

Python For ML

Topics:

1. Basic Python Syntax
 - i . variables
 - ii. if else
 - iii. loop
2. List , Dictionaries
3. Numpy , Pandas
4. Matplotlib



Python Basic

- Why Python ?
 - Simplicity
 - Large libraries for Machine Learning ,AI and various fields
 - Math heavy functionalities and structures
- Fields where python is most popular
 - Data Science
 - Web Development
 - Machine Learning
 - Artificial Intelligence

Variables

- integer (**int**)
 - to store integer number
 - it can also be used to store big integer numbers
- **float**
 - to store floating point number
 - it can also be used to
- **string**
 - to store name , sentences
 - char is also in this type in python
 - it has some powerful in built-in method to use

Ex : `str.count()` , `str.upper()` , `str.replace()` , string multiplication, string slicing

List

- List is used to store a collection of items
- indexing is similar to arrays , but structure is different than C/C++ arrays

Fun part ?

- **no need to specify which kind of is going to be stored. It is possible to store any type**

comes with built in functionalities:

- i. append , insert , remove
- ii. max , min , sum , len , sum
- iii. List slicing

- Later it will be replaced by **NumPy** as it is more powerful and faster

If else and Loop

- If else is used to check conditionals

```
a = 10
if a <= 10:
    print("yes")
else:
    print("no")
```

- Loop is used to do a multiple task a specific set of time

- Types:

- i. for loop
- ii. while

NumPy

- Numpy stands Numerical Python
 - it is fast , efficient and flexible to use with large number of datasets
 - convenient to use with ML features (Matrices)
 - comes up with many math functions for probability , statistics
- Numpy array works with multi dimensional field with some powerful math function

Ex:

- i. shape , ndim
- ii. max, min , mean , standard deviation
- iii. reshape
- iv. dot for matrix multiplication

Pandas

- **Pandas is used to do Data Analysis and Data manipulation**
- It is used to work with CSV file in which maximum ML datas are provided
- It provides functionalities to
 - i. exploring the data -> head , info , describe
 - ii. Cleaning the data -> dropna , drop_duplicate , drop based on condition.
 - iii. Playing with the data , adding new features

Matplotlib

- Matplotlib is used to visualize data to take different decisions based on data

Ex : i . to plot a histogram

ii.To plot a scatter plot to find out correlation between datas

.....And many more