Q1 What are the key hyperparameter in KNN ?

The key hyperparameters in KNN are:

1. **n\_neighbors**: Number of neighbors to consider (important for accuracy).
2. **weights**: How neighbors are weighted (e.g., 'uniform' or 'distance').
3. **algorithm**: The algorithm used to find neighbors (e.g., 'auto', 'ball\_tree', 'kd\_tree').
4. **metric**: Distance metric (e.g., 'euclidean', 'manhattan').
5. **p**: Power parameter for Minkowski distance (p=1 is Manhattan, p=2 is Euclidean).
6. **leaf\_size**: Controls tree structure efficiency for 'ball\_tree' and 'kd\_tree'.
7. **n\_jobs**: Number of CPU cores to use for computation.

Q2 What distance metrics cane used in KNN ?

In K-Nearest Neighbors (KNN), the most commonly used distance metrics are:

1. **Euclidean Distance**: Measures straight-line distance between points.
2. **Manhattan Distance**: Sum of absolute differences (also known as L1 norm).
3. **Minkowski Distance**: Generalization of Euclidean and Manhattan; depends on a parameter ppp.
4. **Cosine Similarity**: Measures the cosine of the angle between two vectors.
5. **Hamming Distance**: Measures the number of differing positions in binary or categorical data.
6. **Chebyshev Distance**: Maximum absolute difference between coordinates.
7. **Jaccard Similarity**: Measures similarity between sets.
8. **Mahalanobis Distance**: Accounts for data correlation and scale.