TITLE: CLASSIFICATION OF IRIS FLOWER ATTRIBUTES

OBJECTIVES/EXPECTED OUTCOMES:
By the end of this exercise, learners should be able to:

- Load Dataset
- build and train a model using the K-Nearest Neighbor Algorithm
- Visualize the outcome of the model
- Evaluate the performance of the model

PRE-REQUISITE:
The learners' are expected to have acquired the following skills:

- Data Structures and Algorithm,
- Statistics; if NOT click on this link
- Linear Algebra if NOT click on this link
- Python 3.0 Programming
- Load the data set.

EQUIPMENT REQUIRED:
Personal Laptops with Python 3.0 installed
Internet facilities

THEORY:
What is Surpervised Learning:
Supervised learning is where you have input variables (x) and an output variable (Y) and you use an algorithm to learn the mapping function from the input to the output.

$$Y = f(X)$$

The goal is to approximate the mapping function so well that when you have new input data (x) that you can predict the output variables (Y) for that data.

It is called supervised learning because the process of an algorithm learning from the training dataset can be thought of as a teacher supervising the learning process. We know the correct answers, the algorithm iteratively makes predictions on the training data and is corrected by the teacher. Learning stops when the algorithm achieves an acceptable level of performance.

Algorithm to be used is: K-Nearest Neighbour(KNN). Learners can read more about Machine Learning Algorithms here, our focus classification

Pre-Class Activity
Learners are expected to watch K-Nearest Neighbour Algorithm in Python 3.0 here(KNN)

PROCEDURE
To carry out the above Lab activity; the following steps are to be taken:
Step 1: The Tutor demostrate to the learner the process of loading Python 3.0 notebook
Step 2: The learner loads the Python 3.0 Notebook on their laptops
Step 3: The tutor gives a brief explanantion of the Lab Practicals as stated in the theory above
Step 4: The learners are asked to import the python libraries to use in the coding exercise

In Class Activity:
Learners are instructed to use the following steps to classify the flowers in the Iris Dataset into three(3) categories:

a. Load the .csv file
b. Create features and labels; take note: X = features anf Y = labels
c. Split the Features and Labels into training and test datasets
d. Apply the K-Nearest Neighbour Algorithm
e. Perform Model Training
f. Plot a scatter graph of the classification

Out-of-Class Activity:
Evaluate the performance of the model by determining the train accuracy and the test accuracy of the K-Nearest Neighbour Algoirthm implemented during the Lab Practice.

Deadline for submission: 6 Hours from the end of the class.

CONCLUSION

In today's session; the learners have been able to perform classification task in supervised learning using the K-Nearest Neighbour Algorithm.

Additional Resources:
Visit: KNN lecture Notes