Autoregressive Model

1. Introduction

In statistics and signal processing, an **autoregressive** (**AR**) **model** is a representation of a type of random process; as such, it describes certain time-varying processes in nature, economics, etc. The **autoregressive model** specifies that the output variable depends linearly on its own previous values.(From Wiki)

Formula:

 X_t = c + \sum_{i=1}^p \varphi_i X_{t-i}+ \varepsilon_t \,

where \varphi_1, \ldots, \varphi_p are the ***parameters*** of the model, c is a constant, and \varepsilon_t is noise.

1. Implement in stock price estimation

In this example, let AR(1) , which mean only 1 previous data will affect the value. Noise has a normal distribution with mean = 0, and sd = sigma^2.

Examine parameters, (interact example with different rho) and simulating result with different c also.

1. Conclusion

A very simple way to simulating time series, e.g. stock price.

Addition idea:

Fit a stock price with AR(1) model and plot 2 graphs to see the difference.