Video: Sensitivity, Specificity and Prevalance

$$\text{Accuracy} = P(\text{correct} \mid \text{disease})P(\text{disease}) + P(\text{correct} \mid \text{normal})P(\text{normal})$$

$$\text{Accuracy} = \underline{P(+ \mid \text{disease})}P(\text{disease}) + \underline{P(- \mid \text{normal})}P(\text{normal})$$

Sensitivity (true positive rate)

Specificity (true negative rate)

$P(+ \mid \text{disease})$

$P(- \mid \text{normal})$

If a patient has the disease, what is the probability that the model predicts positive

If a patient is normal, what is the probability that the model predicts negative

Sensitivity

Specificity

Thus:

$$\text{Accuracy} = P(\text{correct})$$

$$\text{Accuracy} = \text{Sensitivity} \times P(\text{disease}) + \text{Specificity} \times P(\text{normal})$$

prevalence

1 − prevalence

$$\text{Accuracy} = \text{Sensitivity} \times \text{prevalence} + \text{Specificity} \times (1 - \text{prevalence})$$