Machine Learning in Finance Groupwork Assignment
Submission 3: Modeling and Strategy Development

Solution Document

Date: 19 Nov 2018

To implement a trading strategy using machine learning. It involves collecting the data, choosing the proper algorithm, fitting the model and checking the performance using multiple performance metrics.

Data

- Start date: 1998-11-10
- End date: 2018-11-10
- stock: McDonald's (MCD)
- source: yahoo finance

Problem Statements

- fetch the data
- prepare the data using optimization techniques
- implement the algorithm
- check the performance using the performance metrics

Ideas and Challenges

Challenges	Potential Solutions	Current Solution	Reference
• fetch the data	• using pandas_datareader	• pandas datareader with the use of fix_yahoo_finance	• GitHub
• optimizing the data	• SMA • MACD • EMA • RSI • MOM • ROC	• used pandas Series features to obtain moving averages	• Investopedia • Github • SciKit-learn.org
• preparing the data for algorithm	• StandardScaler	• used StandardScaler to transform the data	• https://scikit-learn.org/stable/modules/generated/sklearn.preprocessing.StandardScaler.html
• implement the algorithm	• TensorFlow Sequential • LSTM • Dense	• used 5 layers Densed classifier • used LSTM algorithm	• https://www.datacamp.com/community/tutorials/lstm-python-stock-market • https://machinelearningmastery.com/multi-class-classification-tutorial-keras-deep-learning-library/
• use performance metrics to check the performance	• ROC • Consfusion Matrix • AUC	• used sklearn to produce the metrics	• https://scikit-learn.org/stable/modules/model_evaluation.html