

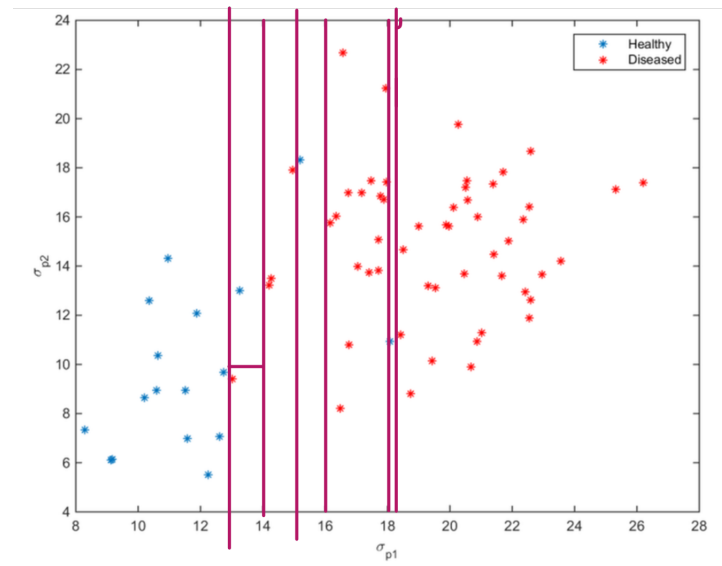
Machine Learning Assignment 61

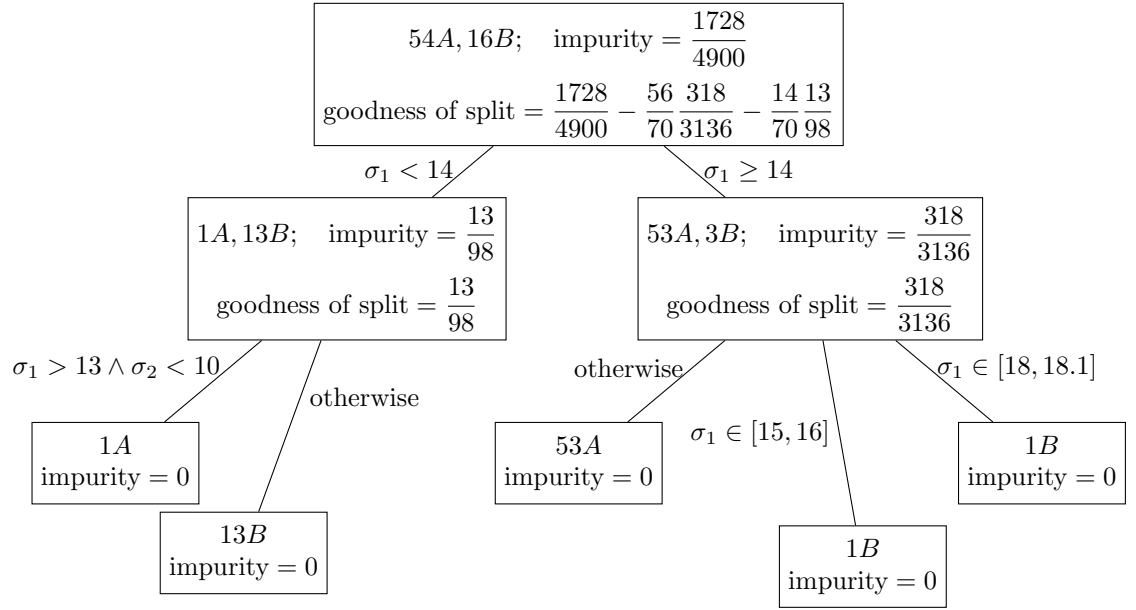
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February 24, 2021

Problem 1

(e) Draw a decision tree to represent the following dataset.





Problem 4

(a a)

$$\begin{aligned}
 P(A) &= 0.4 \\
 P(B) &= 0.7 \\
 P(A \cup B) &= 0.9 \\
 P(A - B) &= P(A \cup B) - P(B) = 0.2 \\
 P(B - A) &= P(A \cup B) - P(A) = 0.5 \\
 P(A \cap B) &= P(A \cup B) - P(A - B) - P(B - A) = 0.2
 \end{aligned}$$

(a b)

$$P(A^C \cap B) = 1 - P(A) - P((A \cup B)^C) = 0.5$$

(a c)

$$P(A - B) = 0.2$$

(a d)

$$P(A^C - B) = 1 - P(B) = 0.3$$

(a e)

$$P(A^C \cup B) = P(B - A) = 0.5$$

(a f)

$$P(A \cap (B \cup A^C)) = P(A \cap B) = 0.2$$

(b a)

$$P(X_2 = 4) = \frac{1}{6}$$

(b b)

$$P(X_1 + X_2 = 7) = \frac{1}{6}$$

(b c)

$$P(X_1 \neq 2, X_2 \geq 7) = \frac{1}{3} * \frac{5}{6} = \frac{5}{18}$$