FINAL YEAR PROJECT REPORT

BS (SOFTWARE ENGINEERING)

INVEST WITH INTELLIGENCE

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IQRA UNIVERSITY, KARACHI

MARCH 2024

FACULTY OF ENGINEERING, SCIENCE AND TECHNOLOGY

DEPARTMENT OF SOFTWARE ENGINEERING

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BACHELOR OF SOFTWARE ENGINEERING

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ABSTRACT

This project is all about making startup investments less of a gamble. Starting a business is thrilling, but it's risky too. Nobody wants to pour money into something without a good idea of what they'll get back. Traditional market research can give you a rough estimate, but the market is so unpredictable that it's hard to be sure about future profits. That's where our solution steps in. We're using machine learning to create a tool that predicts how much profit a startup might make.

Our plan is to build a user-friendly web app. You plug in details about your startup - things like what industry you're in, how much funding you've got, the size of your team, where you're based, and your revenue. Then, our app crunches the numbers and gives you a prediction of how much profit you might make. The goal is to take the guesswork out of predicting profits and give entrepreneurs and investors more confidence in their decisions.

This project covers everything from getting the data ready, tweaking the features for the machine learning model, building the actual model, and setting it up so anyone can use it. We're not just focusing on the technical stuff; we also want to make sure our solution is easy to use, dependable, and accurate. The aim is to provide startup players with useful insights, helping them make smarter choices and boosting the chances of success in the business world

We have approved this manuscript for submission and presentation as fulfillment of Bachelor of Software Engineering/ Computer Science.

Supervisor: Sir Fahad Najeeb
Date: 17-03-2024

Project Coordinator: Dr. Aarij Mahmood Hassaan
Date: 17-03-2024

DECLARATION

We hereby declare that the work has been done by ourself to fulfill the requirement of the BS (Software Engineering) and no portion of the work contained in this report has been submitted in support of any application for any other degree or qualification of this or any other university or institute of learning.

We hereby further declare that in the event of any infringement of the provision of the Act whether knowingly or unknowingly the university shall not be liable for the same in any manner whatsoever and undertake to indemnify and keep the university indemnified against all such claims and actions.

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LIST OF ACRONYMS

1. IWI = Invest with Intelligence
2. UX = User Experience
3. CSV = Comma-separated values
4. ML = Machine Learning
5. RFC = Random Forecast Classifier
6. RN = React Native
7. VS = Microsoft Visual Code
8. . IPYNB = Interactive Python Notebook
9. SQL = Structured Query Language
10. PM = Postman Tool
11. WB = Work Bench Tool
12. PD = Pandas Library
13. NP = NumPy Library
14. SD = Standard Deviation
15. CoM = Correlation Matrix
16. SNS = Seaborn
17. R2 = R2 Score
18. SKL = Scikit Learn Library
19. MSE = Mean Squared Error

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CHAPTER – 1

1.0 Introduction

This project endeavors to develop a sophisticated web-based application designed to forecast the profitability of startups and businesses by machine learning model. The envisioned application will intricately consider various inputs crucial to startup success, including industry, funding, team size, location, and revenue. Through this automated profit prediction process, our objective is to furnish entrepreneurs and investors with indispensable insights, enabling them to navigate investment decisions with heightened confidence and precision.

The overarching goal of this initiative is to deliver a comprehensive end-to-end solution, encompassing vital stages such as data preprocessing, feature engineering, model development, and seamless deployment. Throughout each phase, our unwavering focus lies on the core tenets of usability, reliability, and accuracy. By streamlining the complex journey from data input to profit prediction, we aim to provide a tool that not only simplifies decision-making for stakeholders but also sets a new standard for predictive analytics in the realm of startup investments. Our commitment is rooted in the belief that informed decisions, supported by cutting-edge technology, can catalyze success in the dynamic landscape of entrepreneurship.

