Coding Challenge

Introduction:

The purpose of this taking home assessment is to examing your python technical skills, software architecture, documentation, and ability to connect to external APIs. This task combines technical programming with computational finance in the form of modern portfolio theory.

This Challenge should take between 2-4 hours.

Objective:

To create an optimal portfolio using free historical data from the Houbi Derivatives Market RESTful API. https://www.hbdm.com/

Create a vector of weights for the portfolio using mean-variance portfolio optimization. Using the current quarterly futures contracts available on HBDM from 2020-02-01T05:00:00+00:00 to 2020-02-15T23:00:00+00:00 using 1 hour data. Construct the portfolio using the following three contracts: BTC200327, XRP200327, LTC200327.

Requirement:

- Executes on Ubuntu with python 3.7+
- Connects, parses, and processes related data from HBDM RESTful API
- Computes mean-variance optimization
- Documentation in a markdown readme file
- Outputs dictionary of format { 'futures_contract_name' : weight, 'futures_contract_name1' : weight1, etc…}

Bonuses:

- Deal with appropriate HTTP status error codes
- A plot of the mean-variance efficient frontier
- Write output a location

Submission:

GitHub/Bitbucket cloneable repository, with the readme.

Reference:

https://huobiapi.github.io/docs/dm/v1/en/#introduction