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Forex Deep Learning

**14th June 2017**

# OVERVIEW

We want to create a deep learning model that is able to predict price movements for currency exchange pairs to a accuracy where profitability is guaranteed. We will also then develop code that will allow for the program to input orders and trade automatically based on the information from the deep learning model.

We have a team of 4 people working on this, shown below with Slack name and email:  
@tivashchuk - ivashchuktaras@gmail - ivashchuktaras (Skype) - +1 (330) 252-7361 (cell)  
@bentonp - [bentonpena@gmail.com](mailto:bentonpena@gmail.com) - bentonpena (Skype) - +1 (829) 521-1005 (cell)  
@pun11 - [puni.lr@gmail.com](mailto:puni.lr@gmail.com) - lucasst4r (Skype) - (+420) 728 478 979 (WhatsApp, add me)  
@jwrl - [jwrlaney@gmail.com](mailto:jwrlaney@gmail.com) - jwrlaney (Skype)

# GOALS

1. Decide on libraries we are going to use and how to approach the project overall
   1. Assign everybody a role to work on matching their skills
2. Begin development and testing of code, using old data to see whether we can be profitable or not and how accurately we predict price movements
3. Shift focus onto developing automatic trading based on model predictions
   1. Look into working with Oanda API or Interactive Brokers API
4. Test full project on a demo account and hopefully get good returns!

# EVERYBODY WRITE YOUR THOUGHTS BELOW:

**From Taras** - My main role will be in development, and I have experience with day trading as well. I think we should use Python and Tensorflow to build the model, although I saw the @jwrl was doing something with OpenAI that I would be curious in hearing about. Reinforcement learning seems like it may be an interesting approach. We can also try to train a model that predicts whether the price will be bullish or bearish (binary classifier) and use this alongside a price prediction model. We also need to figure out all the features we will be using in the model alongside obviously just price, which is something I believe @bentonp can help out with as he works as a day trader.

**Lukas**

As mentioned in the presentation here on Drive, I am interested in creating an agent which will exploit inefficiencies in less competitive markets - cryptocurrencies, sports betting exchanges etc. Using information about the state of the orderbook and incoming orderflow it will determine the correct strategy to optimally quote, re-quote, cancel etc. limit orders (hundreds of milliseconds timescale) on given sides of the orderbook and potentially predict short term alpha on given instruments (predictions on scale of tens of seconds to small number of minutes). The main profit is made from the bidask spread, inventory is kept as small as possible. It is therefore a system that is counter any other directional strategy.

The approach is quite frequentist with hundreds of trades per day, but does not need infrastructure costs as a true high frequency. I know which features are important, we just need to build a few APIs, collect quality data (a few weeks suffice) and create an environment which will train the bot. It will be a bit tricky to design a reward function given markets are open continuously - some form of expected value representation will be needed I guess. Will be happy to hear your ideas..

Approach - also curious about the OpenAI solutions, I believe they may work well with graphical representations of the orderbook. Also in for Tensorflow, but I do not know much about it honestly. Skills: C#, R, littlebit of Python. Knowledge of finance in general and especially financial markets (market making, trading, algo systems development).

I do not believe in finding a holy grail in successfully predicting the price movements with AI or without. There are tons of funds and people better equipped to do so than us and these generally result in overfitted models. Rather, I seek opportunities others do not see and make them happen.