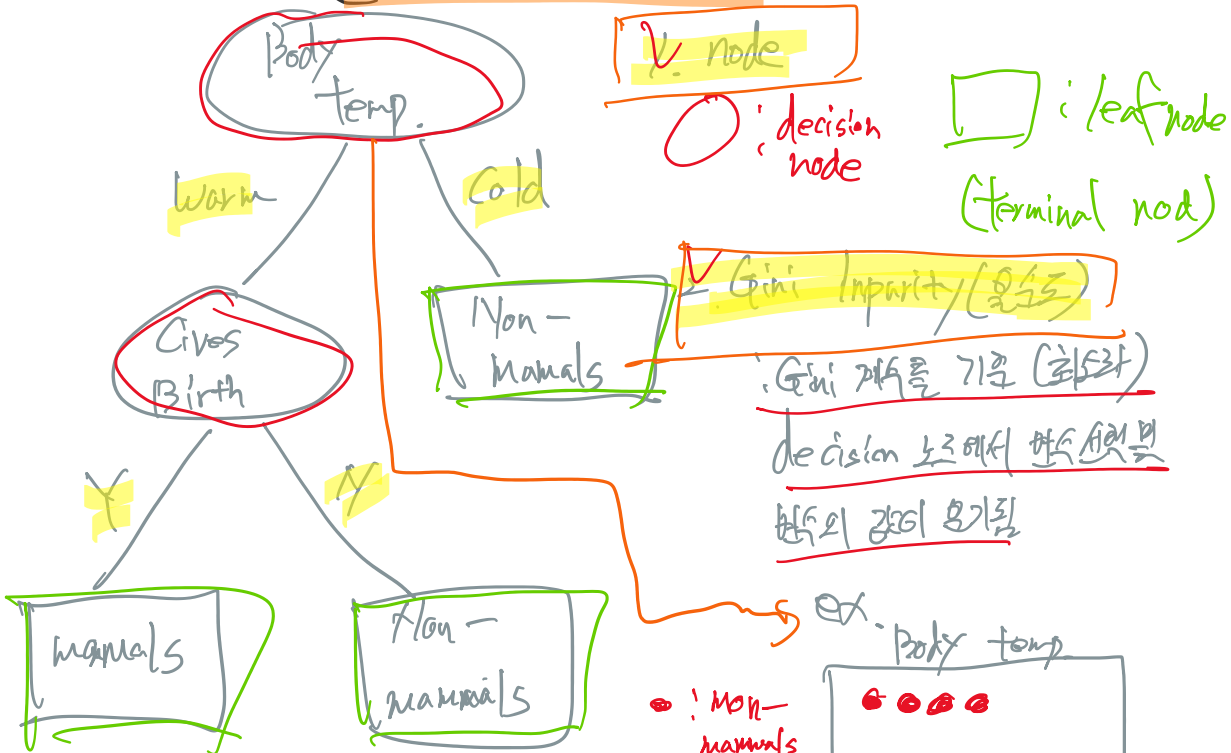


# Decision Tree

2019년 2월 21일 목요일 오전 11:13

## Decision Tree



$$I(A) = 1 - \sum_{k=1}^m (p_k^2)$$

$m$  = number of records

$A$  = rectangle 'A'

[Warm / cold] 기준으로 나뉘었음에 Gini Index?

$$I(a,b) = \frac{1 - \left( \left( \frac{1}{3} \right)^2 + \left( \frac{2}{3} \right)^2 \right)}{\frac{3}{10} \text{ (가중치)}} + \frac{1 - \left( \left( \frac{3}{7} \right)^2 + \left( \frac{4}{7} \right)^2 \right)}{\frac{7}{10} \text{ (가중치)}}$$

$$I(a,b) = \frac{3}{10} \times \left( 1 - \frac{1}{9} - \frac{4}{9} \right) + \frac{7}{10} \left( 1 - \frac{9}{49} - \frac{16}{49} \right)$$

$$= \frac{1}{4} + \frac{1}{24} = \frac{7}{24}$$

$$\begin{aligned}
 &= \frac{\cancel{2}^1}{10} \times \frac{4}{\cancel{4}} + \frac{\cancel{2}^1}{10} \times \frac{24}{\cancel{49} 7} \quad \begin{array}{r} 18 \\ 32 \end{array} \\
 &= \frac{\cancel{2}^3}{30_{15}} + \frac{\cancel{24}^{12}}{70_{35}} \quad \begin{array}{r} 18 \\ 32 \\ 105 \end{array} \\
 &= \frac{63+36}{105} \\
 &= \frac{99}{105} \\
 &= 0.94 \Rightarrow \frac{99}{105} = \frac{33}{35}
 \end{aligned}$$


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