1.1 Problem Statement

Working parents are occupied and at times do not have time to teach them. At the nursery, the children's time is wasted during playtime. Most of the academic course nowadays is more critical and harder to understand for kids and they need assistance in both school and college. They could be learning while having fun and don't have any proper platform to use gadgets properly. There is a high normality of gadget usage however it was not concerned with academic concerns. However, After the first wave of covid-19, many schools have learning aids like books, materials, cardboards, and other toys but do not have interactive screens/mobiles/tablets that a kinder can easily utilize for more enhanced and effective learning. Though science has proved that a motion picture and 100 times more impact than a voice. Keeping in view, where mobile phones, tablets are common, the use of these so-called smart devices for learning can be more effective to any kid that can be more attracted towards it.

1.2 Motivation

The inspiration driving this project is rooted in a genuine desire to revolutionize the startup landscape. We recognize the exhilaration that comes with launching a business, but we also acknowledge the trepidation stemming from the inherent uncertainties and risks. Our motivation is to reshape this narrative by creating a tool that empowers entrepreneurs and investors with a heightened sense of certainty.

By harnessing the potential of machine learning, our vision is to offer a groundbreaking solution that transcends the limitations of traditional market research. We aim to provide a more precise and dependable prediction of potential profits, thereby mitigating the apprehensions that often accompany startup investments. The goal is not merely to eliminate uncertainty but to instill a newfound confidence in decision-makers navigating the dynamic world of entrepreneurship.

Through the development of a user-friendly web application, we aspire to democratize access to accurate profit forecasts, irrespective of specific factors involved. This project is driven by the belief that by enhancing predictability, we can foster a more conducive environment for innovation and success. Ultimately, our motivation lies in contributing to a future where aspiring entrepreneurs can embark on their ventures with greater assurance and conviction.

1.3 Project Objective

The objective of the startup profit prediction web app is to empower entrepreneurs and investors with a user-friendly and reliable tool for making informed decisions about startup investments. The app aims to leverage machine learning techniques to accurately forecast the profitability and financial performance of startups, providing valuable insights into their future growth potential.

The startup profit prediction web app aims to democratize access to predictive analytics and empower stakeholders in the startup ecosystem to navigate investment decisions with confidence and clarity.

The key objectives of the startup profit prediction web app are:

1. Prediction Accuracy: Develop and deploy robust machine learning models to accurately forecast startup profitability using comprehensive input features, including historical financial data, industry trends, and market conditions.

2. User-Friendly Interface: Design an intuitive and easy-to-use web interface enabling users to input startup features, explore predictions, and visualize results clearly. The interface should cater to users with varying technical expertise levels.

3. Reliability and Stability: Ensure the web app's reliability and stability by implementing a robust backend infrastructure and efficient data processing pipelines. Minimize downtime and errors to ensure a seamless user experience

Research Objectives:

By our literature survey, the aim is to investigate, analyze, and understand the relationship between various factors and startup profitability. The research seeks to uncover insights into the determinants of startup success, particularly focusing on how different features impact the profitability and financial performance of startups.

Academic Objectives:

To contribute to academic discourse, our objective is to rigorously analyze the relationship between various startup features and profitability, utilizing advanced methodologies. We aim to expand theoretical frameworks, validate empirical findings, and provide valuable insights to academia and industry stakeholders.

Management Objectives:

The main objective of the management position is to organize the meetings for discussions, check the status of the project, and submit the project on time.

CHAPTER – 2

2.0 Development Environments:

The development of our web application harnesses a strategic amalgamation of cutting-edge technologies and robust tools to ensure optimal functionality and user experience. Leveraging Java for backend development facilitates the creation of a scalable and efficient server-side infrastructure, enabling seamless data processing and management. Our frontend interface is crafted using React Native, a versatile framework renowned for its ability to deliver native-like experiences across multiple platforms, ensuring an intuitive and responsive user interface. Python serves as our tool of choice for machine learning model building, empowering us to leverage advanced algorithms and data analytics techniques to predict startup profitability with precision and accuracy. Complementing our development efforts are essential tools such as VS Code for streamlined code editing, Postman for comprehensive API testing, and SQL for database management, ensuring robustness, reliability, and scalability throughout the development lifecycle. This comprehensive approach, underpinned by a meticulous selection of technologies and tools, enables us to deliver a sophisticated web application that embodies the ethos of innovation and excellence.

