SGUS Project - NUS FinTech Lab

Algotrading: Developing algorithms in Quantconnect and Submitting Alpha

March 2021

OVERVIEW

To design and develop an intelligent systematic trading system leveraging the fundamentals of investing and algotrading.

SKILLS: Python, Understanding of libraries and Quantconnect

Phase 1: Foundation (2 weeks)

A :Fundamentals of Python

The project will be developed in python and hence the first part will be to understand python.

Getting familiarized with how to use notebooks or any python IDE for:

- Loading data
- Cleaning data
- Using Libraries, numpy and pandas and Yahoo Finance
- Creating Indicators (Technical, Fundamental) by libraries and raw python
- Visualising data

We will use google colab

Documentation of steps

Deliverable: A python script which inputs a dataframe and outputs all the important financial parameters like BASS and other indicators

B: Fundamentals of Quantconnect

Quantconnect is a very vast tool for developing trading algorithms. First phase is to complete all the botcamps within quantconnect to get familiar with syntax and functions of QC

- Understanding of Quant Connects Alpha stream

Deliverable:Successfully completed all the bootcamps

Phase 2: Strategy Development (4 weeks)

A Develop multiple strategies for decision making using, technical or fundamental analysis

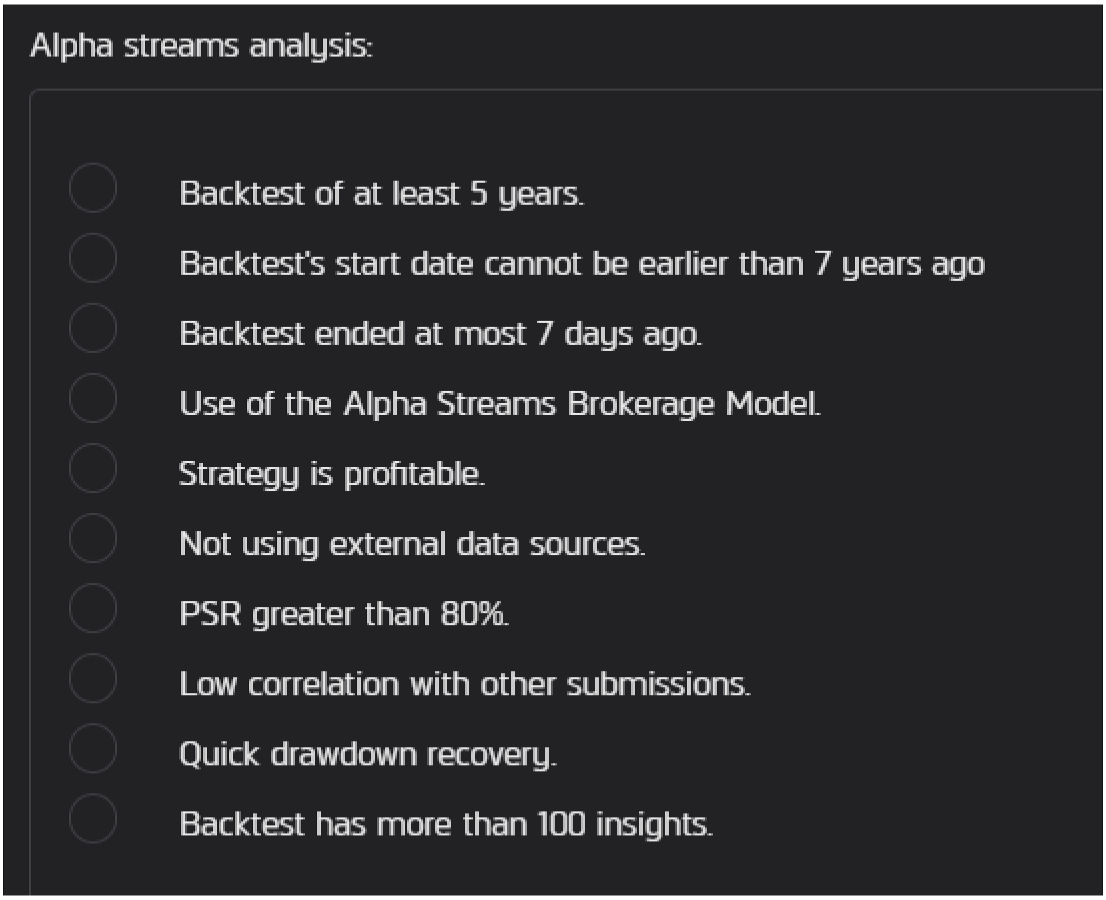
- Momentum
- Mean reversion
- Adding indicators
- Confirmations from multiple indicators

B. Selecting the robust strategies

C. Optimizing strategies for higher returns

D. Documentation on researches, findings and what the strategy is doing

Deliverable: A strategy that qualifies for Quant Connects Alpha criteria. Fintech Lab has 2 premium licenses so only two best algos will be nominated.


