



Menu ▾

Log in



HTML

CSS



# Machine Learning - Normal Data Distribution

[< Previous](#)[Next >](#)

## Normal Data Distribution

In the previous chapter we learned how to create a completely random array, of a given size, and between two given values.

In this chapter we will learn how to create an array where the values are concentrated around a given value.

In probability theory this kind of data distribution is known as the *normal data distribution*, or the *Gaussian data distribution*, after the mathematician Carl Friedrich Gauss who came up with the formula of this data distribution.

### Example

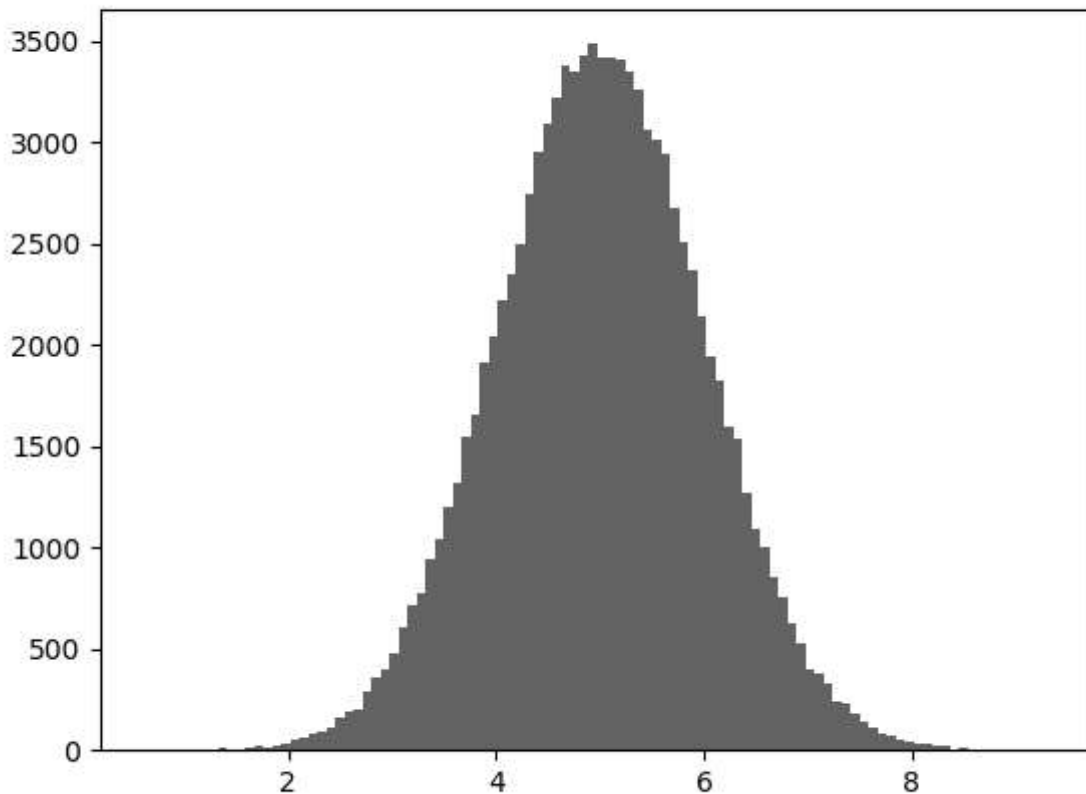
A typical normal data distribution:

```
import numpy
import matplotlib.pyplot as plt

x = numpy.random.normal(5.0, 1.0, 100000)

plt.hist(x, 100)
plt.show()
```

## Result:

[Run example »](#)

**Note:** A normal distribution graph is also known as the *bell curve* because of its characteristic shape of a bell.

## Histogram Explained

We use the array from the `numpy.random.normal()` method, with 100000 values, to draw a histogram with 100 bars.

We specify that the mean value is 5.0, and the standard deviation is 1.0.

Meaning that the values should be concentrated around 5.0, and rarely further away than 1.0 from the mean.

And as you can see from the histogram, most values are between 4.0 and 6.0, with a top at approximately 5.0.

[◀ Previous](#)

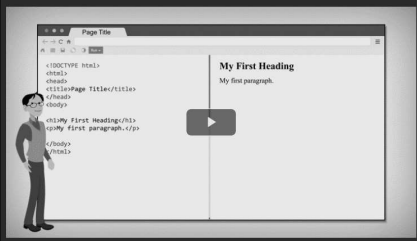
[Next ▶](#)

ADVERTISEMENT



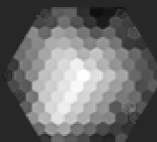
NEW

We just launched  
W3Schools videos



Explore now

COLOR PICKER



Get certified  
by completing  
a course today!




Get started

CODE GAME



Play Game

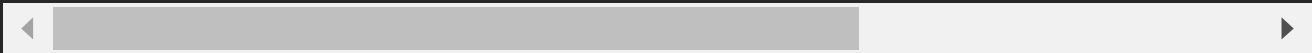
ADVERTISEMENT

 Touchcast

Leave a **Lasting** Impact



ADVERTISEMENT



Report Error

[Forum](#)[About](#)[Shop](#)

## Top Tutorials

[HTML Tutorial](#)  
[CSS Tutorial](#)  
[JavaScript Tutorial](#)  
[How To Tutorial](#)  
[SQL Tutorial](#)  
[Python Tutorial](#)  
[W3.CSS Tutorial](#)  
[Bootstrap Tutorial](#)  
[PHP Tutorial](#)  
[Java Tutorial](#)  
[C++ Tutorial](#)  
[jQuery Tutorial](#)

## Top References

[HTML Reference](#)  
[CSS Reference](#)  
[JavaScript Reference](#)  
[SQL Reference](#)  
[Python Reference](#)  
[W3.CSS Reference](#)  
[Bootstrap Reference](#)  
[PHP Reference](#)  
[HTML Colors](#)  
[Java Reference](#)  
[Angular Reference](#)  
[jQuery Reference](#)

## Top Examples

[HTML Examples](#)  
[CSS Examples](#)  
[JavaScript Examples](#)  
[How To Examples](#)  
[SQL Examples](#)  
[Python Examples](#)  
[W3.CSS Examples](#)  
[Bootstrap Examples](#)  
[PHP Examples](#)  
[Java Examples](#)  
[XML Examples](#)  
[jQuery Examples](#)

## Web Courses

[HTML Course](#)  
[CSS Course](#)

[JavaScript Course](#)  
[Front End Course](#)  
[SQL Course](#)  
[Python Course](#)  
[PHP Course](#)  
[jQuery Course](#)  
[Java Course](#)  
[C++ Course](#)  
[C# Course](#)  
[XML Course](#)

[Get Certified »](#)

---

W3Schools is optimized for learning and training. Examples might be simplified to improve reading and learning. Tutorials, references, and examples are constantly reviewed to avoid errors, but we cannot warrant full correctness of all content. While using W3Schools, you agree to have read and accepted our [terms of use](#), [cookie and privacy policy](#).

Copyright 1999-2022 by Refsnes Data. All Rights Reserved.  
W3Schools is Powered by W3.CSS.

