Stock Prices Generative Adversarial Network

MATH 6397 - Pattern Recognition
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Topic Proposal

The Ornstein-Uhlenbeck process is a stochastic process with applications in financial mathematics and the physical sciences. With the help of special parameters, we can create stationary time series or describe the behavior of stock prices. If we assume that the data generated by this process is the true stock prices for some fixed period of time (time frame), then the topic of interest to us will be building a model that should generate time series with a very similar distribution to our data. The results can be used to expand the time frame of stock price charts from bigger to lower without having access to the true one, or to predict the direction in which the price is more likely to move.

To achieve our goals, we will use deep learning methods and build a Generative Adversarial Network and its variations, since the mathematics of this network is similar to the equation of the Ornstein-Uhlenbeck process. We will start by experimenting with stationary series and then move on to creating a generator for real stock prices.

References

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