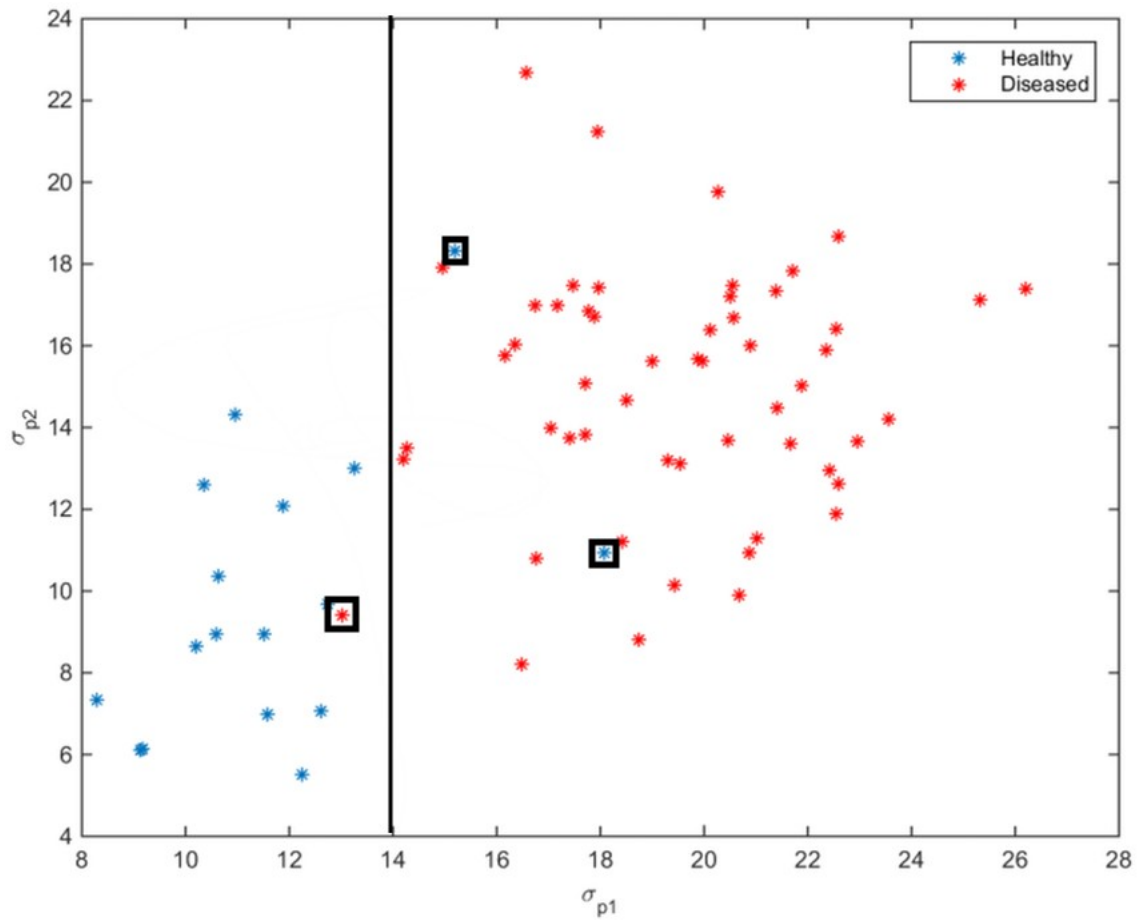


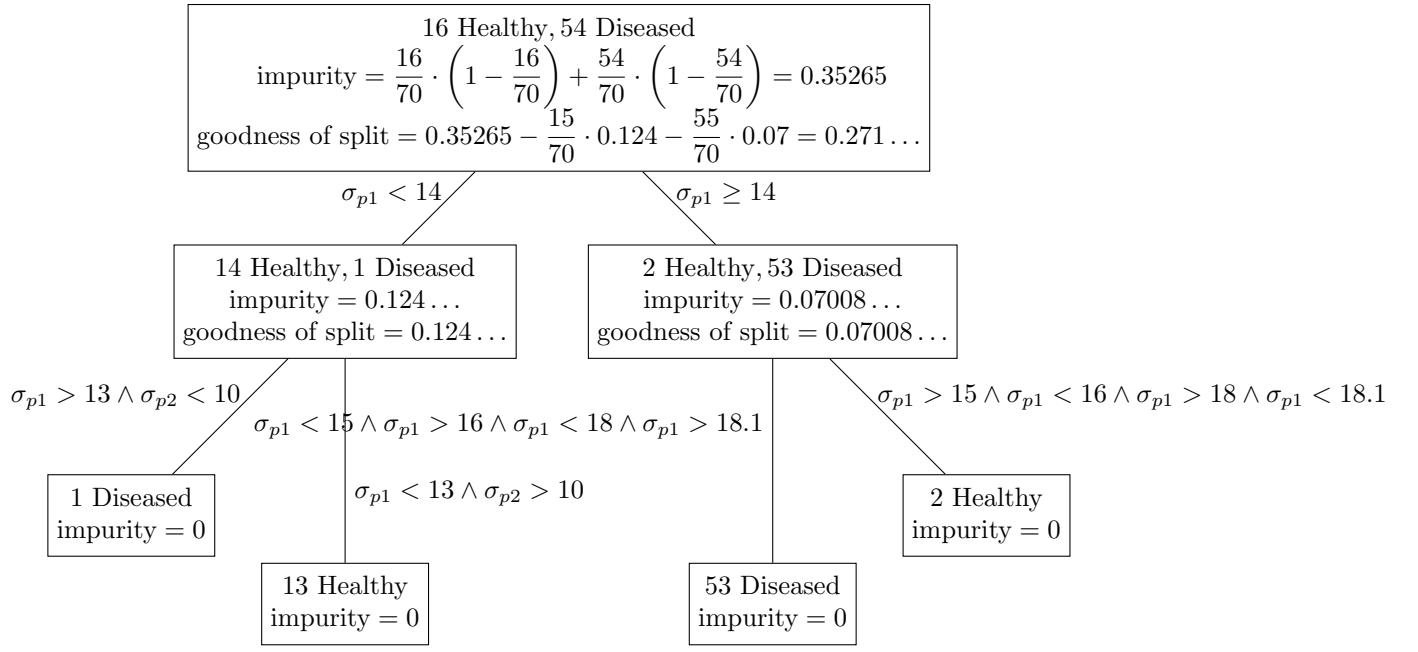
Machine Learning Assignment 58

Colby Roberts

November 16, 2020

61-1





61-4

61-4-A

$A : P(A \cap B) = 0.2$ This is because 0.2 satisfies the condition of $(P(A) - x) + x + (P(B) - x) = 0.9$

$B : P(A^c \cap B) = P(A^c) \cdot P(B) = 0.6 \cdot 0.7 = 0.5$

$C : P(A - B) = P(A) - P(A \cap B) = 0.4 - 0.2 = 0.2$

$D : P(A^c - B) = P(A^c) - P(A^c \cap B) = 0.6 - 0.5 = 0.1$

$E : P(A^c \cup B) = P(B) + P(A^c - B) = 0.7 + 0.1 = 0.8$

$F : P(A \cap (A^c \cup B)) = P(A) \cdot (P(B) + (P(A^c) - P(A^c \cap B))) = 0.4 \cdot (0.7 + (0.6 - 0.6 \cdot 0.7)) = 0.448$

61-4-B

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

$$B : 2 \cdot P(1) \cdot P(6) + 2 \cdot P(2) \cdot P(4) + 4 \cdot P(3) \cdot P(3) = 2 \cdot \frac{1}{6} \cdot \frac{1}{6} + 2 \cdot \frac{1}{6} \cdot \frac{1}{6} + 2 \cdot \frac{1}{6} \cdot \frac{1}{6} = 3 \cdot \frac{1}{18} = \frac{1}{6}$$

$$C : (P(1) + P(3) + P(4) + P(5) + P(6)) \cdot (P(4) + P(5) + P(6)) = \frac{5}{6} \cdot \frac{3}{6} = \frac{15}{36}$$