U Mobile Cryptocurrency Prediction Software

Software Requirements Specification

Code Black

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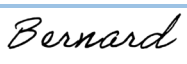
1 DOCUMENT CHANGE CONTROL

Version	Date	Authors	Summary of Changes
1	25/4/2022	*Bernard Joshua*	Introduction, Overall Description and Functional Requirements.
2	25/4/2022	*Lionel Low*	High Level Architecture.
3	26/4/2022	*Danial Imran*	Interface Requirements.
4	26/4/2022	*Ming Xuan*	Non-Functional Requirements.
5	1/5/2022	*Bernard Joshua*	Final Editing.

DOCUMENT SIGN OFF

Name	Position	Signature	Date
Bernard Joshua	*Team Leader/Data Engineer*		1st May 2022
Lionel Low	*Backend Engineer*		1st May 2022
Danial Imran	*Frontend Engineer*		1st May 2022
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Robina D. Tinawin	*Project Supervisor*		4th May 2022

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1. Introduction

The software that will be developed is a cryptocurrency prediction software. It will use machine learning and deep learning algorithms to analyse historical data about the cryptocurrency and make predictions about its performance in the future. The predictions will be displayed to the user via a web-based user interface.

1.1 Purpose

The purpose of this document is to outline procedures and policies that the development team must follow in order to design and develop the project/software to the highest degrees of quality. The targeted audience of this document is the development team, project supervisor (lecturer) and the project employer (U-Mobile).

1.2 Scope

a. In-Scope and Use/Application of the Software

The software will be named GoCrypt as to be consistent with other U Mobile services such as GoPayz and GoBiz. This software would be able to analyse historical data regarding specific cryptocurrencies and make short-term predictions about its performance. It will be based on a web application, hence be able to be accessed on almost all operating systems given that there is a good internet connection. The software will also be able to send notifications to the user on new analysis of the cryptocurrencies predictions and when to buy or sell the crypto.

b. Out-Of-Scope

This software will however not be able to predict performance changes due to market volatility such as breakouts of war or natural disasters, etc. It will also not be able to download or convert the data into a file format.

c. Benefits and Objectives

Among the objectives of this software would be to give users accurate or near accurate information about a cryptocurrency that their interested in, so that the user can make a more informed investment decision. This will directly benefit the user as they have access to such services while directly boosting U Mobiles brand image as a key technological player. Another benefit this application/software may have towards U Mobile is that is can increase its user base by offering such services. A third benefit would be that it can monetize the predictions that it give in two ways; One to have a planed subscription service which would require users to pay to use the prediction model or two to have a referral program to a crypto-exchange which would see that each time a prediction is made the user could be prompted to buy or sell the crypto at a specific crypto exchange which in turn would allow for U Mobile to make money via commissions.

Summary of Scopes

Application uses	• *Give predictions about specific cryptocurrencies for the short-term.*
In-scope	• *Web Based Application.* • *Analyses historical crypto data and makes short term predictions.* • *Provides notifications on performance changes/ when to buy or sell the crypto.*
Out-Of-Scope	• *Predict performance of crypto via external market conditions.* • *Convert or download the data into file formats.*
Objectives	• *Give existing U Mobile users better access to crypto investment services.* • *Increase U Mobiles user base.*
Benefits	• *Increase U Mobiles Brand Image.* • *Increase U Mobiles users.* • *Increase U Mobile profits.*

1.3 Definitions, Acronyms and Abbreviations

Acronym/ Abbreviations	***Definitions***
GUI	*Graphical User Interface*
UX	*User Experience*
ML	*Machine Learning*
DL	*Deep Learning*
CNN	*Convolutional Neural Networks*
LSTM	*Long Short-Term Memory*
KIV	*Keep In View*
FR	*Functional Requirement*
NFR	*Non-Functional Requirement*

2. Overall Description

This software is being created as a stand-alone software or as a new product under U Mobiles (PE) services and may be extended at their own discretion. However, as far as our team goes this project will solely focus on creating the application for prediction means only.

2.1. Product Features

Backend

Three ML algorithms and one DL algorithm. Besides that, a general algorithm to convert raw data into machine friendly data. It will also have a notification system that will send notifications to the user in an event there is a change in the crypto's performance.

