



### Distance functions

Euclidean

$$\sqrt{\sum_{i=1}^k (x_i - y_i)^2}$$

Manhattan

$$\sum_{i=1}^k |x_i - y_i|$$

Minkowski

$$\left( \sum_{i=1}^k (|x_i - y_i|)^q \right)^{1/q}$$

# Remarks

- chose an odd  $k$  value for a 2 class problem
- $k$  must not be a multiple of the number of classes
- the main drawback of  $k$ NN is the complexity in searching the nearest neighbors for each sample