Seaborn

Visualize Distributions With Seaborn

Seaborn is a library that uses Matplotlib underneath to plot graphs. It will be used to visualize random distributions.

Install Seaborn

If you have Python and PIP already installed on a system, install it using this command.

pip install seaborn.

Distplots

Distplot stands for distribution plot, it takes as input an array and plots a curve corresponding to the distribution of points in the array.

Import Matplotlib

Import the pyplot object of the matplotlib module in your code using the following statement

```
import matplotlib.pyplot as plt
```

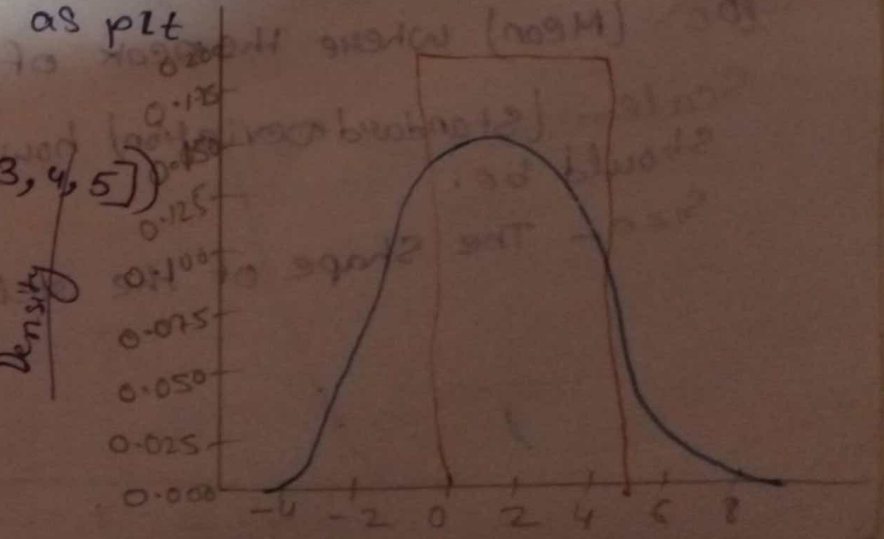
Import seaborn

Import the seaborn module in your code using the following statement.

```
import seaborn as sns.
```

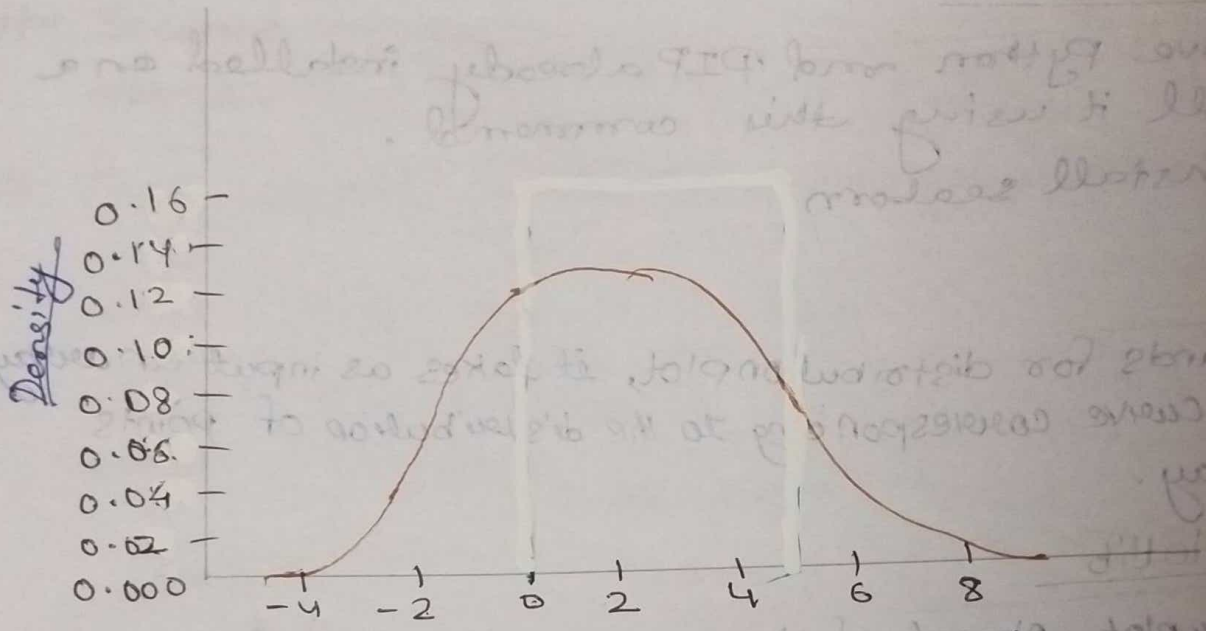
Plotting a Distplot

```
import matplotlib.pyplot as plt
import seaborn as sns
sns.distplot([0, 1, 2, 3, 4, 5])
plt.show()
```



Plotting a Distplot without the Histogram

```
import matplotlib.pyplot as plt
import seaborn as sns
sns.distplot([0, 1, 2, 3, 4, 5], hist = False)
plt.show()
```



- we will be using. sns ~~distrib~~ distplot (arr, hist = ~~Fa~~ False) to visualize random distributions.