Frontend

User friendly GUI. Besides that, an interactive tutorial prompt on how to use the application. A login portal as well as a customizable dashboard.

2.2. System Requirements

Software

Windows	Windows 7, Windows 8, Windows 8.1, Windows 10 or later.
Mac	OS X El Capitan 10.11 or later.
Linux	64-bit Ubuntu 18.04+, Debian 10+, openSUSE 15.2+, or Fedora Linux 32+.
Others	Android Marshmallow 6.0 or later / IOS 12 and up.

Hardware

Desktops	*An Intel Pentium 4 processor or later that's SSE3 capable*
Mobiles	*8GB RAM*

2.3. Acceptance Criteria

Backend

The prediction algorithm must meet atleast 60% accuracy to be accepted.

Frontend

The GUI must meet all heuristic principles to a reasonable degree as well as pass all usability tests to a 90% score to be accepted.

General

All code must follow industry standards to be accepted.

*****This are just high-level acceptance criteria. More specific ones will be available in the functional requirements section.***

2.4. Documentation

Type	***Description***
Debug Manual	*Contains any errors encountered during development and how it was resolved.*
User Manual	*Contains information on how to use the application.*
Research Report	*Contains the analysis of the ML / DL algorithms.*
Extension Report ***(KIV)***	*Contains methods of monetization of the application.*

3. Functional Requirements

FR No.	***Description***
1	*System must allow users to log in via their Google Account or Phone number.*
2	*System must allow users to change/reset their passwords.*
3	*System must display a graph to show the predicted performance of the crypto.*
4	*System must provide a numeric number on the accuracy of the prediction. (In percentage)*
5	*System must allow the user to change the type of crypto to predict performance.*
6	*System must allow users to save/mark crypto to follow for performance prediction.*
7	*System must allow for users to receive notification about a specific cryptos performance if that crypto was marked.*
8	*System must allow administrator to notify the user about any changes to the system.*

*** Please be advised the functional requirements may be increased if needed during the development phase. The project employer and the project supervisor will be notified about any changes.*

4. Non-Functional (Quality) Requirements

4.1 Functional Suitability

a. ***Functional completeness:*** *Functions such as performance notification, marking the crypto for performance notification, prediction graphs and accuracy percentages will be added into the application to ensure the users objectives of having necessary information when needed are met.*
Measurement: *Testing the applications ability to do so by checking if it does present the following when the functions are called.*

b. ***Functional Correctness:*** *The prediction of the crypto should be available on a weekly basis.*
Measurement*: Checking the weekly closing prices versus the predicted weekly closing prices. Both should be equal with a margin of error at +/- 10 %.*

4.2 Usability

a. ***Learnability – GUI interface.***
Measurement *-To check for learnability, the user should be able to know what each part of the application should do when they use it for the first time.*

b. ***Operability – GUI interface.***
Measurement – *To check for operability, the user should be able to navigate within the application and operate each feature without problems to get their desired outcomes.*

4.3 Reliability

a. ***Availability:*** *Overall application.*
Measurement *– To check for availability, the user should be able to use the application anytime when they need to. This is if the crypto markets are open.*

b. ***Recoverability:*** *Overall application.*
Measurement: *To check for recoverability, the user should be able to use the application and retrieve data in the event of a system failure.*

4.4 Security

a. **Confidentiality:** 99% of correctness that only those authorizes to have access.
Measurement: Log in attempts made wit non-existent accounts/ Attempt to access the application without an account result in a denied access.

b. ***Integrity:*** Normal users do not have administrative privileges.
Measurement: Normal users cannot modify or access sensitive data.

4.5 Portability

a. ***Adaptability:*** *The product can be used across multiple different operating systems on multiple different browsers.*
Measurement: *Testing out the applications use on Windows, Mac, Linux, Android and iOS.*

4.6 Maintenance

a. ***Modifiability:*** *99% of functions are easy to modify*
Measurement: *The functions can be modified without affecting the main application too much or at all.*

