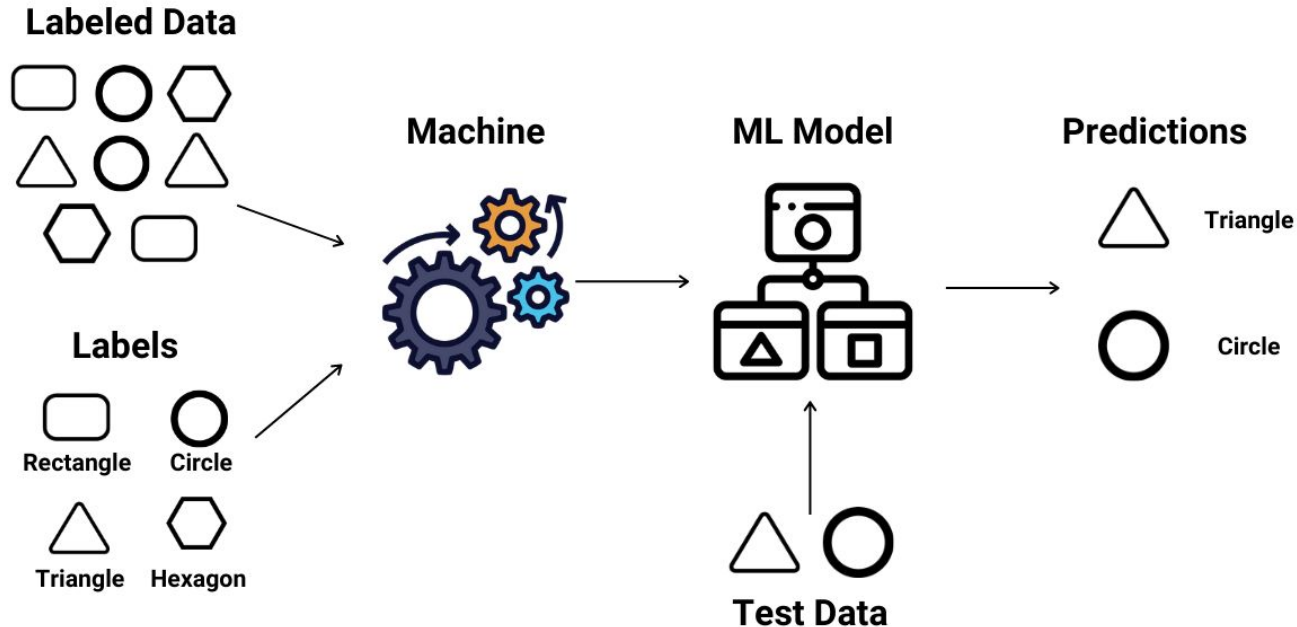


Metrics & Scaling for Classification

Supervised Learning Algorithm

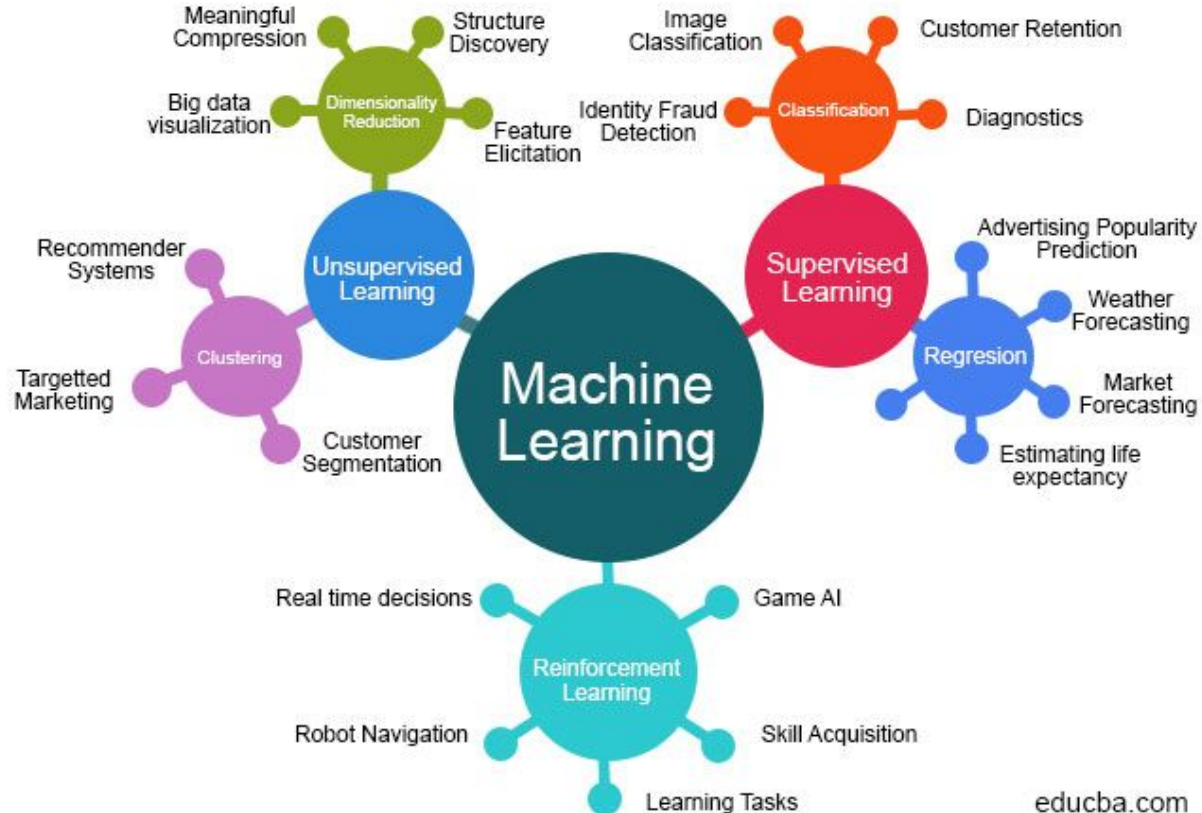


Supervised Learning

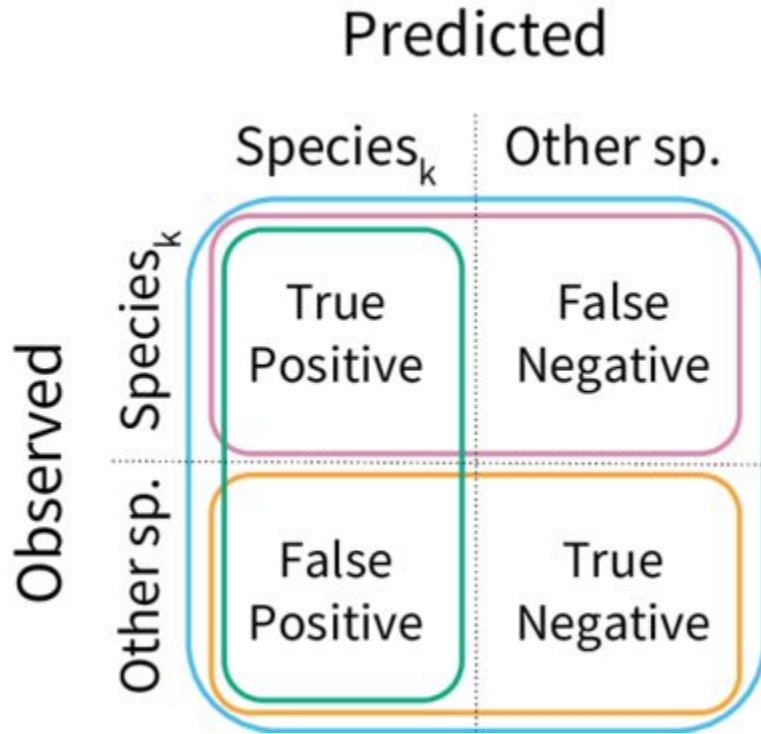