Normal (Gaussian) Distribution

The Normal Distribution is one of the most important distributi
It is also called the Gaussian Distribution after the German mathematician Carl Friedrich Gauss
It fits the probability distribution of many events eg. IQ scores, Heartbeat etc.
Use the random.normal() method to get a Normal Data Distrib
It has three parameters.

loc - (Mean) where the peak of the ~~bell~~ bell exists.

Scale - (Standard Deviation) how flat the graph distribution should be.

Size - The shape of the returned array.

eg. Generate a random normal distribution of size 2x3:

```
From numpy import random
x= random.normal (size = (2, 3))
Print (x)
```

Output

```
[[ 0.45621732 -0.98486059  0.91850642]
 [-0.30662985  0.2857098   1.17587079]]
```

~~brent~~ Generate a random normal distribution of size 2x3 with mean at 1 and standard deviation of 2:

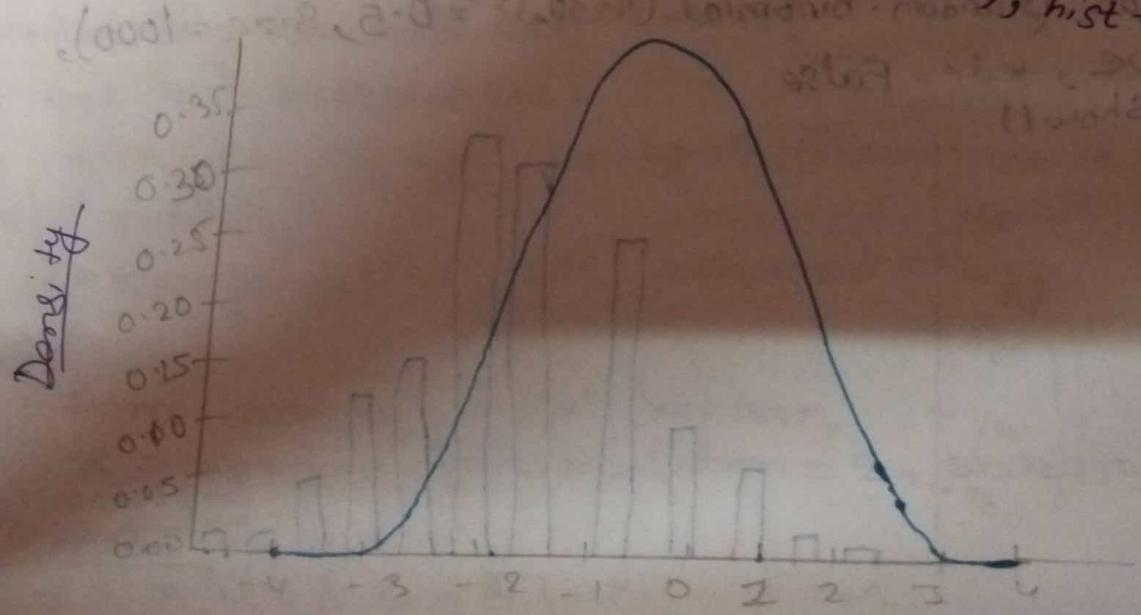
```
From numpy import random
x= random.normal (loc = 1, scale = 2, size=(2, 3))
Print (x)
```

Output

```
[[-0.88649191  1.17519215  2.31307245]
 [2.43740755  0.66415318 -0.69303517]]
```

Visualization of Normal Distribution

```
From numpy import random
import matplotlib.pyplot as plt
import seaborn as sns
sns.distplot (random.normal (size = 1000), hist = False)
plt.show ()
```



Binomial Distribution

Binomial Distribution is a discrete Distribution.
It describe the outcome of binary scenarios, e.g. toss of a coin, it will either be head or tails.

It has three parameters:

n - number of trials.

p - probability of occurrence of each trial (e.g. for toss of a coin 0.5 each)

size - The shape of the returned array.

Discrete Distribution: The distribution is defined at separate set of events, e.g. a coin toss's result is discrete as it can be only head or tails where as height of people is continuous as it can be 170, 170-1, 170.11 and so on.

Eg: Given 10 trials for coin toss generate 10 data points:

```
From numpy import random
x = random.binomial (n=10, p=0.5, size=10)
Print (x)
```

Output

```
[8 4 6 4 5 8 7 9 6 3]
```

Visualization of Binomial Distribution

```
From numpy import random
import matplotlib.pyplot as plt
import sea born as sns
sns.distplot (random.binomial (n=10, p = 0.5, size =1000),
hist=True, kde = False
plt.show()
```