2.1 Literature Review:

The convergence of machine learning and predictive analytics has sparked a paradigm shift in how startups approach decision-making and investment strategies. This literature review seeks to explore the landscape of predictive applications, particularly those focused on automating profit prediction for startups. The context of this exploration revolves around the development of a web-based application that leverages machine learning to provide entrepreneurs and investors with accurate profit estimates.

2.1.1 Machine Learning in Business Prediction:

Numerous studies emphasize the transformative impact of machine learning on business prediction. Authors like underscore the ability of machine learning models to adapt to dynamic market conditions, providing more accurate forecasts compared to traditional methods. The application of these models in predicting startup profits aligns with the project's core objective.

2.1.2 Predictive Analytics in Startup Success:

Understanding the determinants of startup success is paramount to accurate profit prediction. Research by authors researches into the multifaceted nature of startup ecosystems, emphasizing the interconnectedness of factors such as industry, funding, team dynamics, and geographical location. This literature reinforces the significance of incorporating these features into the predictive model.

2.1.3 Automated Prediction Tools and Decision Support Systems:

The development of automated tools for profit prediction aligns with broader trends in decision support systems. Authors discusses the advantages of these tools, highlighting their potential to enhance decision-making processes for entrepreneurs and investors. The incorporation of machine learning in this project aligns with the principles outlined in this body of work.

2.1.4 Data Preprocessing and Feature Engineering:

Efficient data preprocessing and feature engineering are crucial in the development of accurate predictive models. Insights from authors underscore the importance of data quality, preprocessing techniques, and feature selection in improving model performance. These principles are integral to the end-to-end solution outlined in this project.

2.1.5 Usability, Reliability, and Accuracy in Predictive Applications:

Ensuring the usability, reliability, and accuracy of predictive applications is central to their success. [Author H] emphasizes the need for user-friendly interfaces, robust algorithms, and continuous refinement to meet end-users' expectations. These criteria directly inform the project's goal of providing an end-to-end solution that prioritizes usability, reliability, and accuracy.

2.1.6 Challenges in Predicting Startup Profits:

The literature also recognizes the challenges associated with predicting profits in the volatile startup landscape. [Author I] discusses the uncertainties inherent in entrepreneurial ventures, highlighting the need for adaptive models capable of navigating unpredictable market conditions. This insight informs the project's approach to addressing the challenges unique to startup profit prediction.

2.2 Comparative Analysis:

ASPECT	OUR WEB APP	COMPETITOR A	COMPETITOR B
PREDICTION ACCURACY	Moderate	Moderate	High
USER-FRIENDLY INTERFACE	Intuitive and easy-to-use	Clean and user-friendly	Complex and cluttered
TECHNOLOGY STACK	Java, React Native, Python	Node.js, Angular, Python	Django, React, R
MACHINE LEARNING MODELS	Basic models	Sophisticated algorithms	Advanced algorithms
DATA PROCESSING EFFICIENCY	Efficient pipelines	Sluggish processing	Fast processing
TESTING TOOLS	Postman, VS Code	Swagger, Eclipse	JUnit, IntelliJ
DATABASE MANAGEMENT	MongoDB, MySQL	SQL	PostgreSQL, Firebase
SCALABILITY	Scalable but costly	Limited scalability	Highly scalable

Figure 1.0: Comparative Analysis

2.3 Conclusion:

The synthesis of literature underscores the theoretical underpinnings of the project, drawing on established principles in machine learning, predictive analytics, and decision support systems. This comprehensive review forms the foundation for the development of an innovative web-based application, emphasizing the importance of accuracy, usability, and adaptability in predicting startup profits.

CHAPTER – 3

3.1 Introduction:

In this chapter we will discuss about how much work is done on the development of our project according to the project plan. This chapter will cover the in-detail process and objective of the project. As our app is built on windows that are being reused within the system itself the developers had to take a systematic approach for the app to work smoothly. Our project plan is strategically planned with the Gantt chart and other organizational tools. Each activity has specific time period allotted according to the complexity of the task, which is why the days in work may vary.

