ECE 59500 Machine Learning

Assignment 4: KNN for iris plant classification

Procedure

1) Import dataset and apply min-max feature scaling.
2) Implement KNN classifier from scratch in Python and apply it to the scaled data.
3) Report classification results in terms of overall accuracy.
4) (Optional) Implement and apply Distance-Weighted KNN using the two forms of weights as follows and compare the accuracy.
   a. $\frac{1}{d(x_t,n_i)}$
   b. $\frac{1}{d(x_t,n_i)^2}$

Dataset:

- **Name**: Iris dataset
- **Description**:

Data Set Characteristics:	Multivariate	**Number of Instances:**	150	**Area:**	Life
Attribute Characteristics:	Real	**Number of Attributes:**	4	**Date Donated**	1988-07-01
Associated Tasks:	Classification	**Missing Values?**	No	**Number of Web Hits:**	3146961

- **Source**: the UCI Repository (https://archive.ics.uci.edu/ml/datasets/Iris)
- **Import**: you can directly import the dataset from Sklearn library as follows:

```
from sklearn import datasets
iris = datasets.load_iris()
```

Submission:

1) Jupyter Notebook file contains all your code and results. (display all necessary outputs)
2) A written report (includes title, introduction, theory, dataset description, results, and discussion)
3) Both Jupyter Notebook file and report must be submitted to the Blackboard prior to the deadline.