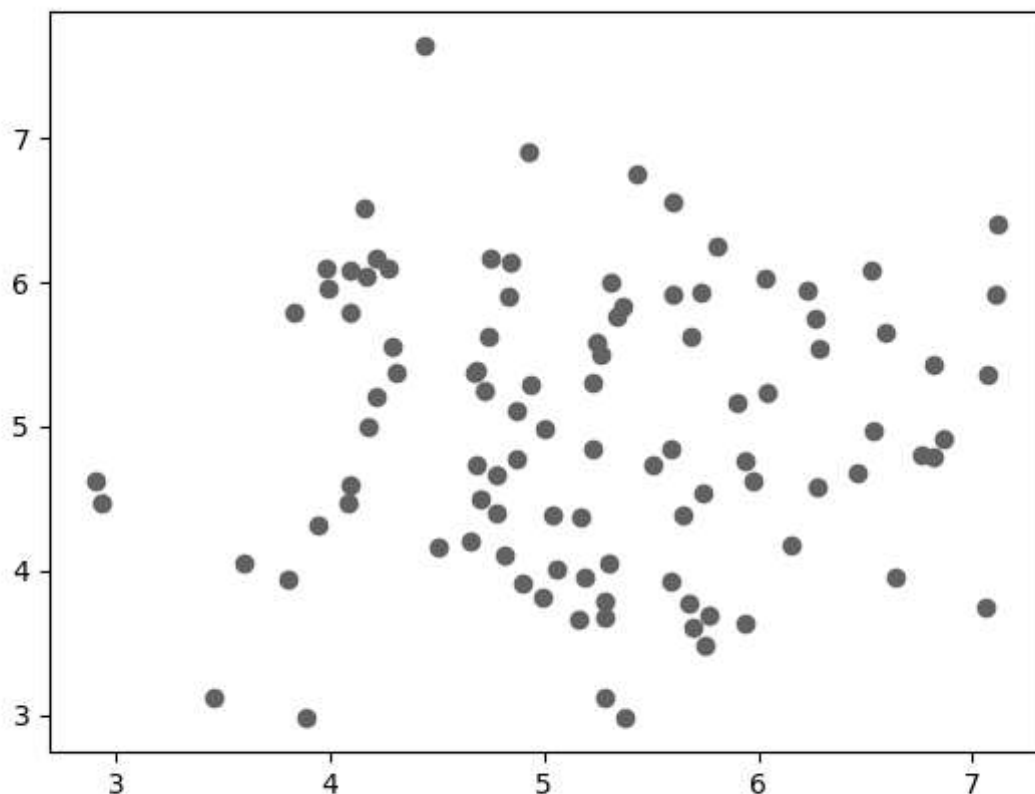
Leave a **Lasting** Impact

Machine Learning - Scatter Plot

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

Scatter Plot

A scatter plot is a diagram where each value in the data set is represented by a dot.



The Matplotlib module has a method for drawing scatter plots, it needs two arrays of the same length, one for the values of the x-axis, and one for the values of the y-

axis:

```
x = [5,7,8,7,2,17,2,9,4,11,12,9,6]
y = [99,86,87,88,111,86,103,87,94,78,77,85,86]
```

The `x` array represents the age of each car.

The `y` array represents the speed of each car.

