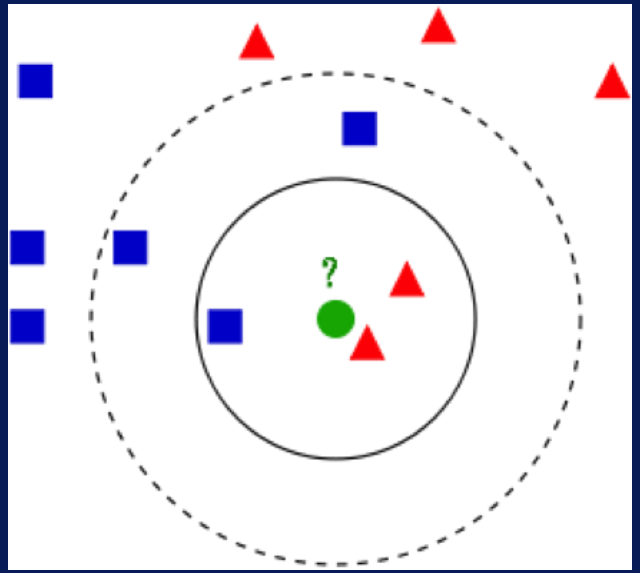
k Nearest Neighbors

After this video you will be able to..

- Describe how kNN is used for classification
- Discuss the assumption behind kNN
- Explain what the ‘k’ stands for in kNN

