

Research Question

1. What modern approaches are used in stock forecasting?
2. What are the model features to be considered?
3. What improvements for existing stock forecasting models can be done by applying modern machine learning methods and techniques?

		Dec 22												Jan 23												Feb 23																	
Task Id	Task Name	Start	Deadline	Hours	Deliverable	Evaluation Approach	Evidence																																				
1.0 Background research by evaluating different investment strategies and studying modern approaches and methods used for stock forecasting						Critique on different investment strategies and modern approaches for stock forecasting. Then define the data problem and expected deliverables correspondingly	List, describe and discuss at least three investment strategies and modern approaches that can assist for decisioning																																				
1.1	Research on different investment strategies	17Dec2022	31Dec2022	20	Understand big categories of investment strategies																																						
1.2	Research on modern approaches and methods used for stock forecasting	17Dec2022	31Dec2022	20	Research pros and cons for different approaches and methods																																						
1.3	Summarization	28Dec2022	8Jan2023	5	Identify the most suitable modern forecasting approaches and area for improvement																																						
1.4	Dissertation write up	3Jan2023	8Jan2023	5	Write up on background and introduction																																						
2.0 Study the Hong Kong stock market landscape by performing background research and technical analysis						Perform exploratory data analysis of long term, mid-term and short-term study in Hong Kong stock market. Describe the	Use of summary statistics and various charts for technical analysis that able to articulate the market situation in 2022																																				
2.1	Identify data scope to be collected	9Jan2023	15Jan2023	10	Find out the big waves of Hong Kong stock market and summarize the analysis from longest available period to zoom in to recent 2 years market situation																																						
2.2	Perform data analysis	16Jan2023	4Feb2023	20	Present the data analysis result of long, medium, short term that reflect the market situation																																						
2.3	Summarize analytics finding	30Jan2023	5Feb2023	10	Consolidate the analytics finding and support the model building objectives																																						
2.4	Dissertation write up	4Feb2023	5Feb2023	5	High level describe the Hong Kong stock market and summarize the exploratory data analysis finding																																						
3.0 Literature review to critically evaluate potential forecasting algorithms and its application						Research relevant literatures that can provide directions on potential forecasting algorithms, such as logistic regression, neural network algorithms and their experiment results on stock predictions	Summarize literature review findings and lay down experimental design																																				
3.1	Literature review on logistics regression	17Dec2022	31Dec2022	10	Critically evaluate different usage by logistic regression and its application																																						
3.2	Literature review on neural networks and LSTM	1Jan2023	15Jan2023	10	Critically evaluate different usage by neural networks, LSTM and their application																																						
3.3	Literature review on how LSTM variants to solve forecasting problems	16Jan2023	31Jan2023	50	Understand the theory of LSTM and its variants specific on forecasting problems																																						
3.4	Summarization	30Jan2023	5Feb2023	10	Define the experiment design of the practical model building																																						
3.5	Dissertation write up	5Feb2023	11Feb2023	10	Dissertation on literature review																																						
4.0 Discuss data collection process by Yahoo Finance						Describe the data collection process with reasons on data period, collection method.	Document the process flow with corresponding consideration																																				
4.1	Research on available data collection method	6Feb2023	11Feb2023	10	Identify the available data collection method and corresponding advantages and disadvantages																																						
4.2	Dissertation write up	12Feb2023	12Feb2023	5	State the available data collection method and reason of adoption																																						
5.0 Identification and discussion of relevant professional, ethical, social and legal issues						Elaborate the consideration on relevant professional, ethical, social and legal issues during data collection, application adoption process	Document the study and discussion of relevant professional, ethical, social and legal issues																																				
5.1	Research on social issues related to stock forecasting model	15Feb2023	24Feb2023	2	Discuss on social issue related to stock forecasting model																																						
5.2	Research on ethical issues related to stock forecasting model	15Feb2023	24Feb2023	2	Discuss on ethical issue related to stock forecasting model																																						
5.3	Research on professional issues related to stock forecasting model	15Feb2023	24Feb2023	2	Discuss on professional issue related to stock forecasting model																																						
5.4	Research on legal issues related to stock forecasting model	15Feb2023	24Feb2023	2	Discuss on legal issue related to stock forecasting model																																						
5.5	Dissertation write up	15Feb2023	24Feb2023	2	Summarize and state the relevant social, ethical, professional and legal issue related to stock forecasting model																																						
6.0 Build, train, deploy and visualize forecasting model(s) for evaluating the one with the highest prediction accuracy and efficiency to assist optimization of swing trading in the Hong Kong stock market						Iteratively develop, evaluate and fine tune a model using the selected algorithm by data collected, ie. Logistic regression and LSTM	Develop Python coding of the model building and evaluation process																																				
6.1	Learning Python to code for data preprocessing	25Feb2023	8Apr2023	50	Equip skills on Python code for data importation and preprocessing																																						
6.2	Learning Python to code for data modeling	10Apr2023	26May2023	80	Equip skills on Python code for data modeling																																						
6.3	Sprint 1: Develop, finetune and finalize baseline model by logistic regression model	29Apr2023	18May2023	40	Develop Python code for logistic regression modeling																																						
6.4	Sprint 2: Develop, finetune and finalize LSTM modeling	19May2023	7Jun2023	40	Develop Python code for LSTM modeling																																						
6.5	Sprint 3: Research for different variants and finalize for the best data model	30May2023	18Jun2023	40	Summarize model performance measures tables and charts																																						
6.6	Summarization	19Jun2023	22Jun2023	10	Identify the model with the highest prediction accuracy and efficiency to assist optimization of swing trading in the Hong Kong stock market																																						
7.0 Wrap up work done						Wrap up dissertation and build presentation deck																																					
7.1	Summarize the model building process	23Jun2023	25Jun2023	20	Highlight the key steps of developing the model																																						
7.2	Wrap up and final evaluation of the model outputs	26Jun2023	30Jun2023	30	Summarize and discuss the performance measures and discuss the findings from the output																																						
7.3	Discuss the future enhancement	1Jul2023	2Jul2023	10	Discuss the future enhancement																																						
7.4	Dissertation write up	3Jul2023	7Jul2023	40	Wrap up the practical work, conclusion and possible future enhancement																																						
7.5	Viva preparation	3Jul2023	7Jul2023	30	Build presentation deck																																						

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