Example

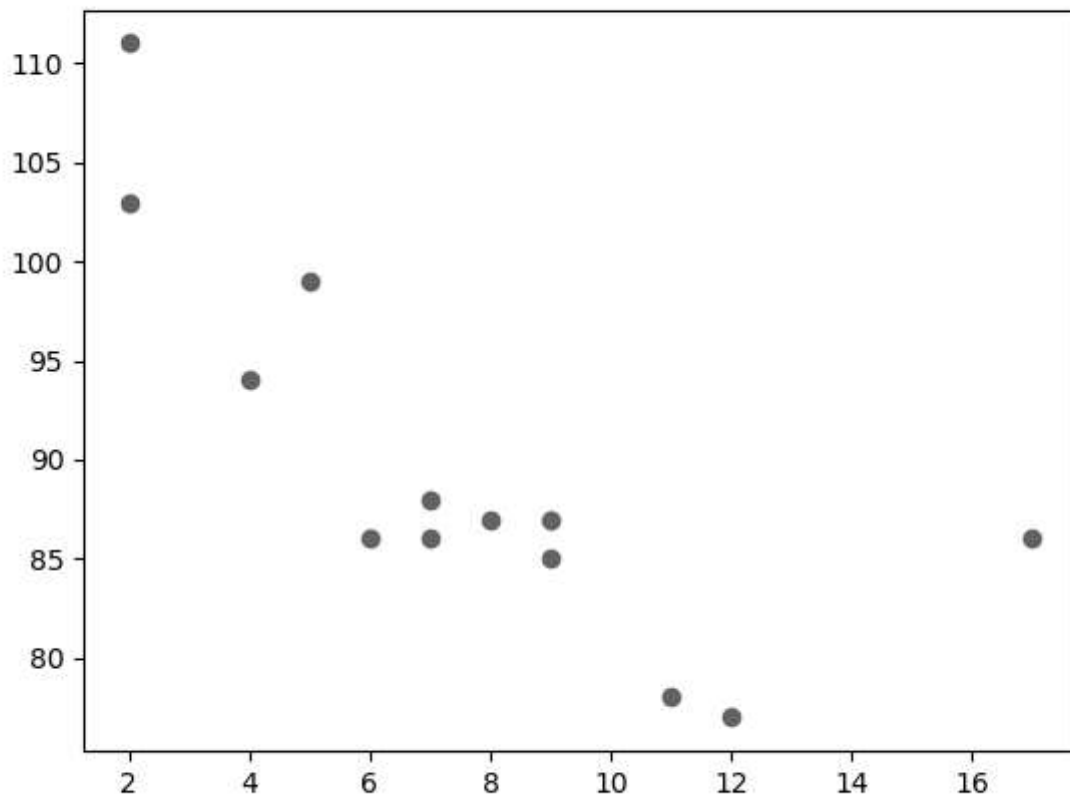
Use the `scatter()` method to draw a scatter plot diagram:

```
import matplotlib.pyplot as plt

x = [5,7,8,7,2,17,2,9,4,11,12,9,6]
y = [99,86,87,88,111,86,103,87,94,78,77,85,86]

plt.scatter(x, y)
plt.show()
```

Result:

[Run example »](#)

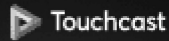
Scatter Plot Explained

The x-axis represents ages, and the y-axis represents speeds.

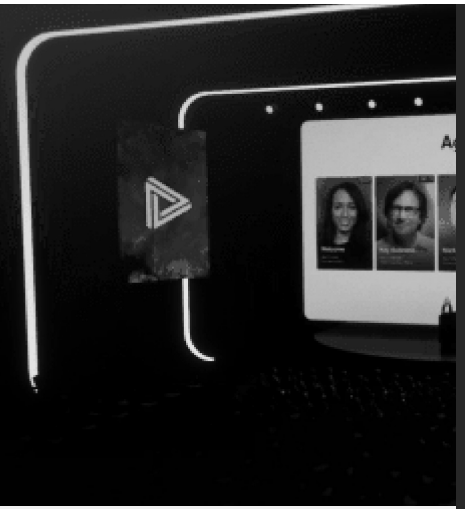
What we can read from the diagram is that the two fastest cars were both 2 years old, and the slowest car was 12 years old.

Note: It seems that the newer the car, the faster it drives, but that could be a coincidence, after all we only registered 13 cars.

ADVERTISEMENT



Leave a **Lasting** Impact



Random Data Distributions

In Machine Learning the data sets can contain thousands-, or even millions, of values.

You might not have real world data when you are testing an algorithm, you might have to use randomly generated values.

As we have learned in the previous chapter, the NumPy module can help us with that!

Let us create two arrays that are both filled with 1000 random numbers from a normal data distribution.

The first array will have the mean set to 5.0 with a standard deviation of 1.0.

The second array will have the mean set to 10.0 with a standard deviation of 2.0:

Example

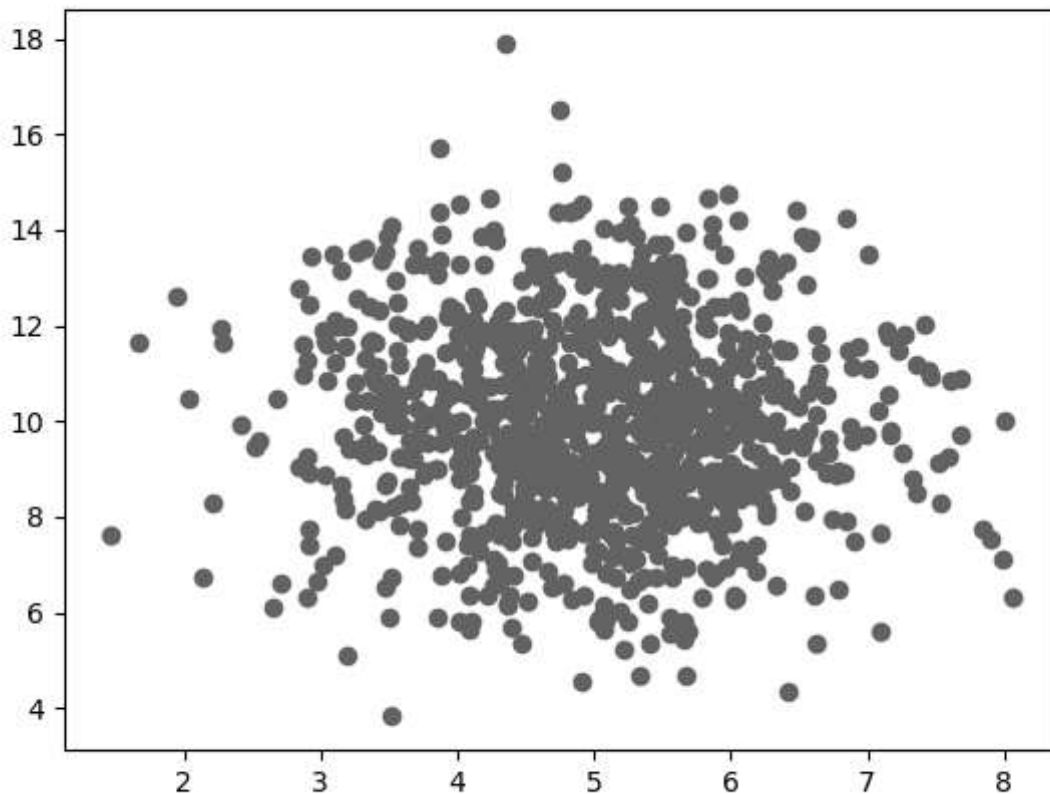
A scatter plot with 1000 dots:

```
import numpy
import matplotlib.pyplot as plt

x = numpy.random.normal(5.0, 1.0, 1000)
y = numpy.random.normal(10.0, 2.0, 1000)

plt.scatter(x, y)
plt.show()
```

Result:

[Run example »](#)

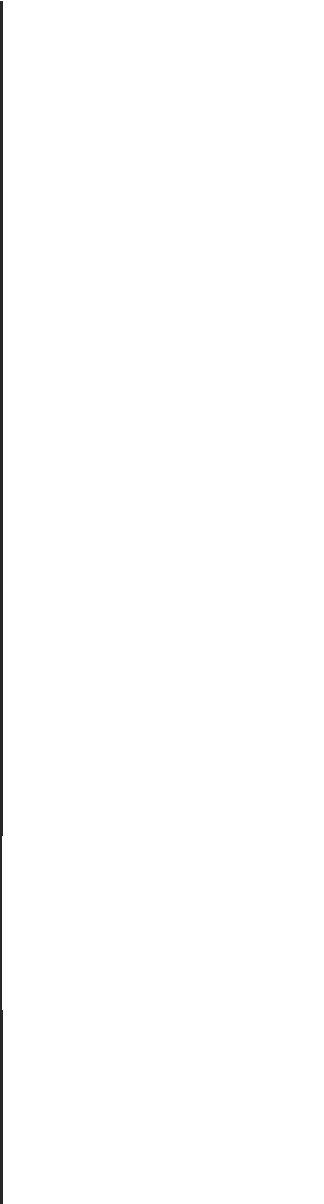
Scatter Plot Explained

We can see that the dots are concentrated around the value 5 on the x-axis, and 10 on the y-axis.

We can also see that the spread is wider on the y-axis than on the x-axis.

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

ADVERTISEMENT



NEW

We just launched
W3Schools videos



Explore now

COLOR PICKER





Get certified
by completing
a course today!



