Cryptocurrency Trading with Python

March 11th / 18th 2017 (2 Consecutive Saturdays)

Registration: http://www.epchan.com/workshops/

This is a hands-on 6-hour workshop about the algorithmic trading of cryptocurrencies such as Bitcoin. Gemini Exchange's Sandbox environment will be used, which offers full exchange functionality using test funds, for testing API connectivity and the execution of strategies.

This course will be conducted by Nick Kirk, and moderated by Ernest Chan.

Ernest Chan's Biography can be found here:

http://www.epchan.com/biography/

Nick is an active algorithmic crypto trader and quantitative developer. He has more than 10 years' worth of experience in developing, automating and integrating trading systems for Investment Banks and Asset Management firms. Prior to working in Finance, he worked at IBM Labs and Siemens Research. He has previously taught algorithmic crypto trading at the CQF Institute to wide acclaim.

http://mintegration.co.uk

"Nick is a very passionate advocate of cryptocurrencies. I was very pleased to have attended one of his cryptocurrency trading workshops in the past. His blunt enthusiasm along with his in-depth knowledge on the field resulted in a very positive and value added experience on cryptocurrency trading with actual hands-on implementation. In combination with Ernie Chan, the guru of algo trading, the mix is going to be 'explosive'! Can't wait!"

– Konstantinos Moutsioulis
Portfolio Analyst, Dutch Development Bank, The Hague Area

"I have been very impressed with Ernie's past workshops and have enjoyed discussing cryptocurrency trading ideas with Nick on many occasions. I look forward to their unique partnership in the upcoming Bitcoin workshop".

– Stephen Hope
Former Head of Fixed Income Quantitative Trading Strategies, BNP Paribas

Course Outline

Introduction

- A brief introduction about cryptocurrencies and the digital asset space
- Bitcoin makes use of two hashing functions, SHA-256 and RIPEMD-160. We explain how cryptographic hashing works and give examples using Python
- What is mining? An example of the Proof of Work Algorithm is shown using Python

Trading systems development

- An introduction to trading systems architecture (not only useful for cryptocurrencies)
- Development of trading system components using a low latency messaging framework (zeroMQ) and the publish/subscribe pattern
- We will utilise parallel processing with the multiprocessing Python module

Gemini's Application Programming Interfaces (APIs)

Market Data WebSocket API:

- A very thorough walk-through of how the Market data API is used
- We will develop data handlers for both level 1 trades & quotes and level 2 order book data
- Saving the level 1 and level 2 data (from our data handlers) into a database (sqllite)
- Developing and maintaining an order book in memory
- Monitoring for heartbeat messages and restarting data handlers when needed

Order Events Websocket API:

- Tracking and getting real-time information about orders placed

RESTful APIs (Public and private):

- Develop code to place orders via the Order Placement APIs
- Checking account balances

Analysing Market Data

- Resampling the data into bars (e.g. 5-min OHLCV bars)
- Developing Highcharts plots using Python

Backtesting and Strategy Development

- Using a vectorised backtester to test strategy ideas
- Machine Learning and Technical Analysis will be used in the examples.