Big Picture


Machine Learning Algorithms





Metrics



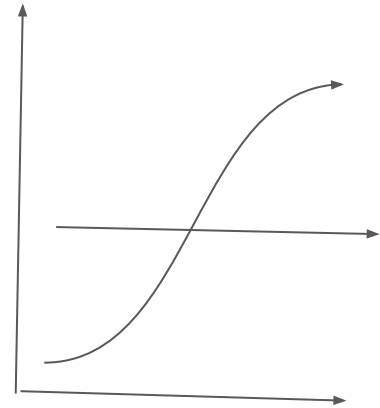
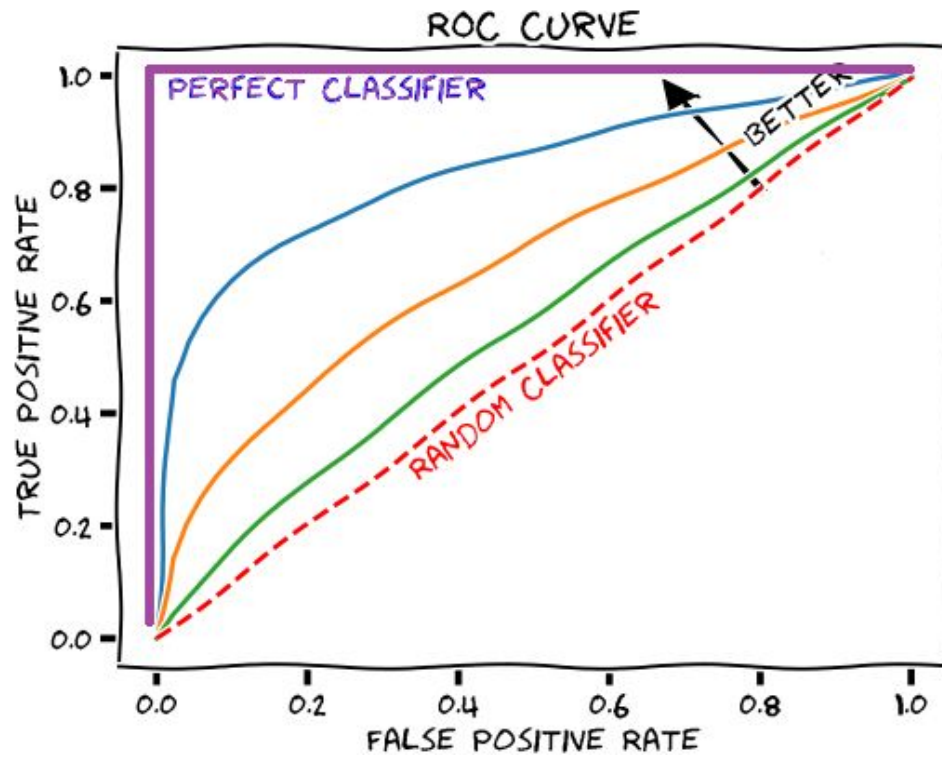
 Accuracy = $\frac{TP + TN}{TP + TN + FP + FN}$

