Stock Forecast with Elliott Wave pattern recognition

Motonari Ito, Sundar Shiva
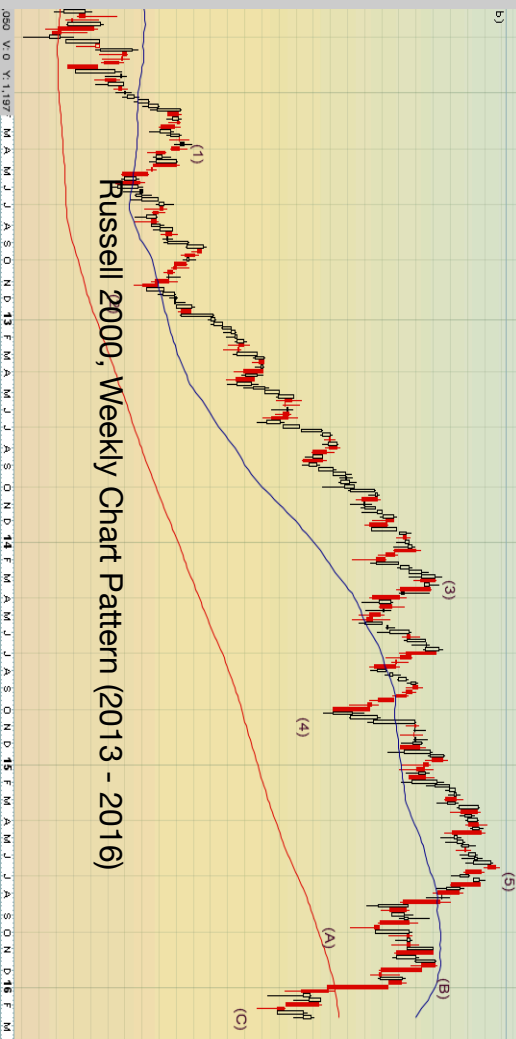
CS221, Project Poster for Artificial Intelligence

Motivation

Can we predict a stock price based on the prior price changes?

Buy! It has been too low for long period!

Sell! The price hike slowed down and a major drop will come.

Elliott Waves

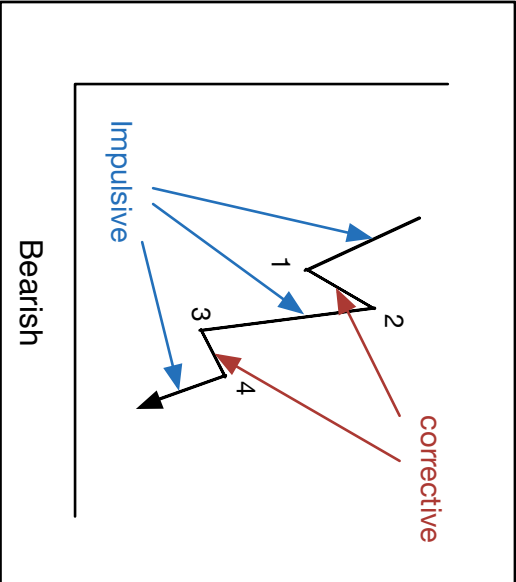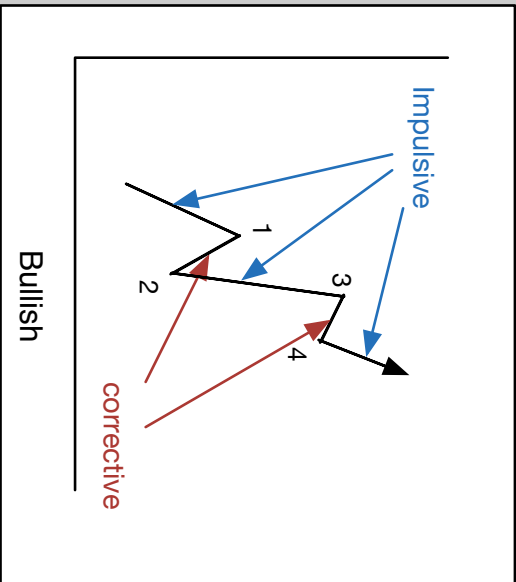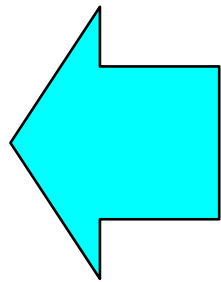Elliott Wave Principle (EWP) is a hypothesis that stock market price can be modeled as a sequence of waves that tracks the sentiment of the trend.
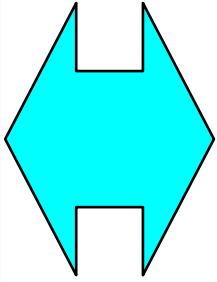
If we can find the waves, EWP says we will be rich!

Russell 2000 - Weekly Chart Pattern (2013 - 2016)

Approach — Q-Learning

Model the stock market and buy/sell decision as an MDP where the transition function needs to be learned through Epsilon Greedy and Function Approximation.

State: Historical Price and Stocks currently own

Action: Buy, Sell or Stay

Reward: Money

Transition: From day N to N+1

Data

Pick one stock in Yahoo Finance stock price data; day to day closing prices for the entire company history.

MDP

Learn the optimal trade strategy based on the prior stock price pattern

Function Approximation

Neural Network to learn Qopt from state and action

Sell

End of bearish, buy!

Results

dj — $-1486.7
qcom — $-61.54
rut — $268.51
wmt — $212.58
hd — $0
low — $-12.44
tgt — $0
aapl — $4.60