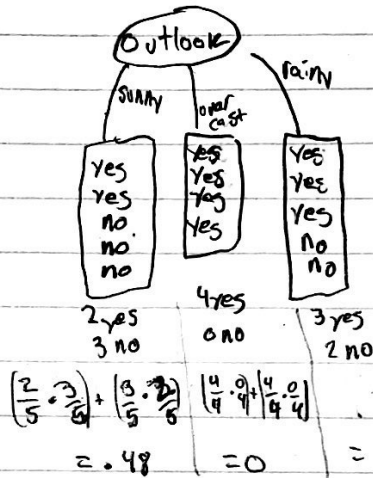


HW5 Exercise 5

$$I_{Gini}(X_k) = \sum_{j=1}^q p(j/k) (1 - p(j/k))$$

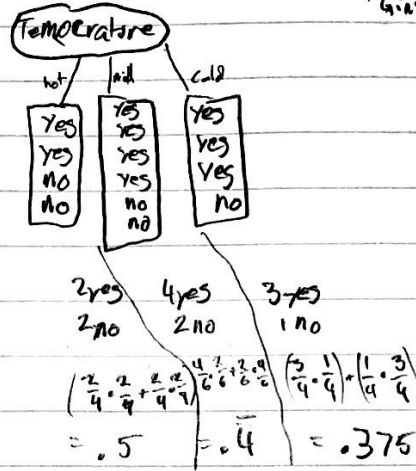


$$\left(\frac{2}{5} \cdot \frac{3}{5}\right) + \left(\frac{3}{5} \cdot \frac{2}{5}\right) = .48$$

$$\left(\frac{4}{4} \cdot \frac{0}{4}\right) + \left(\frac{0}{4} \cdot \frac{4}{4}\right) = 0$$

$$\left(\frac{3}{5} \cdot \frac{2}{5}\right) + \left(\frac{2}{5} \cdot \frac{3}{5}\right) = .48$$

$$\frac{5}{14} (.48) + \frac{4}{14} (0) + \frac{5}{14} (.48) = .3428571429$$

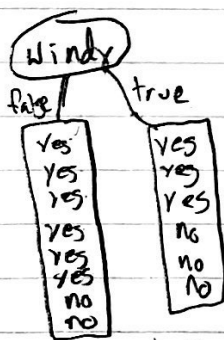


$$\left(\frac{2}{4} \cdot \frac{2}{4}\right) + \left(\frac{2}{4} \cdot \frac{2}{4}\right) = .5$$

$$\left(\frac{4}{6} \cdot \frac{2}{6}\right) + \left(\frac{2}{6} \cdot \frac{4}{6}\right) = .44$$

$$\left(\frac{3}{4} \cdot \frac{1}{4}\right) + \left(\frac{1}{4} \cdot \frac{3}{4}\right) = .375$$

$$\frac{4}{14} (.5) + \frac{6}{14} (.44) + \frac{4}{14} (.375) = .4404761905$$

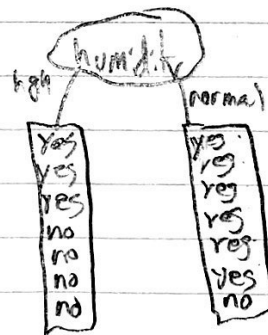


$$1 - \left(\frac{6}{8}^2 + \frac{2}{8}^2\right) = 1 - \frac{625}{64} = .375$$

$$\left(\frac{6}{8} \cdot \frac{2}{8}\right) + \left(\frac{2}{8} \cdot \frac{6}{8}\right) = .375$$

$$\frac{3}{6} \cdot \frac{3}{6} + \frac{3}{6} \cdot \frac{3}{6} = .5$$

$$\frac{8}{16} (.375) + \frac{6}{16} (.5) = .4285714286$$



$$\frac{3}{7} \cdot \frac{4}{7} + \frac{4}{7} \cdot \frac{3}{7} = .4897959184$$

$$\frac{6}{7} \cdot \frac{1}{7} + \frac{1}{7} \cdot \frac{6}{7} = .2448979592$$

$$\frac{7}{14} (\downarrow) + \frac{7}{14} (\downarrow) = .3673469388$$