Currency Analyser Dissertation

Johnny Glynn

Rebecca Kane

Tara O'Kelly

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Advised by: Dr Ian McLoughlin

Department of Computer Science and Applied Physics
Galway-Mayo Institute of Technology (GMIT)

Contents

About this project

Abstract A brief description of what the project is, in about two-hundred and fifty words.

What it is, analytics part and applied project part, volatility, viability, predicting prices etc.

Authors Will get everyone to write their own?

Chapter 1

Introduction

Throughout our first three years of Software Development at Galway-Mayo Institute of Technology, we have continuously been encouraged to maintain a comprehensive knowledge of the trends within the technology industry, and to embrace its ever-changing nature. In these short years, we have witnessed the birth, growth and sometimes failure of various technologies, approaches and trends.

When we had our initial meeting to discuss some possible project ideas in September 2017, we were all in agreement that we wanted to pursue a concept that would be interesting, distinct from other projects, and most importantly be beneficial and of use in its field. After numerous ideas were considered and after much deliberation, we decided to focus on the area of Cryptocurrency and more specifically, analysing changes in the market and attempting to decipher trends in prices. We felt this was a good decision as we weren't aware of any similar projects from previous years, and most importantly, we all had a keen interest in the topic outside of academia.

– Need to fill out... –

In this dissertation, we aim to first give the reader a good understanding of what exactly cryptocurrency is, how it works and the various technologies behind it. We will also examine the volatility of cryptocurrency as an asset, and the influencing factors in the changing of its prices. Following the more theoretical chapters we will move to discussing the applied aspect of this project, in which we will outline and explain the development process and reasoning behind technologies used, among other relevant topics. Finally, we will conclude the dissertation with a summary of the project as a whole, along with any discoveries gained throughout the project.

All source code and documentation for this project can be found in the project's GitHub repository.

1.1 Objectives for the Project

Keep in mind the LEARNING OUTCOMES.

- Demonstrate the application of appropriate research methodologies and techniques related to software development.
- Demonstrate an awareness of the present state of the art in a specialist computing area including the ability to evaluate the literature base.
- Integrate disparate technologies and principles to successfully develop and deliver an appropriately integrated solution to a computer-based project.
- Apply research and critical thinking skills to a challenging computer based problem.
- Evaluate, select and apply standard and customised research tools and methodologies of enquiry.
- Design and implement a computing solution that requires preliminary research.
- Critically evaluate the work and research and reflect on the strength, weaknesses and future potential of such work.

As mentioned previously, our main objective for the project was to make the area of cryptocurrency more accessible to an individual with little knowledge of the field.

Outline objectives here...

1.1.1 Metrics for Success/Failure

1.2 Description of Each Chapter

ALL NEEDS TO BE RE-WRITTEN AT LEAST SLIGHTLY.

1.2.1 Understanding Cryptocurrency

Explain what exactly a cryptocurrency is, and how it differs from a traditional currency, briefly examine some of the most popular / well-known cryptocurrencies such as Bitcoin, Ethereum, Litecoin, and more. Some of the technologies behind cryptocurrency, blockchain.

1.2.2 Predicting the Prices of Cryptocurrency

Chapter 3 - will need to tidy this explanation up - is where the theoretical analytics and applied elements of this project meet. We discuss the influencing topic for the project, the main driving force behind the project, something like that. Explain the volatility of cryptocurrency, influencing factors on prices such as hype, news, hacks, maybe even the whole ”are the South Koreans awake” thing.

1.2.3 Applied Project Chapter (tbrn)

To be renamed. Applied ”Currency Analyser” aspect of project is explained. Methodologies, planning used throughout project, any aspects which could have been done/planned/managed/organised better. Technologies used for the applied project, reasons for being chosen, any problems that occurred related to the technologies. Design of the system and overall evaluation of the system.

1.2.4 Conclusion

Concluding chapter will summarise all theoretical and applied aspects of project. What could have been done differently, any findings gained during the project.

Chapter 2

Understanding Cryptocurrency

Since the first signs of digital finance in the 1970s, the financial services industry has relied more and more on new technologies and advancements in existing technologies. With the advent of the internet in the 1990s, becoming popular and more accessible in the 2000s, online banking was soon to become a commonplace financial service. As the internet grew and became faster, we witnessed an increase in both companies and individuals taking advantage of a variety of digital finance software, with respect to buying and selling goods and services and even trading stock.

