How to Fit a curve in python

# Information gathered from [scipy documentation](https://docs.scipy.org/doc/scipy/reference/generated/scipy.optimize.curve_fit.html)

# Get your data

Store independent and dependent variables in separate arrays. Make sure the indices line up! (Don’t store as 2-tuples or pairs)

## For example:

### X\_data = [ 0, 1, 2, 3, 4, 5 ]

### Y\_data = [ 0, 1, 4, 9, 16, 25 ]

# Pick your model

## It may be helpful to plot your data. [Try using matplotlib to make a scatterplot](http://stackoverflow.com/questions/21519203/plotting-a-list-of-x-y-coordinates-in-python-matplotlib)!

### import matplotlib.pyplot as plt

### plt.scatter(X\_data, Y\_data)

## Example models include:

### Linear (Line)

### Sinusoidal (Sine wave)

### N-degree polynomial ()

### Exponential (Growth or Decay)

### Logistic (Growth with limits)

## Make a function where the first input is the independent variable and the remaining inputs are parameters, such that the value it returns would follow the model you chose. This is your base model (function referred to as “model”).

# Fit the Curve

## from scipy.optimize import fit\_curve

## params, cov = fit\_curve(model, X\_data, Y\_data)

## model(x, \*params) will fit the provided data, provided model worked out well.

## To find R2 , take the sum of squares of residuals (predicted\_y – actual\_y) divided by the sum of squares of deviations (actual\_y – mean\_y), then subtract that from 1. ([src](http://stackoverflow.com/questions/19189362/getting-the-r-squared-value-using-curve-fit))