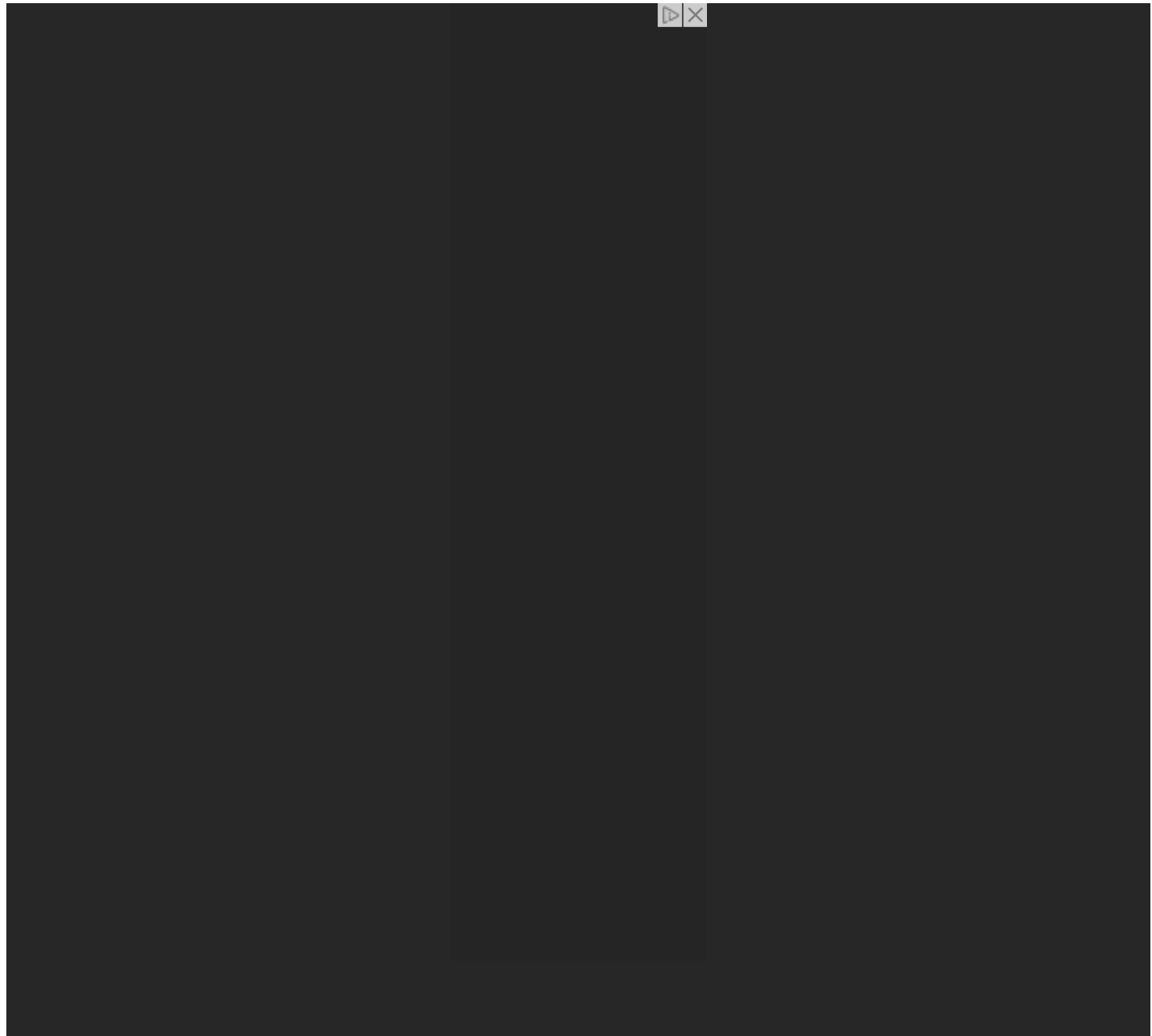
Get started

CODE GAME



Play Game

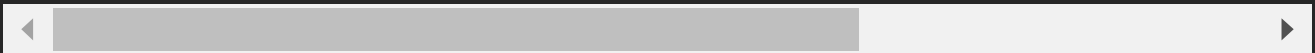
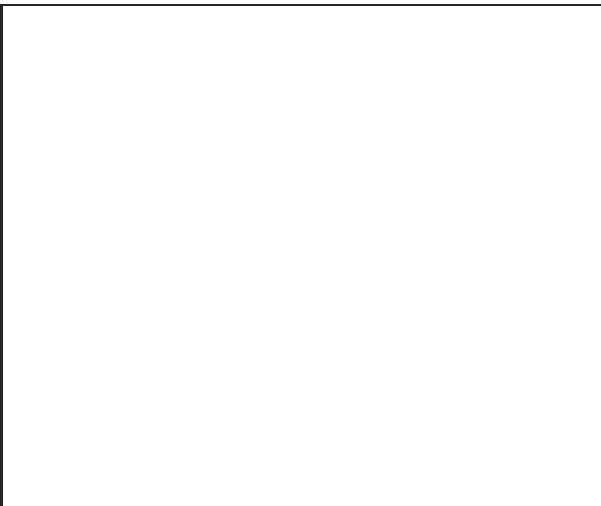
ADVERTISEMENT



ADVERTISEMENT



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.