Alpha streams analysis:

- Backtest of at least 5 years.
- Backtest's start date cannot be earlier than 7 years ago
- Backtest ended at most 7 days ago.
- Use of the Alpha Streams Brokerage Model.
- Strategy is profitable.
- Not using external data sources.
- PSR greater than 80%.
- Low correlation with other submissions.
- Quick drawdown recovery.
- Backtest has more than 100 insights.

Phase 3: Other strategies (4 weeks)

If you can't find alpha in the previous strategies, more optimization can be required. If you achieved the alpha, it will be good to discover other strategies, only if you are familiar with or have a huge interest.

- Time Series
- Statistical Regression
- Machine Learning

Otherwise, work on optimisation of previous strategies by:

- Combining strategies
- Assign weights to strategies
- Diversification in Assets (Forex,Crypto, Derivatives)

Documentation on researches, findings and what the strategy is doing

Deliverable: A strategy that qualifies for Quant Connects Alpha criteria. Fintech Lab has 2 premium licenses so only two best algos will be nominated.

Phase 4 : Long Term portfolio strategy (4 weeks)

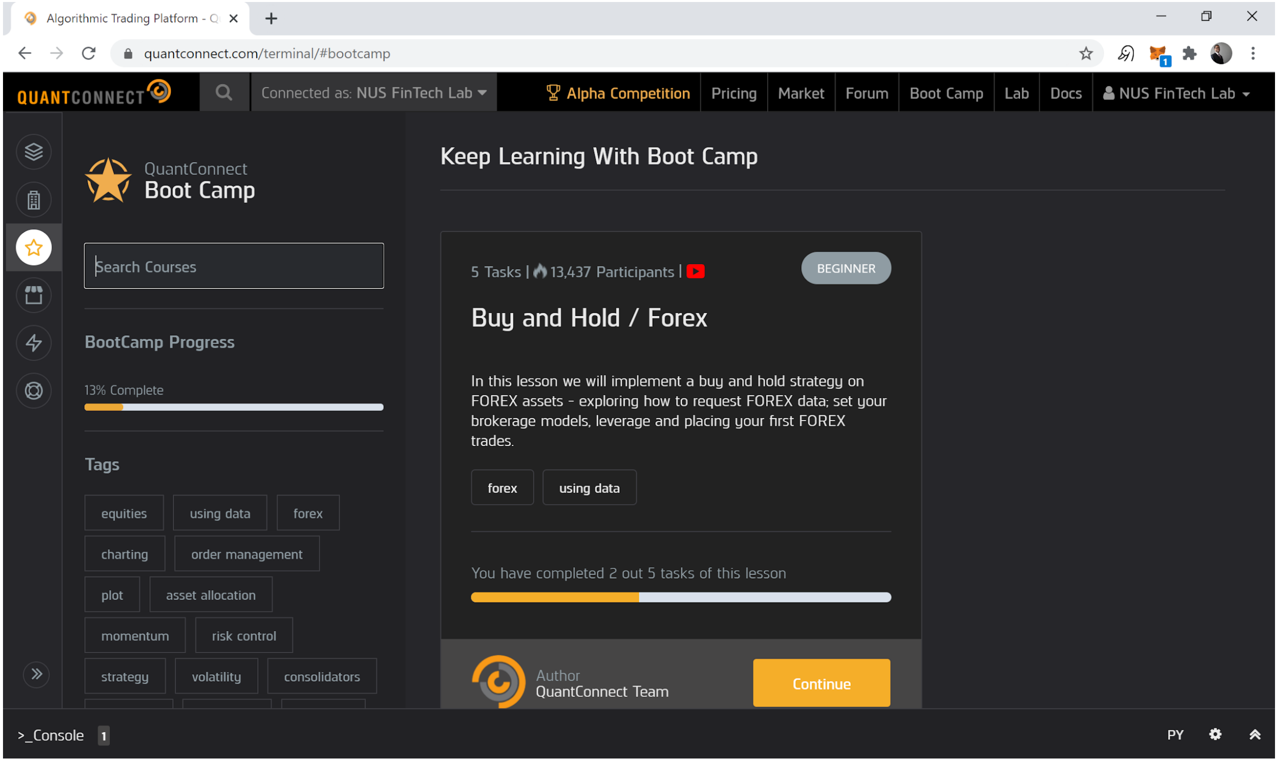
Creating a risk managed Portfolio with IDMR framework:

- Entry on BASS and other ratios
- Exit criteria
- Apply diversification and MPT
- Rebalance

Deliverable: A strategy that rebalances every week / month and beats the market (DJI)

Documentation on researches, findings and what the strategy is doing

Phase 5 : Final Report preparation and presentation (1 week)


