Trading Binary Options with Deep Learning Models

Team ID: 19

Shashwath Kumar S - PES2201800623
Varun Seshu - PES2201800074
Hritik Shanbhag - PES2201800082

Introduction to Binary Options trading

- A binary option is a financial instrument where traders ‘bet’ on a binary outcome - whether the value of a stock/commodity rises above a set ‘strike price’ within the expiry time of the option.

- At the time of expiry, the price of the underlying asset must be on the correct side of the strike price (above or below based on the trade taken) for the trader to make a profit.

- The risk in the trade is always the amount bet on the binary option, while the profit is always a fixed amount.

What is our project about?

- We are trying to create a deep learning model which can predict whether the closing price of a stock, commodity or other financial instrument would be above or below a particular ‘strike price’ in a given time period.

- Given all the parameters mentioned above, the model classifies whether the closing price would be above/below the strike price before the expiry of our time period allowing us to purchase the appropriate binary option, thus beating the market and turning a profit.

- After we get all predictions we perform a back test to see whether the model is viable in real market conditions, we simulate trading with the generated orders and make a report with various performance metrics to evaluate the model.

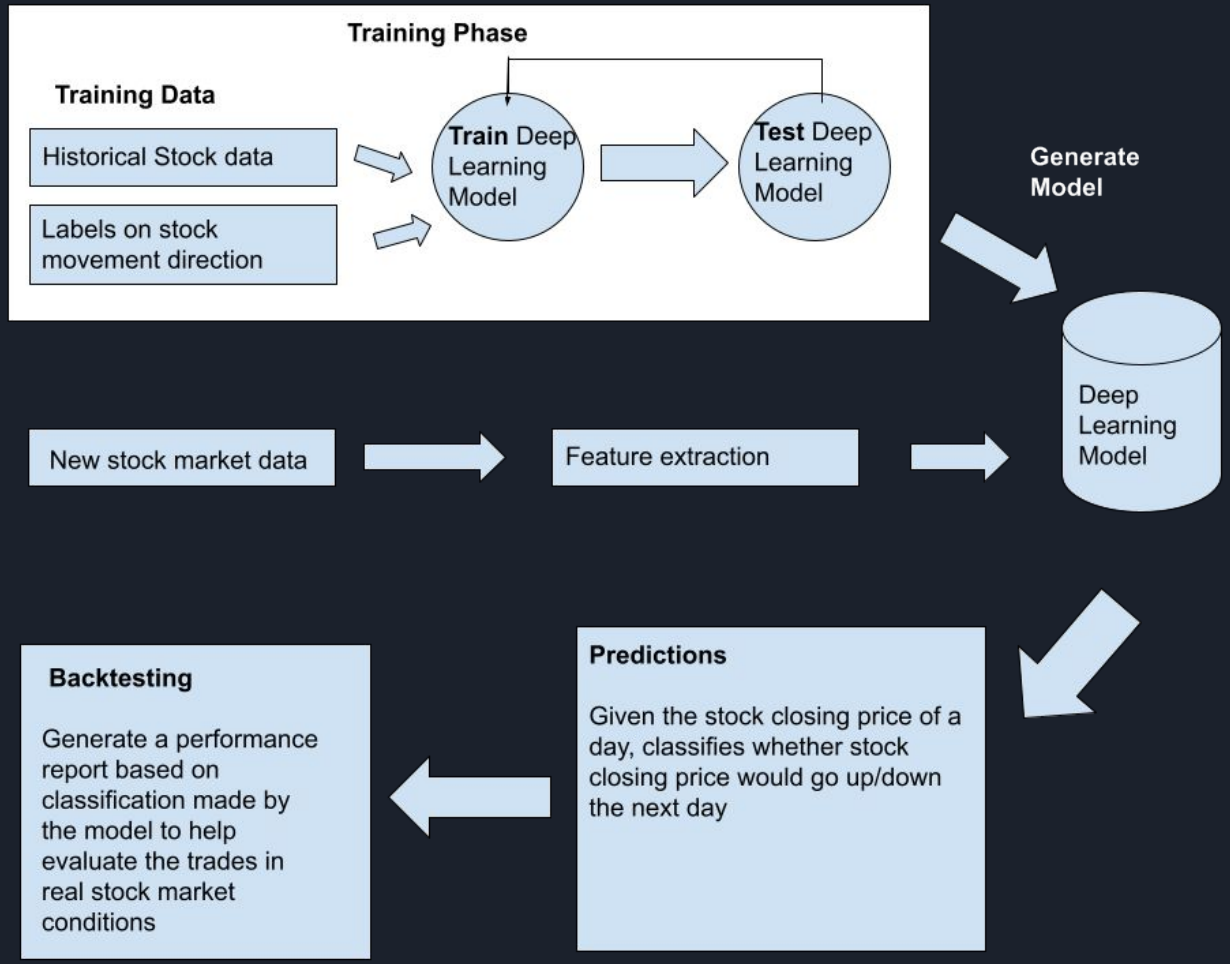
Literature Survey - Empirical Case Study of Binary Options Trading

https://www.researchgate.net/publication/236872916_Empirical_Case_Study_of_Binary_Options_Trading_An_Interdisciplinary_Application_of_Telecommunications_Methodology_to_Financial_Economics

In finance, a binary option is a type of option where the payoff is either some fixed amount of some asset or nothing at all.

The case study consists of a preliminary example of trading stocks with a simple algorithm for binary options, which includes one buy / sell order for week of a fixed amount of cash (or exchange equivalent) to limit the maximum risk of the investment to that fixed amount.

Architecture



Software Requirements

- Jupyter Notebook
- Spyder IDE
- Python libraries
  - Numpy
  - Pandas
  - Tensorflow
  - Keras
  - Matplotlib
  - Seaborn
  - scikit-learn

Hardware requirements

- OS : Windows 10 / Ubuntu 18.04 LTS
- CPU: Intel processor with 64-bit support
- Disk Storage: At least 8GB of free disk space.
- At least 8GB of RAM
- Graphics card: gtx 750 or better

Final Deliverables

- Deep Learning Model to classify binary options trades.
- Back testing the model and final report on performance of model on historical and recent market data.
- Determine direction in which a stock is going to move (up/down), allowing a trader to make the appropriate binary option trade.

THANK YOU