We will also discuss in detail about the Functional, Non-Functional and Hardware requirements of our project. The functional requirement is taken in to full consideration as they are the necessary part in order to get the basic requirement by the project such as, camera detection and learning objective, while on the other hand, the non-functional requirement such as, settings and feedback are also thoroughly planned.

3.2 Project Plan:

INVEST WITH INTELLIGENCE TIMELINE

Week No:	TASK NAME	SUB TASK NAME	STATUS	ASSIGNED TO	START DATE	END DATE
Week 01	Timeline and Github Repoitory		Done	Abdul Rafay	10/19/2023	10/26/2023
Week 02	Data Gathering & Environment Setup		Done	Subhash	10/26/2023	11/2/2023
Week 03	Login , Signup, page Frontend and Backend		Done	Abdul Wahid & Mujahid Ahmed	11/2/2023	11/9/2023
Week 04	Data Cleaning & Data Spliting		Done	Subhash	11/9/2023	11/16/2023
Week 05	Model Training		Done	Subhash	11/16/2023	11/23/2023
Week 06	Startup Description Frontend and Backend		Done	Abdul Wahid & Mujahid Ahmed	11/23/2023	11/30/2023
Week 07	Startup Data input Frontend and Backend		Done	Abdul Wahid & Mujahid Ahmed	11/30/2023	12/7/2023
Week 08	Prediction Page frontend and Backend		Done	Abdul Wahid & Mujahid Ahmed	12/7/2023	12/14/2023
Week 09	Database Tables Development		Done	Abdul Rafay	12/14/2023	12/21/2023
Week 10	Connection of Database		Done	Abdul Rafay	12/21/2023	12/28/2023
Week 11	APIs Development and Testing		Done	Mujahid Ahmed	12/28/2023	1/4/2024
Week 12	Machine Learning Model Integration		Done	Subhash	1/4/2024	1/11/2024
Week 13	Frontend and Backend Api Integration		Done	Abdul Wahid & Mujahid Ahmed	1/11/2024	1/18/2024
Week 14	Project debugging and testing		Done	Abdul Wahid & Mujahid Ahmed, Abdul Rafay Subhash	1/18/2024	1/25/2024

