

104. Developing Stocks Volatility Prediction Model Using Neural Networks

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We implement machine learning techniques to develop stocks volatility prediction models. This is a typical time series problem: a study of the past evolution of the phenomenon with respect to time in order to predict the future trend. Generally, statistical models such as the Auto Regressive Moving Average (ARMA) model can be used to perform time series analysis. However, because of the availability of Big Data and easy access to computational resources, data scientists have recently been moving towards machine learning techniques to analyze these kinds of problems. Our model is based on Neural Networks, particularly a Long Short-Term Memory (LSTM), which is a type of Recurrent Neural Network (RNN). We execute this model in the Python programming environment using TensorFlow and Keras APIs. The model produced impressive fitting results when we implemented it in a few common stocks listed in NYSE and NASDAQ. Various model selection strategies, including cross-validation, are used to test the effectiveness and resilience of our model.