Generic Crypto-Portfolio

Project Report

Python in the enterprise 2021/22

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1. Initial project idea

The main goal for this project was to create a web application that would allow users to store, modify and observe their cryptocurrency portfolio. Users have the opportunity to add the assets to their portfolios and are provided with useful information about them, how the prices change, which ones are profitable and which are not. The website is supposed to aid them in their investment and make managing their holding easier by storing all information in one place.

Another feature, aimed mostly at people who just begin investing in cryptocurrencies is price prediction. Using machine learning, the website is supposed to predict how the price will change in the following days, aiding less experienced or indecisive users with help on what might be worth investing into.

2. Project analysis

The project was made using the Django framework. Website requires users to be authorized(registered) to access some of the features, mainly: user's portfolio. Data about cryptocurrencies is obtained via API calls to the CoinGecko API, which is a free-to-use, reliable and comprehensive API that provides up-to-date data from the cryptocurrency networks. Each user is responsible for managing their portfolio by adding to it cryptocurrencies they want. Bootstrap's infrastructure was used when designing the website to avoid repetitive styling of the website. Predicting the price of each cryptocurrency required using advanced machine learning algorithms and models, which was achieved using scikit-learn module for python. Majority of the logic behind the program is written in Python with some JavaScript functions.

3. Work division and organization

In the project we used several tools to work more efficiently:

-Visual Studio Code as our IDE with LiveShare extension to work on code together

-Bitbucket repository to store our repository online and work with the proper branching model

-Conda packet management system for managing virtual environment in which we worked

-Confluence for organizing our work using earlier prepared roadmap of the project

-Discord meetings to discuss what we've worked on, solve problems and plan next steps.

We divided the tasks, so that everybody worked in the field they are skilled in:

Michał Orlewski:

- Work management
- Decision making
- Portfolio functionalities

Damian Raczyński:

- Implementing machine learning and price prediction
- User authorization
- Testing

Kamil Kaproń:

- Portfolio functionalites
- Design
- User authorization
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4. Technologies used

Some of the most significant technologies/libraries used are:

- Python 3.9.5
- Django 3.2.5
- Scikit-learn 1.0.1
- Pandas 1.3.5
- Numpy 1.21.5
- Matplotlib 3.5.1
- Requests 2.26.0
- Coverage 5.5

5. Future development

There is still a lot of room for improvements and new features in the project, some of which are:

-notifications for user when price reaches certain point
-scraping the web for articles regarding cryptocurrency
-minor visual and logistical changes.

6. Links

Repository: https://agile.fis.agh.edu.pl/bitbucket/projects/PITE2122W/repos/pite-gtn/browse
Confluence: https://agile.fis.agh.edu.pl/confluence/display/PITE2122W/Generic+Team+Name+-+project+roadmap