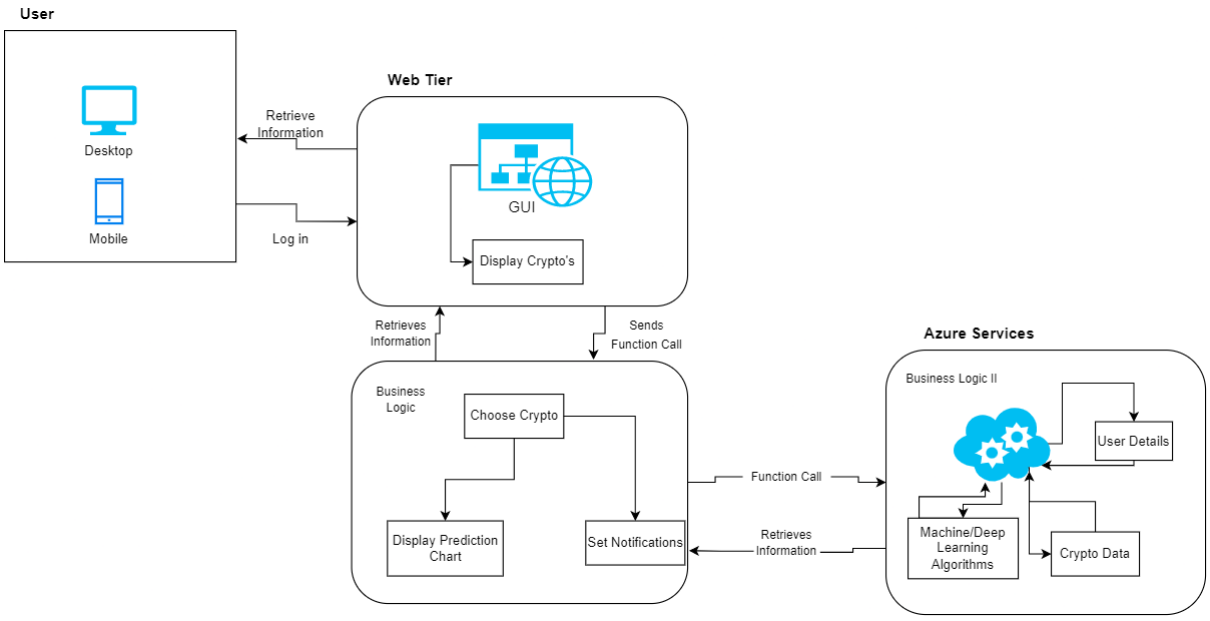
b. ***Testability:*** *99% of functions can be tested if there are new criteria set.*
Measurement: *Testing out the new/modified functions and it passes the new or existing criteria's set.*

4.7 Performance

a. ***Time behaviour:*** *More than 95% of functions will respond within the response time.*
Measurement: *Monitoring time while calling the functions.*

b. ***Resource utilisation:*** *All resources will use a total of 3GB or less/ All resources will use as much resources only when needed (No background use).*
Measurement: *Monitoring of the resources using the PC's inbuilt "Resource Monitor"*

5. High–Level System Architecture



Explanation

Upon authentication the user using either mobile device or desktop will gain access to the web tier via the GUI. In the web tier the user will be able to see all the available crypto's displayed. The user will be able then to send function calls via buttons in the GUI to access the business logic where they can choose a crypto then display its predictions or set notifications on predictions/performance of that chosen crypto.

6. Interface Requirements

There are many types of interfaces as such supported by the Cryptocurrency Prediction Software system namely, User Interface, Software Interface, and Hardware Interface.

6.1. User Interfaces

The software will be deployed via web service with a GUI. Hence, users will interact with the software through the webservice that inherits industry level standard of UX design. The user interface for the software shall be compatible to any browser such as Google Chrome, Internet Explorer or Mozilla by which user can access to the system. The user interface shall be implemented using ASP.NET and Microsoft Azure Web Apps

6.2. Hardware Interfaces

As the software will be hosted through Microsoft Azure Web Apps, hence most of the major hardware like the data servers will be handled by Microsoft. Besides that, hardware interface for the system to be connected to the internet such as , Modem, WAN – LAN, Ethernet Straight-Cable etc…. will be handled by the user and the employer.

6.3. Software Interfaces

The Cryptocurrency Prediction software shall communicate with Microsoft Azure Web Services for users to be able to access the web and store information there.

6.4. Communication Interfaces

This software will be communicating through Azure Web Apps Services.

7. References

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