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Stock Price Prediction at the Nairobi Stock Exchange

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Abstract

Stock Price Prediction is a challenging, interesting and potentially very profitable task to carry out. The task has great dependence on economic phenomena, history, politics, the media, hype and even some psychology. Experts in the relevant fields have developed elaborate formal techniques and formulas that one may use in trying to carry out the task. On many a case these experts would not agree on any one of the ways as being the best to go about predicting stock market figures. A lot of investors utilize intuition with little reference to the hard facts and figures. Utilizing a data mining methodology, CRISP DM, and the artificial intelligence technique of Neural Networks, this project sets out to provide yet another way of making stock price predictions specifically at the Nairobi Stock Exchange. The neural networks are trained using publicly available historical data, with the intention of deploying the networks to learn any explicit and the not so explicit relationships that may exist in these data. Extensive tests are carried out to compare the performance of different network topologies and parameter settings and leading to the determination of a good network architecture for this application.

Tests carried out have brought about the construction of models with high prediction accuracy, including one with a mean deviation error rate of $\pm 4.08\%$.

Key words: Data Mining, Neural Network, Finance, CRISP DM