One of the first plausible instances of a digital currency, which paved the way for all cryptocurrencies we know today, was DigiCash. In 1983, David Chaum proposed the idea of using "blind signatures" for untraceable digital payments. Similarly to the fears of the public today, Chaum discusses the issue of privacy in banking, also arguing that there would be a need to prevent digital payments from being used inappropriately such as in a criminal manner. Chaum follows by identifying the issue that knowledge of payment details such as payer or recipient details, by anyone other than the payer can often reveal sensitive information about that payer, such as their interests or whereabouts. Furthermore, Chaum also highlights the lack of security and control related to traditional bank notes and cheques. To resolve this issue, Chaum proposed the use of blind signatures, which work by concealing the content of a message through the use of "nested envelopes" (an envelope within an envelope) containing the message being passed back and forth between payer and recipient. More importantly, Chaum describes how this blind signatures system could be used in the implementation of an untraceable payments system, outlining an example of how a single transaction would take place - The payer chooses a value to send to the recipient, and forwards the note to the bank. Thank signs the note, debits the payer's account, and returns the signed note to the payer. At this point the amount

has been deducted from the payer's account, and they now have a note which is verified by the bank. The payer makes sure the value of the note is the same as what they initially sent to the bank, terminating the process if not. The payer then provides the note to the recipient, who checks the note. If the note is valid, the recipient forwards the note to the bank. The bank checks the validity of the note, terminating the process if any discrepancies exist. If the note is valid, the bank adds that note to a comprehensive list of cleared notes, terminating if the note is already on the list. Following success in all steps, the bank credits the recipient's account and informs them of acceptance.

2.1 An Explanation of Cryptocurrency

2.1.1 Comparing Traditional Currency and Cryptocurrency

2.2 Blockchain Technology

2.3 Long Term Prospects

Chapter 3

Predicting The Prices of Cryptocurrencies

Tie concept of diss with concept of proj.

3.1 Unpredictability of Cryptocurrency

3.1.1 Influencing Factors in the Price of Cryptocurrency

Start with explaining what influences traditional currencies, lead into main body of CC influencing factors.

3.2 Segway into applied proj

Chapter 4

Applied Project Chapter

4.1 Context

- Provide a context for your project.
- Set out the objectives of the project
- Briefly list each chapter / section and provide a 1-2 line description of what each section contains.
- List the resource URL (GitHub address) for the project and provide a brief list of the main elements at the URL.

4.2 Methodology

3-5 pages (2-3000 words) Describe the way you went about your project, Was your approach to the problem valid?

- Software development v/s Research methodology. Agile / incremental and iterative approach to development.
- Planning. Did you storyboard? How did you determine the requirements for the project?
- Meetings. Frequency, structure, checks and balances, feedback.
- What about validation and testing? Junit or some other framework.
- If team based, did you use GitHub during the development process.

- Selection criteria for algorithms, languages, platforms and technologies. Was an empirical approach used? How were problems solved? Was any research undertaken first?

4.3 Technologies / Tech Review

About seven to ten pages.

- The "literature review" part of the dissertation. Should be tightly coupled to the context and objective from the introduction. Proves that you researched what you were doing!
- Describe each of the technologies you used at a conceptual level. Standards, Database Model (e.g. MongoDB, CouchDB), XMl, WSDL, JSON, JAXP. Use references (IEEE format, e.g. [1]), Books, Papers, URLs (timestamp) Sources should be authoritative!
- A technology review that includes a lot of de facto or de jure standards supports the methodology! Each chapter buttresses some other aspect of the dissertation.

4.4 System Design

As many pages as needed.

- Architecture, UML etc. An overview of the different components of the system. Diagrams etc... Screen shots etc.

Column 1	Column 2
Rows 2.1	Row 2.2

Table 4.1: A table.

4.5 System Evaluation

As many pages as needed.

- Prove that your software is robust. How? Testing etc.
- Use performance benchmarks (space and time) if algorithmic.
- Measure the outcomes / outputs of your system / software against the objectives from the Introduction.
- Highlight any limitations or opportunities in your approach or technologies used.

Chapter 5

Conclusion

About three pages.

- Briefly summarise your context and ob-jectives (a few lines).
- Highlight your findings from the evalua-tion section / chapter and any opportuni-ties identified.

5.1 Context/Objectives

5.2 Findings

Bibliography