Figure 2.0: Timeline 1

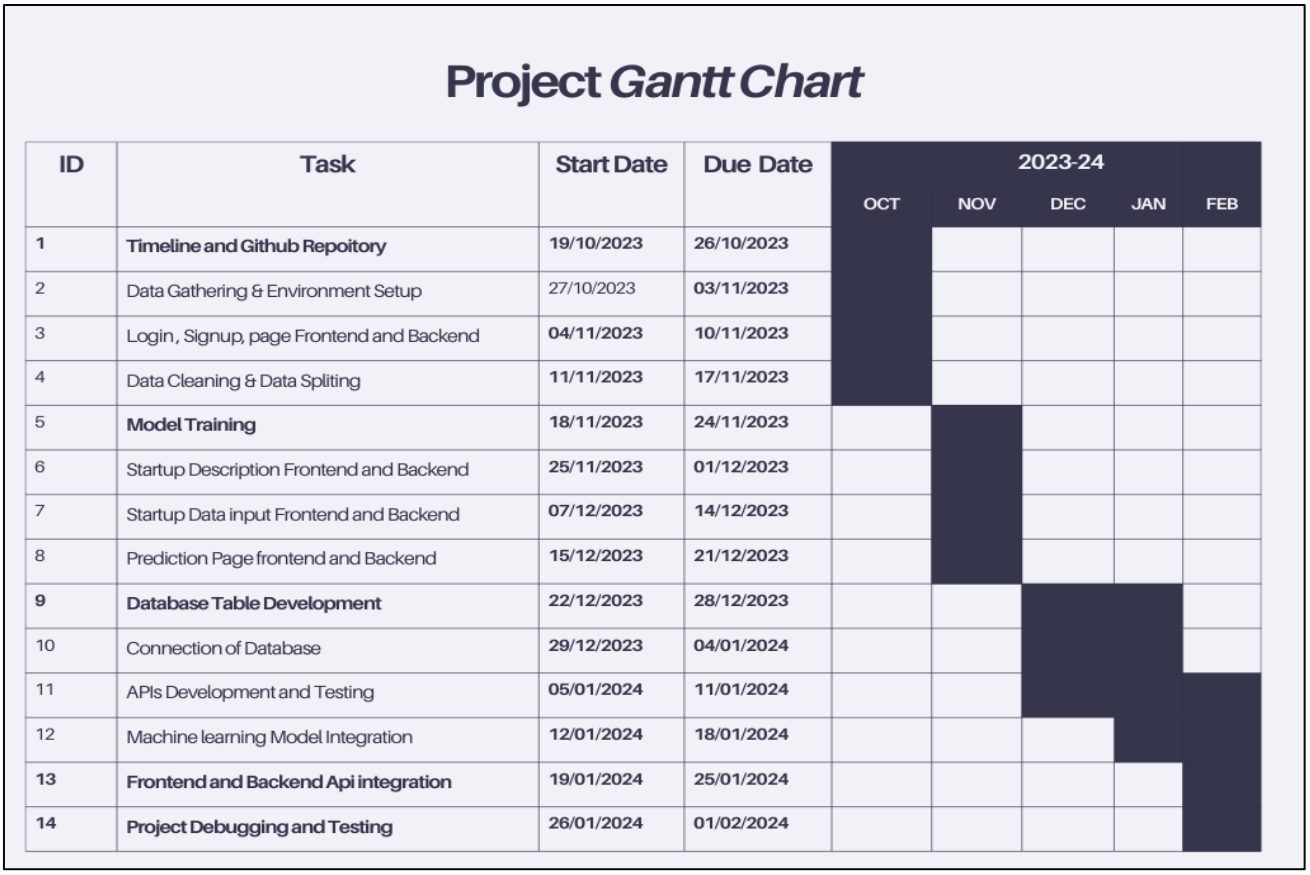


Figure 2.1: Gantt Chart 1

3.3 Functional Requirements:

3.3.1 User Panel:

1. **Register:** User using for the first time have to register into the app by entering their email, username, and password.
2. **Login:** User can login into the application by inserting their email and password in the textboxes.

   2.1 **Startup Register:** Once user login as "entrepreneur" into the Web Application then it can register their startup for funding.

   2.2 **Investor Register:** Once user login as "investor" into the Web Application then it can invest of funds the startup which they want.

   2.3 **Predict Profit:** Startup can predict their profit for upcoming 2 to 3 years. Startup must provide minimum 1.5 of historical financial data into CSV file.

3. **User interface design and usability**

   3.1. The application should have an intuitive and user-friendly interface that is easy to navigate.

   3.2. The application should provide clear instructions and guidance to users on how to use the system effectively.

3.4 Non-Functional Requirements:

- **Performance**

  The system should respond to user requests within a certain time frame.
- **Reliability**

  The system should be available and dependable at all times.
- **Security**

  The system should protect user data and prevent unauthorized access.
- **Usability**

  The system should be user-friendly and easy to navigate.

- **Scalability**

  The system should be able to handle increasing amounts of data and users over time.
- **Maintainability**

  The system should be easy to maintain and update.
- **Compatibility**

  The system should be compatible with different devices and operating systems.

3.5 Summary:

In this chapter, a detailed Project Plan, Functional, Non-Functional requirements and other planning mechanisms are discussed in detail that will be required in our project. We have also mentioned an introduction regarding our mobile application how we can perform our task so we make a milestone chart in this first we describe our task week wise in summary activity and then we make a Gantt chart according to summary activity. In Gantt chart we were describing task name or duration for implementation of our **"Invest with Intelligence"** After Gantt chart we describe Non-Functional requirements of our android application the requirements are system settings and feedback

CHAPTER – 4

4.1 Introduction:

In this chapter, we are going to discuss about the design and specification of our project, in which we elaborate our project deeply with the help of diagrams like we gather all the information related to our project then set the framework to show the flow of the application so that the project flow will be easily understand. We have used different diagrams for the complete flow of our application to make it understandable to user. (ERD'S), UML in detailed as according to our website. These diagrams show the system workflow and specification of our website to make it user friendly. It also shows how every screen workflow is working with the help of diagram.