Algorithmic Trading Platform - Q
quantconnect.com/terminal/#bootcamp
QUANTCONNECT
Connected as: NUS FinTech Lab
Alpha Competition
Pricing
Market
Forum
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order management
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5 Tasks | 13,437 Participants |
BEGINNER
Buy and Hold / Forex
In this lesson we will implement a buy and hold strategy on FOREX assets - exploring how to request FOREX data; set your brokerage models, leverage and placing your first FOREX trades.
forex
using data
You have completed 2 out 5 tasks of this lesson
Author
QuantConnect Team
Continue
>_Console 1
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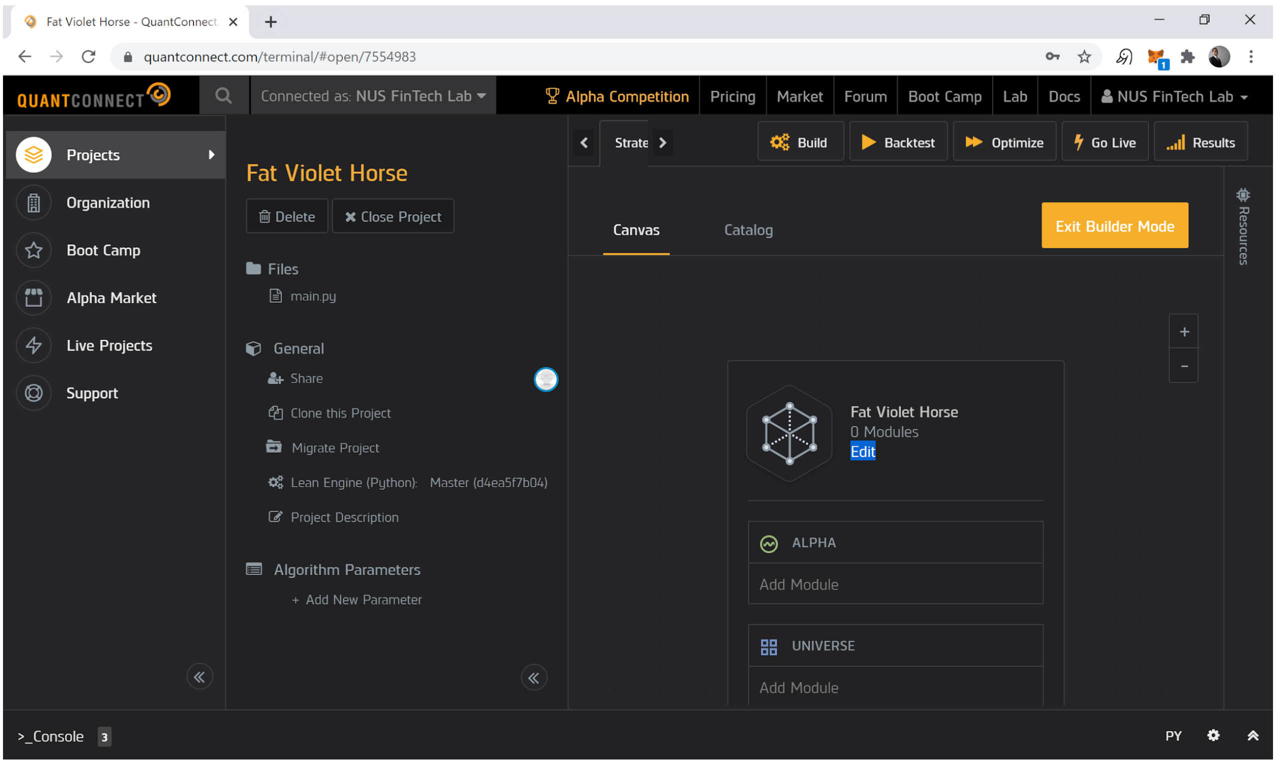
Fat Violet Horse - QuantConnect
quantconnect.com/terminal/#open/7554983
QUANTCONNECT
Connected as: NUS FinTech Lab
Alpha Competition
Pricing
Market
Forum
Boot Camp
Lab
Docs
NUS FinTech Lab
Projects
Organization
Boot Camp
Alpha Market
Live Projects
Support
Fat Violet Horse
Delete
Close Project
Files
main.py
General
Share
Clone this Project
Migrate Project
Lean Engine (Python): Master (d4ea5f7b04)
Project Description
Algorithm Parameters
+ Add New Parameter
Strate
Build
Backtest
Optimize
Go Live
Results
Canvas
Catalog
Exit Builder Mode
Resources
Fat Violet Horse
0 Modules
Edit
ALPHA
Add Module
UNIVERSE
Add Module
>_Console 3
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QuantConnect Alpha Stream Con

quantconnect.com/competitions

QUANTCONNECT

Alpha Competition | Pricing | Market | Data | Community | Lab | Docs | NUS FinTech Lab

QuantConnect Competitions

Keep your IP and compete to design the best Alpha for institutional licensing with quants around the globe

QuantConnect competitions are sponsored by hedge funds to direct and incentivize Alpha Streams development. Read the rules, design the algorithm, and submit to win cash prizes.

Watch Video

Active Competition