 Specificity = $\frac{TN}{TN + FP}$

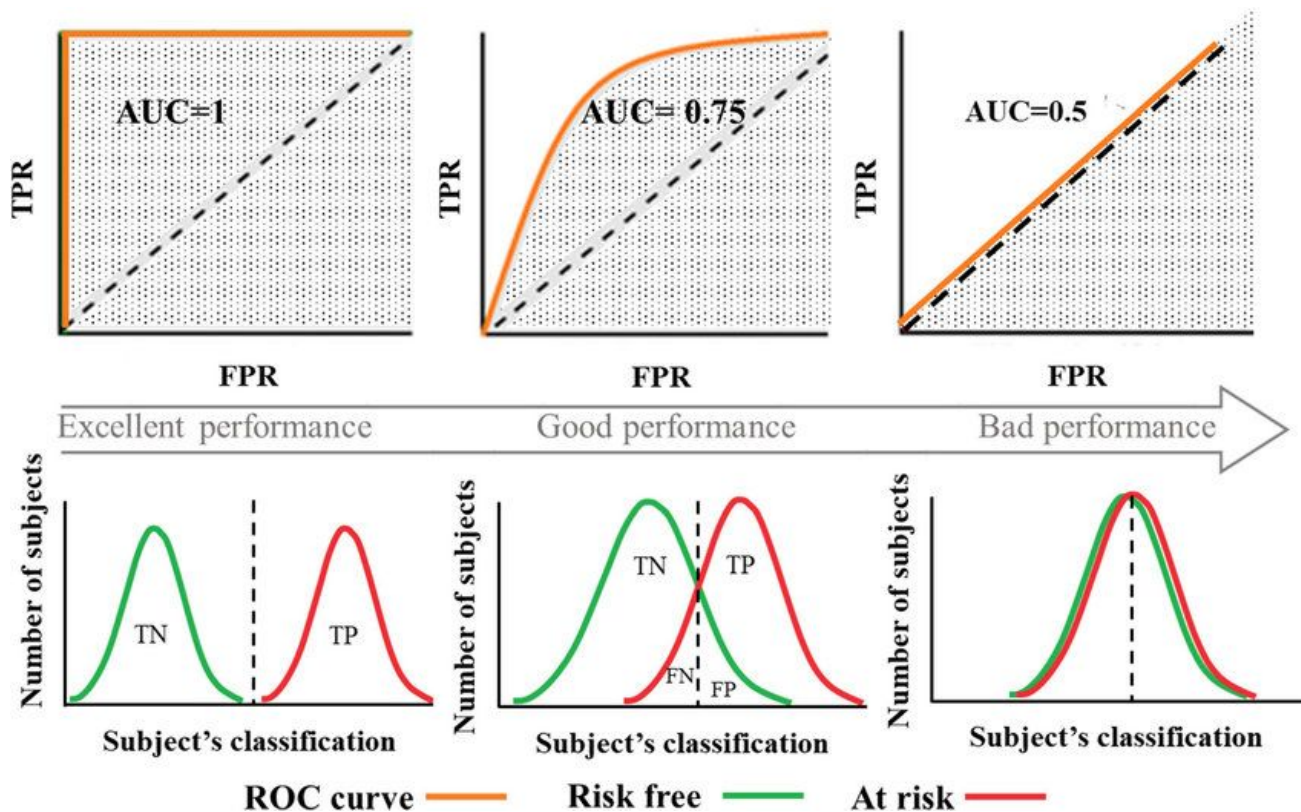
 Precision = $\frac{TP}{TP + FP}$

 Recall = $\frac{TP}{TP + FN}$

Metrics



Metrics



Feature Scaling

Normalization or Standardization

- **Feature Scaling** means scaling features to the same scale.
- **Normalization** scales features between 0 and 1, retaining their proportional range to each other.

Normalization

$$X' = \frac{x - \min(x)}{\max(x) - \min(x)}$$

Diagram annotations: A red arrow points from the text "new value" to X' . Another red arrow points from the text "original value" to x .

- **Standardization** scales features to have a mean (μ) of 0 and standard deviation (σ) of 1.

Standardization

$$X' = \frac{x - \mu}{\sigma}$$

Diagram annotations: A red arrow points from the text "new value" to X' . Another red arrow points from the text "original value" to x . A red arrow points from the text "mean" to μ . A red arrow points from the text "standard deviation" to σ .