4.2 Data Flow Diagram:

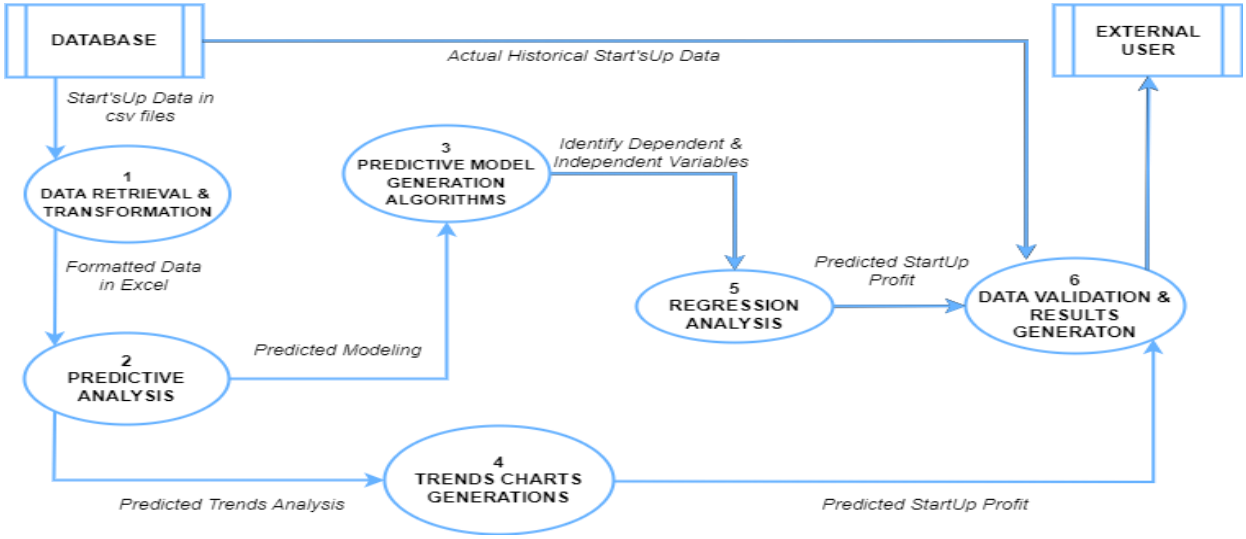


Figure 3.0: DFD level 0 1

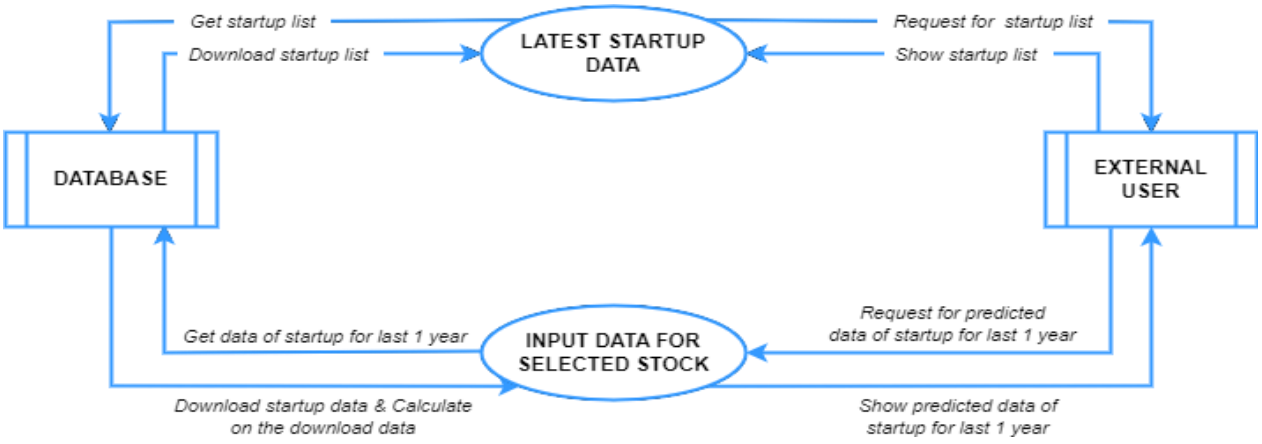


