

# PRIFYSGOL

### **Initial Plan**

Web Application that uses algorithms to automatically identify patterns on financial charts.

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## **Project Description:**

Financial Trading can be extremely lucrative which is why so many people participate even if they do not have a background or any prior knowledge in finance. However, with chances of great success also come risks of losing substantial amounts of money. That is why experienced financial traders use candlestick patterns. Candlestick patterns are essentially the language of financial charts. Being able to read financial charts transformed methods of prediction in future market prices and they could be replicated multiple times.

The reliability of candlestick patterns was truly far beyond the methods at the time. The candlestick patterns: *Three stars in the South, Three-line strike(bearish) and Three White Soldiers* all have a success rate beyond 80% when identified [2]. Candlestick patterns originate from the Japanese who were using candlestick patterns as early as the 17th century. It was only introduced to the western world in the 1980's. From there the popularity of candlestick patterns has become widespread and a standard in financial trading [1].

Technology has been improving exponentially in recent years. Although technology has already been used to assist in financial trading through Trading 212 and Binance have allowed us to participate in trading from our mobile phones at any time or place. They have also enabled us to make stop losses to warn us when an asset has gone above or below a certain price which is invaluable in making profits or avoiding losses.

This project offers a technological solution to candlestick pattern analysis which utilises algorithms to identify a candlestick pattern. By using the high, low, open and close prices of consecutive candlesticks, we can calculate the overall trend and therefore identify candlestick patterns [1]. This solution aims to help veteran traders to save time and check if they have missed anything in their analysis. It also aims to be educational to newer traders by explaining the candlestick patterns that have been identified.

In order to complete this project, I will need to practice data structures and algorithms. Being better at problem solving and being familiar with common and intermediate data structures and algorithms will give me more options and ideas on how to create this algorithm. This project is a web application so I will also need to setup a website. This will be done using Python's web framework Flask. I have used Flask in previous projects so I will only need a couple of weeks to familiarise myself with it again.

In addition to the technological requirements, I will have to review the candlestick patterns and make sure that I understand them well in order to calculate them with the algorithm and to explain them after they have been identified. I will not be submitting any ethics forms as I am not doing any research and my project will not be acquiring data from the user.

### Aims and Objectives:

My primary aim for this project is to create an application that identifies candlestick patterns from financial charts automatically. This will help traders to save time, confirm their analysis and discover patterns that they have missed in their analysis. The secondary aim of the application is to teach users what candlestick patterns are, each of their characteristics and what they mean. This is aimed towards new or rookie traders aiming to improve profits.

My four objectives are to:

- 1. Complete a functional website with Flask
  - a. The first aim will require some recaps on Flask but should be rather simple.

- 2. Create a method for collecting data for the charts from the user
  - a. The second task requires more thought and research into website/flask/python user input methods.
- 3. Complete the algorithm that reveals candlestick patterns on a chart
  - a. The third aim is the bulk of the project and will likely require a lot of trial-and-error testing in order to formulate a working and optimised algorithm.
- 4. Create sections that contain descriptions and examples for each candlestick pattern identified
  - a. The fourth aim will require some research into candlestick patterns but the technical side of it should be simple.

These aims are the key parts of the project. Aim three and aim four are the two most important aims that make the project.

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Week	Tasks	Deadlines/Milestones
Week 1:	- Initial Plan	
Si January – 6 February	- Research Candlestick	
	- Supervisor meeting	
Week 2:	- Besearch Candlestick	- Initial Plan Submission
$7^{\text{th}} - 13^{\text{th}}$ February	Patterns	
, 10 (condity	- Begin report	
	Introduction and	
	Background	
Week 3:	- Continue report,	
14 <sup>th</sup> – 20 <sup>th</sup> February	working on approach	
	- Research Candlestick	
	Patterns	
	- Practice Flask	
	<ul> <li>Supervisor meeting</li> </ul>	
Week 4:	- Complete website	- 1.) First objective
21 <sup>st</sup> – 27 <sup>th</sup> February	initial design	completed
	<ul> <li>Research Candlestick</li> </ul>	
	Patterns	
	<ul> <li>Document progress in</li> </ul>	
	report	
	<ul> <li>Editing and reviewing</li> </ul>	
	plan and progress	
Week 5:	- Research user input	- Supervisor Review
28 <sup>th</sup> February – 6 <sup>th</sup> March	options	Meeting
	- Write up descriptions	- 4.) Fourth Objective
	and explanations for	completed
	candlestick patterns	
	- Document progress in	
	Supervisor mosting	
Wook 6 7:	- Supervisor meeting	
$7^{\text{th}} = 20^{\text{th}} \text{ March}$	- Research user input	
	- Work on main	
	algorithm	
	- Research and planning	
	for future	
	improvements	

Week 8: 21 <sup>st</sup> – 27 <sup>th</sup> March	<ul> <li>Document progress in report</li> <li>Supervisor meeting</li> <li>Slack period to catch up</li> <li>Review plan and progress</li> </ul>	- Supervisor Review Meeting
Week 9 - 10: 28 <sup>th</sup> March – 10 <sup>th</sup> April	<ul> <li>Complete the user input method</li> <li>Complete the main algorithm</li> <li>Create sections for the candlestick explanations that were created in week 5</li> <li>Document progress in report</li> <li>Supervisor meeting</li> </ul>	<ul> <li>Complete first iteration</li> <li>2.) Second objective completed</li> <li>3.) Third objective completed</li> </ul>
Week 11: 11 <sup>th</sup> – 17 <sup>th</sup> April	<ul> <li>Begin second iteration</li> <li>Document progress in report</li> <li>Supervisor meeting</li> </ul>	
Week 12: 18 <sup>th</sup> – 24 <sup>th</sup> April	<ul> <li>Complete second iteration</li> <li>Document progress in report</li> </ul>	
Week 13: 25 <sup>th</sup> – 1 <sup>st</sup> May	<ul> <li>Catch up and finish any remaining code</li> <li>Document progress in report</li> <li>Begin writing up Results and reflections</li> <li>Supervisor meeting</li> </ul>	- Supervisor Review Meeting
Week 14-15: 2 <sup>nd</sup> – 13 <sup>th</sup> May	<ul> <li>Complete final report</li> <li>Supervisor meeting</li> </ul>	

# Risk Plan:

Risk	Туре	Likelihood (1-3 Low - High)	Impact (1-3 Low - High)	Total (Likelihood * impact)	Solution	Supporting Evidence/Justification
Falling behind schedule in report writing	organi sation al	3	2	6	Catch-up time	Weeks 14 and 15 are two weeks dedicated entirely to report writing. If my project is not completed by this time, it will be left as is. This ensures that I will have time to finish the report completely.

Mismanag ed Timelines	Organi sation al	3	2	6	Review	Every week that I have catch- up or a supervisor meeting, I have also made time to review progress and modify the plan as the original timelines may no longer be realistic.
Bad website design	design	3	2	6	Test	In order to test the usability and design of the website I will get friends and family to look at the website and try to use it without giving any prior explanations.
Coding task being harder than expected	Techni cal	3	3	9	Cushion time	I have given myself two weeks of time in my work plan allocated to catching up, reviewing progress and planning for the future. This time will act as a safety net if I fall behind schedule.

## References:

- [1] Sanyog Raut. 2020. The Candlestick Trading Bible
- [2] Thomas Bulkowski. 2008. Encyclopaedia of Candlestick Charts