

Reading Response: HMM for Stock Trading

Github relating to this:

<https://github.com/ayushjain1594/Stock-Forecasting>

<https://github.com/meocong/HiddenMarkovModelPredictingStock>

This paper aims to use the Hidden Markov model (HMM) to predict future stock prices. It does this by first determining the optimal number of states using the 4 criterias: Akaike, Bayesian, Hanna Quinn, and the Bozdogan Consistent Akaike information. It concluded that 4 is the optimal number of states. Then, it uses the HMM to predict the monthly closing prices. It explains that the HMM is made up of 4 main algorithms: the forward, the backward, the Viterbi, and the Baum-Welch. It argues that among these, Baum-Welch, or essentially the EM method, is the most important as it is used to calculate the local maximizer of the probability function. The model is built by using historical data to train it in order to find the parameters and probability. In order to verify the accuracy of this model, it tested the predictions against real stock prices and another commonly used model - the historical average return method HAR, by R2 sampling. It found out that the accuracy of HMM is lower than that of HAR for most stocks. Finally, it used both models to actually trade and found out that the HMM model outperforms the HAR model for all cases and of the Buy&Hold technique for most cases.