ML introduction

->Machine learning is making the computer to learn from   studing data and statistics this is a program that analysis data learn tp predict outcomes.
->Where to start :
Here for calculation important number based on the Data Set we use mathematics and for studing statistics and using various python modulus
->Data Set :[99,8,7,15,77,78,89,98,45,56,67,71]
->Data Type: there are 3 types of main category of data type in machine learning
->Numerical Data : 1> Discreate Data : number that limit to integers like number of car pass by the road .
                              2> Continonous Data : number that are infinite values like the prices of item
-> Categorical Data: The values that cannot be count or measured like color
->Ordinal Data : these are like categorical data but can be measured and countable like school grades .

Mean , Median and Mode

In Machine learning and in math there are basically three value that are interest to us .
->Mean : The Average value
->Median: Mid value
->Mode : The most common value
In python to find the mean ,median , mode?

```
Import numpy as np
```
Speed=[14,67,89,45,56,78,89,45,32,61]
Mean_value = np. mean (speed)
Print(Mean_value)

->Median
Median_value = np.median(speed)
Print(median_value)

->Mode
From scipy import stats
Mode_value= stats.mode(speed)
Print(Mode_value)

```
import numpy as np
speed=[98,89,45,67,78,89,43,25,49,73,87]
mean_value=np.mean(speed)
print(mean_value)
```

67.54545454545455

```
import numpy as np
speed=[98,89,45,67,78,89,43,25,49,73,87]
median_value=np.median(speed)
print(median_value)
```

73.0

```
from scipy import stats
speed=[98,89,45,67,78,89,43,25,49,73,87]
mode_value=stats.mode(speed)
print(mode_value)
```

ModeResult(mode=89, count=2)

Standard Deviation

There are Two type of Standard deviation
1. Low Standard deviation
2. High Standard deviation

```
import numpy as mp
speed=[81,87,84,78,90,92,86,94,97]
sd=np.std(speed)
print(sd)
```

5.830951894845301

```
import numpy as np
speed=[32,67,89,11,57,72]
sd=np.std(speed)
print(sd)
```

26.00427315312278

Variance
If You take the Square of the variance you will get the SD
Standard Deviation =σ
Variance=σ^2

```
import numpy as np
speed=[32,67,89,11,57,72]
Variance=np.std(speed)
print((Variance)*2)
```

52.00854630624556

```
import numpy as np
age=[5,31,43,48,50,41,15,39,82,32,2,6,100,15,62,79]
P=np.percentile(age,20)
print(P)
```

15.0

Percentiles
A **percentile** is a measure used in statistics to indicate the value **below which a given percentage of observations fall**.