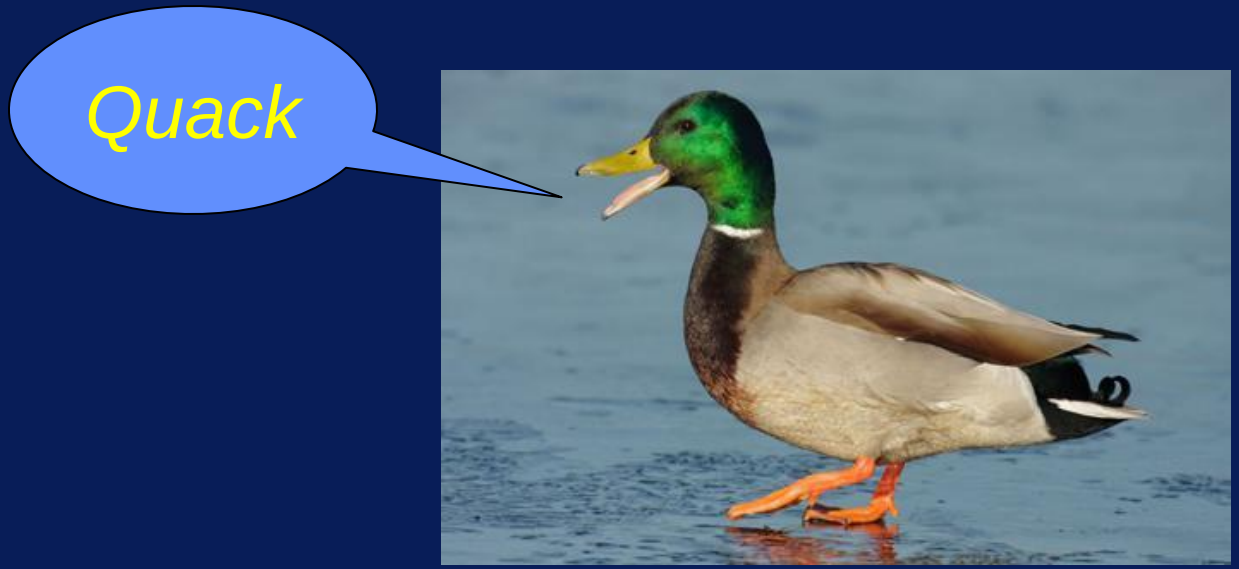
kNN

- Simple classification technique
- Label sample based on its neighbors



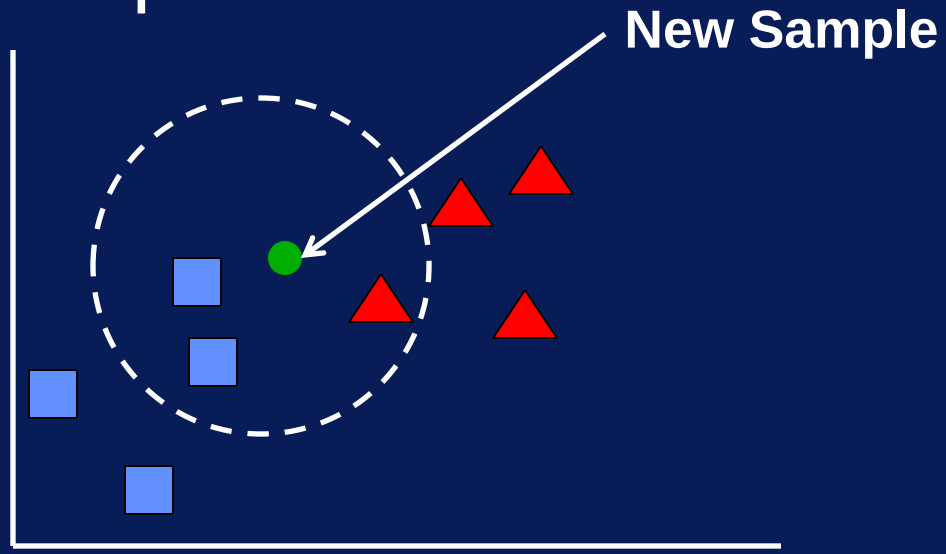
kNN Assumption

- Duck test



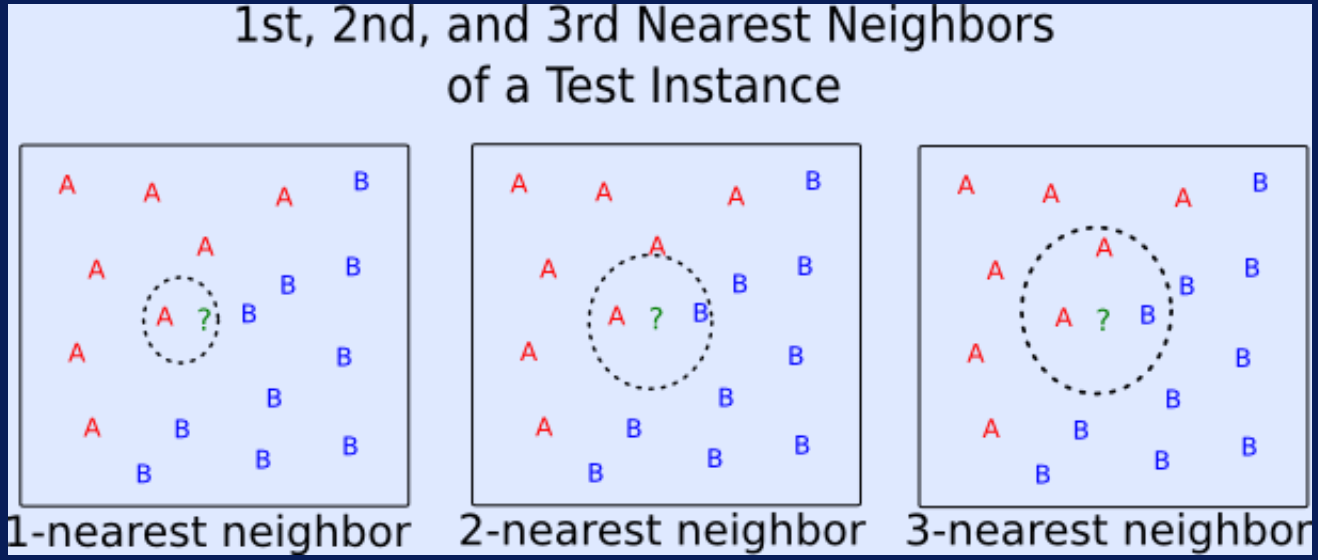
How kNN Works

- Use labels of neighboring samples to determine label for new point



What is k?

- Value of k determines number of closest neighbors to consider

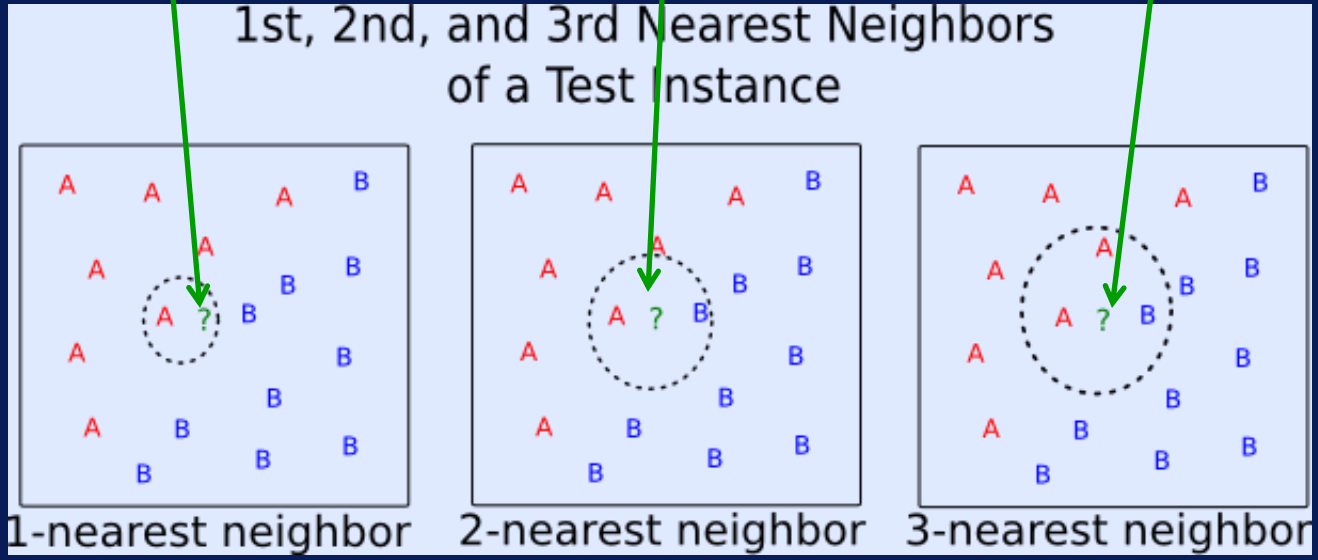


Using k Nearest Neighbors

Label=‘A’ (from neighbor)

Label=‘B’ (random tiebreaker)

Label=‘A’ (majority vote)



Distance Measure

- Need measure to determine "closeness"

kNN Classification

- No separate training phase
- Can generate complex decision boundaries
- Can be slow
  - Distance between new sample and all samples must be computed to classify new sample