

Stock Market Prediction Using Convolutional Neural Network That Learns from a Graph

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Abstract : Over the past decade, deep learning has been in spotlight among various machine learning algorithms. In particular, CNN (Convolutional Neural Network), which is known as effective solution for recognizing and classifying images, has been popularly applied to classification and prediction problems in various fields. In this study, we try to apply CNN to stock market prediction, one of the most challenging tasks in the machine learning research. In specific, we propose to apply CNN as the binary classifier that predicts stock market direction (up or down) by using a graph as its input. That is, our proposal is to build a machine learning algorithm that mimics a person who looks at the graph and predicts whether the trend will go up or down. Our proposed model consists of four steps. In the first step, it divides the dataset into 5 days, 10 days, 15 days, and 20 days. And then, it creates graphs for each interval in step 2. In the next step, CNN classifiers are trained using the graphs generated in the previous step. In step 4, it optimizes the hyper parameters of the trained model by using the validation dataset. To validate our model, we will apply it to the prediction of KOSPI200 for 1,986 days in eight years (from 2009 to 2016). The experimental dataset will include 14 technical indicators such as CCI, Momentum, ROC and daily closing price of KOSPI200 of Korean stock market.

Keywords : convolutional neural network, deep learning, Korean stock market, stock market prediction

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