

2025

4Geeks Academy: data science cohort 12

DAY 24: K-NEAREST NEIGHBORS

TODO

K-NEAREST NEIGHBORS

Model details, applications and types

NAIVE BAYES PROJECT

Submit Naive Bayes Project Tutorial (Naive Bayes Algorithm module), if you haven't done so already

K-NEAREST NEIGHBORS PROJECT

Work on K-nearest neighbors Project Tutorial (K-nearest neighbors module), plan to finish before class Friday

TOPICS

01 K-NEAREST NEIGHBORS

02 APPLICATIONS

03 HYPERPARAMETERS

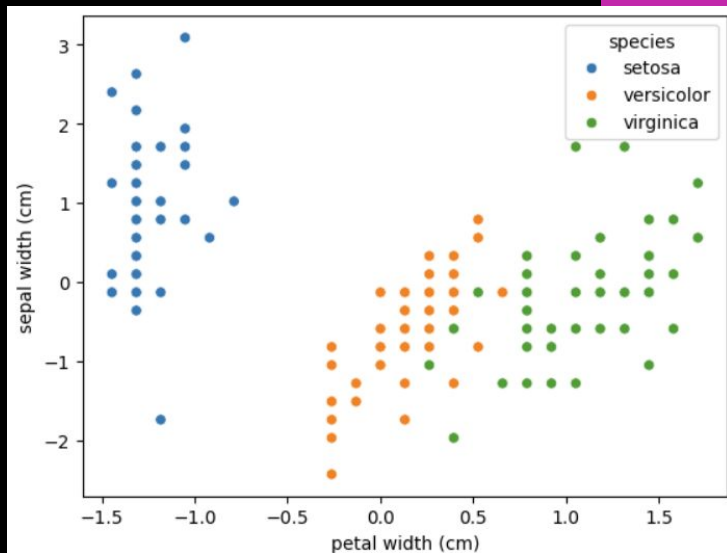
K-NEAREST NEIGHBORS

WHAT Supervised learning technique using set of similar example to assign label to unknown example

WHY No 'training' phase - simple and easy to implement

HOW

- Find nearest points in feature space
- Use majority voting for classification
- Use average for regression



APPLICATION (sklearn)

TYPES

- **NearestNeighbors**
 - Finds n most similar data points
- **KNeighborsRegressor**
 - Uses KNN for supervised regression
- **KNeighborsClassifier**
 - Uses KNN for classification

PROS

- No explicit training
- Simple hyperparameters
- Handles nonlinearity
- Good for search and recommendation

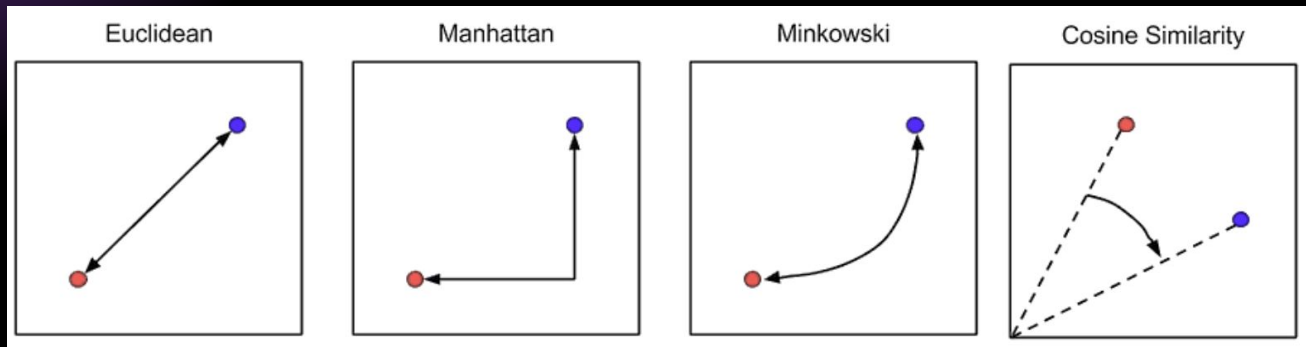
CONS

- Can become infeasible with large datasets
- Sensitive to local structure

HYPERPARAMETERS (sklearn)

DISTANCE

- **metric**: distance metric to use when finding neighbors



SEARCH

- **n_neighbors**: how many neighbors to consider
- **weights**: whether and how to weight neighbors for classification or regression