Sampling from a Distribution

CS 3630

Sampling from a distribution

- **Sampling from a distribution:** randomly selecting values according to the probabilities specified by that distribution.
  - When sampling from a uniform distribution between 0 and 1, any number in that range is equally likely to be selected
  - When sampling from a Gaussian distribution, values near the mean are more likely to be selected than values far from the mean

- The act of “sampling” produces random numbers that follow these probability patterns.

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Numpy has useful functions for sampling:

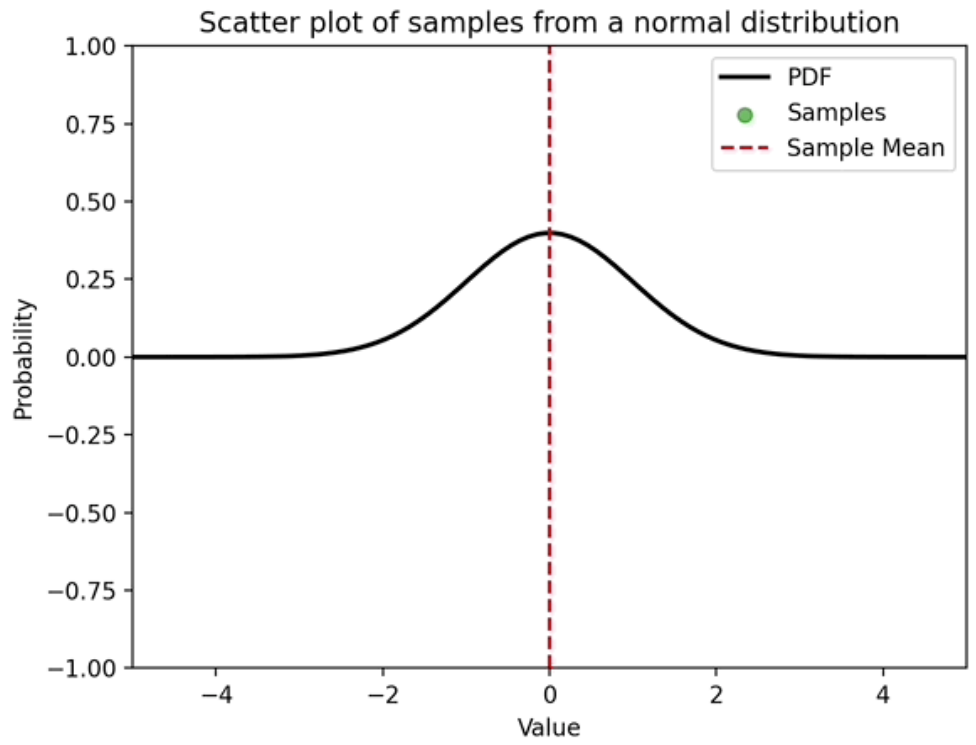
- Gaussian distribution:

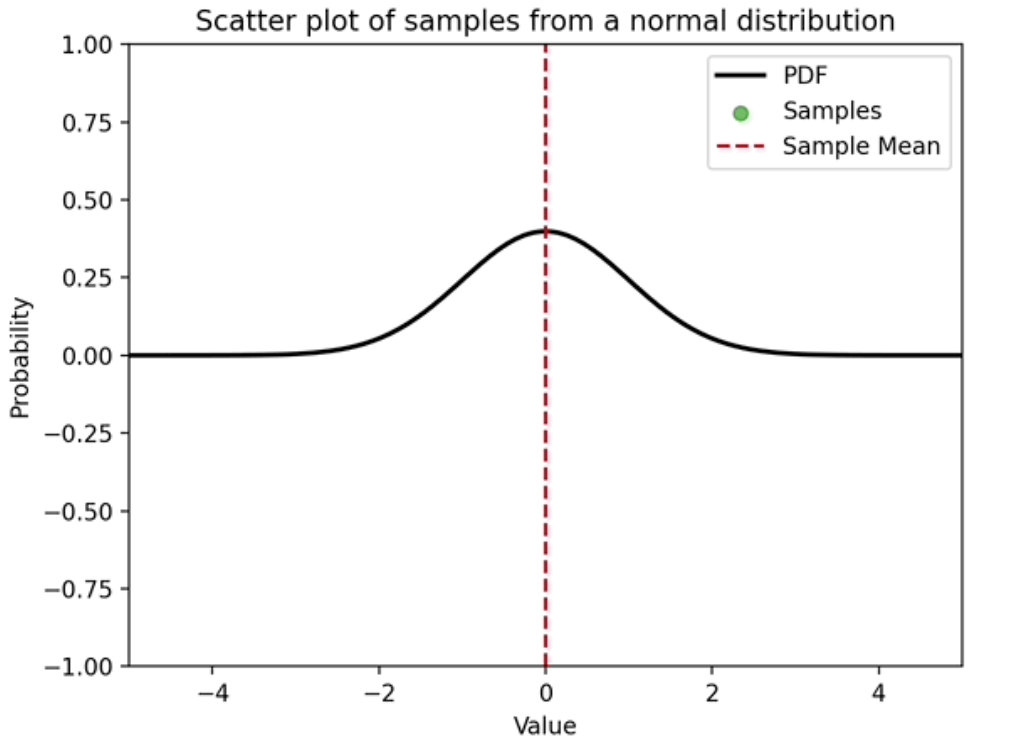
```
sample = np.random.normal(mean, std_dev, 1)
```

- Uniform distribution:

```
sample = np.random.uniform(xmin, xmax, 1)
```

Here we can see two examples of 100 samples being generated from a Gaussian distribution. The resulting distributions differ somewhat, but fit the underlying distribution.





We can also run the script for a longer period.

A copy of the script is available on Canvas for testing, courtesy of Soobum Kim!