

# Ontario Engineering Competition 2018

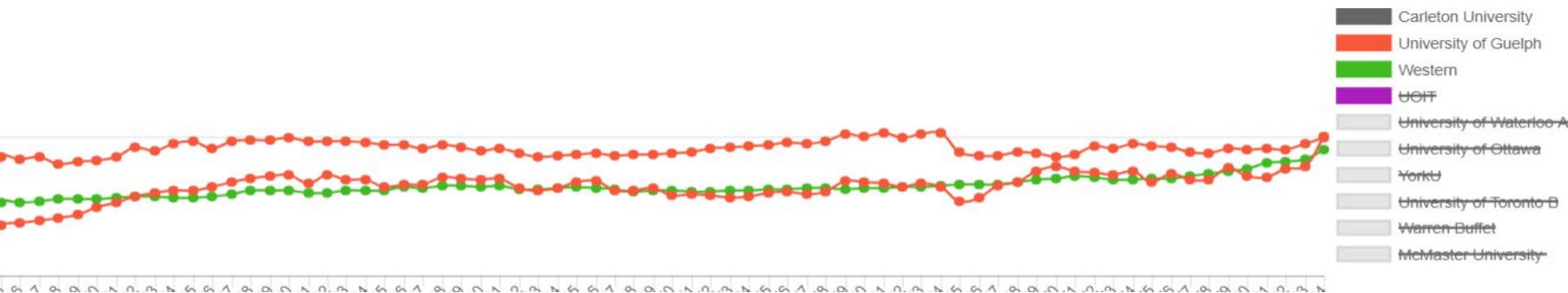
## Programming

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# The Challenge

- Develop a stock trading bot to maximize profit using a prediction algorithm
- Minimize computation time and complexity
- Deployed real time, reliable in data outages and failures



# Design Process

## Observe and Research

- Manually invest \$55k into 23 companies
- Observed market trends
- Researched applicable algorithms

## Implement and Adapt

- Implemented chosen algorithm
- Reinvested to stimulate market
- Bot able to make recommendations on trades

## Observe and Adjust

- Allowed bot to start making trades
- Tuned weighted decisions to get desired results

# Trade Study

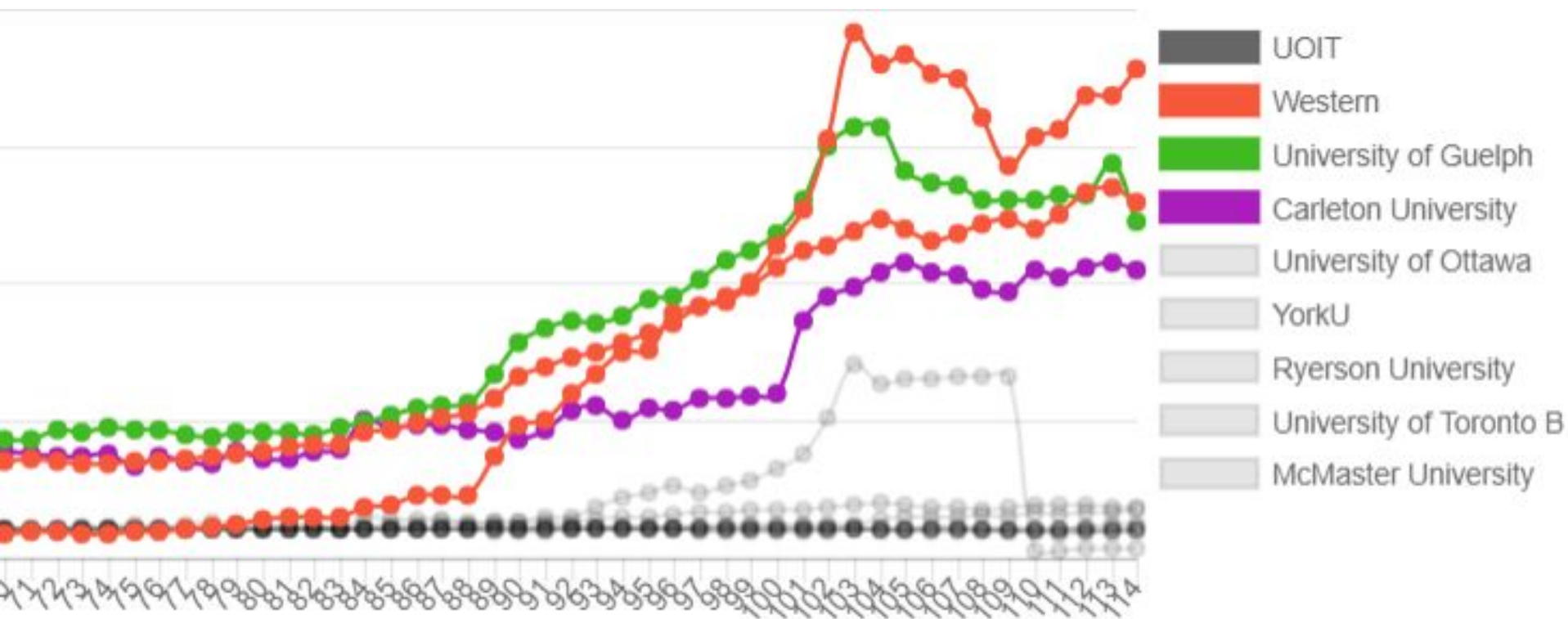
Criteria	Weight (1-5)	Linear Regression	Moving Average	Bounded Average
Speed	4	2 [8]	5 [20]	4 [16]
Accuracy	5	5 [25]	4 [20]	4 [20]
Reliability	5	5 [25]	4 [20]	4 [20]
Integration Complexity	3	5 [15]	3 [9]	3 [9]
Total		73	69	65



# Algorithm

- Weighted Linear Regression
  - create 2 linear regressions
    - short history (30 hours)
    - long history (100 hours)
  - weigh trends based on Pareto principle
  - project trends to create strategies
- + resists fluctuation influence
- slower processing time





# Risk Analysis

Risk	Probability	Impact	Mitigation
Scaling Issues	High	Medium	Weighted values focus on recent history
Bot Speed	Low	High	Using historical averages to not have to compute new trend
Fluctuation Influence	Medium	Medium	Trend line regresses to the mean trend, resisting temporary fluctuation



# Bugs and Improvements

- System is not aware of its current state
- It occasionally creates impossible strategies





# Questions or Comments

Thank you for your time!