Figure 3.1: DFD level 1 1

4.2 Entity Relationship Diagram

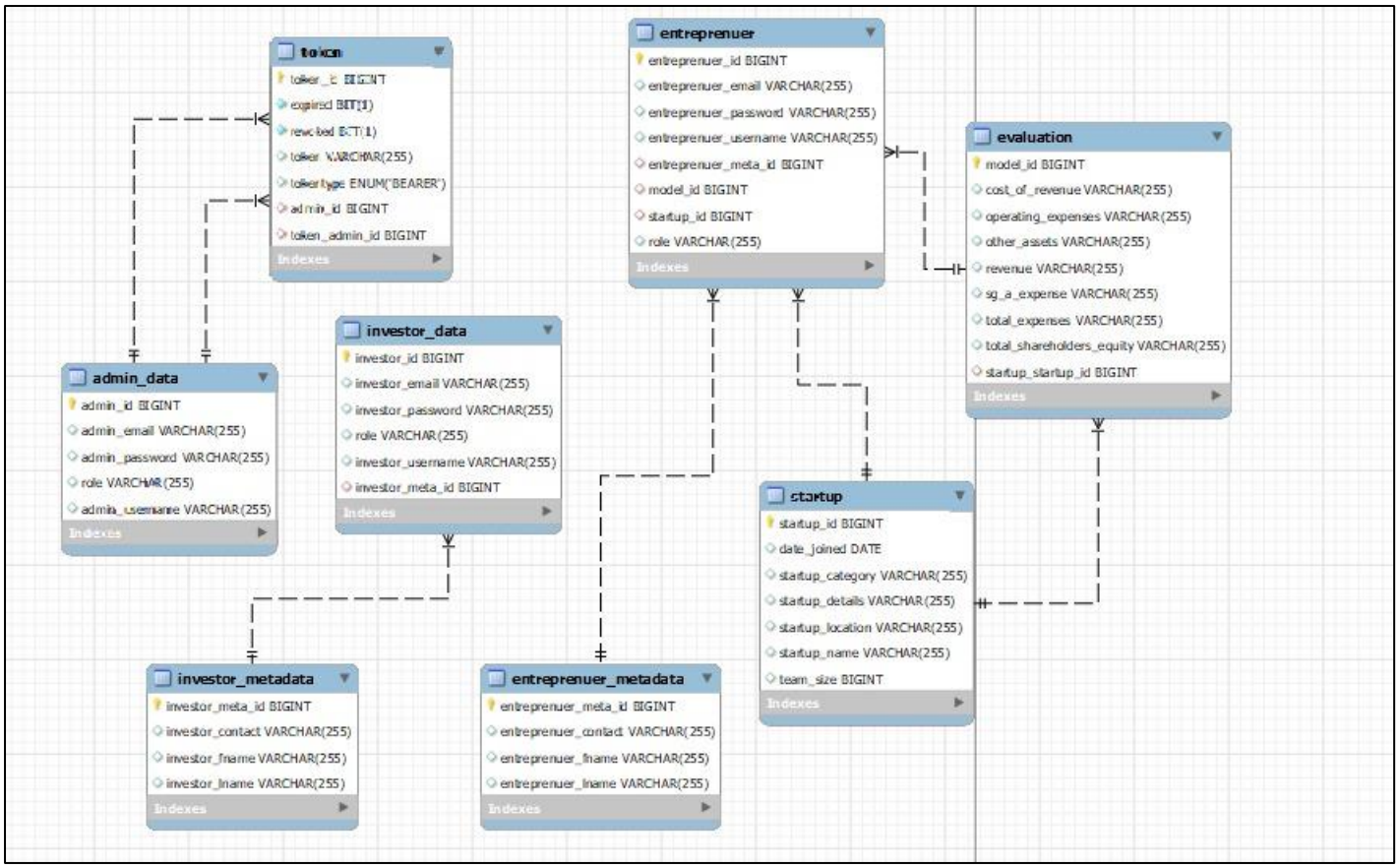


Figure 4.0: ERD Diagram

4.3 USE CASE

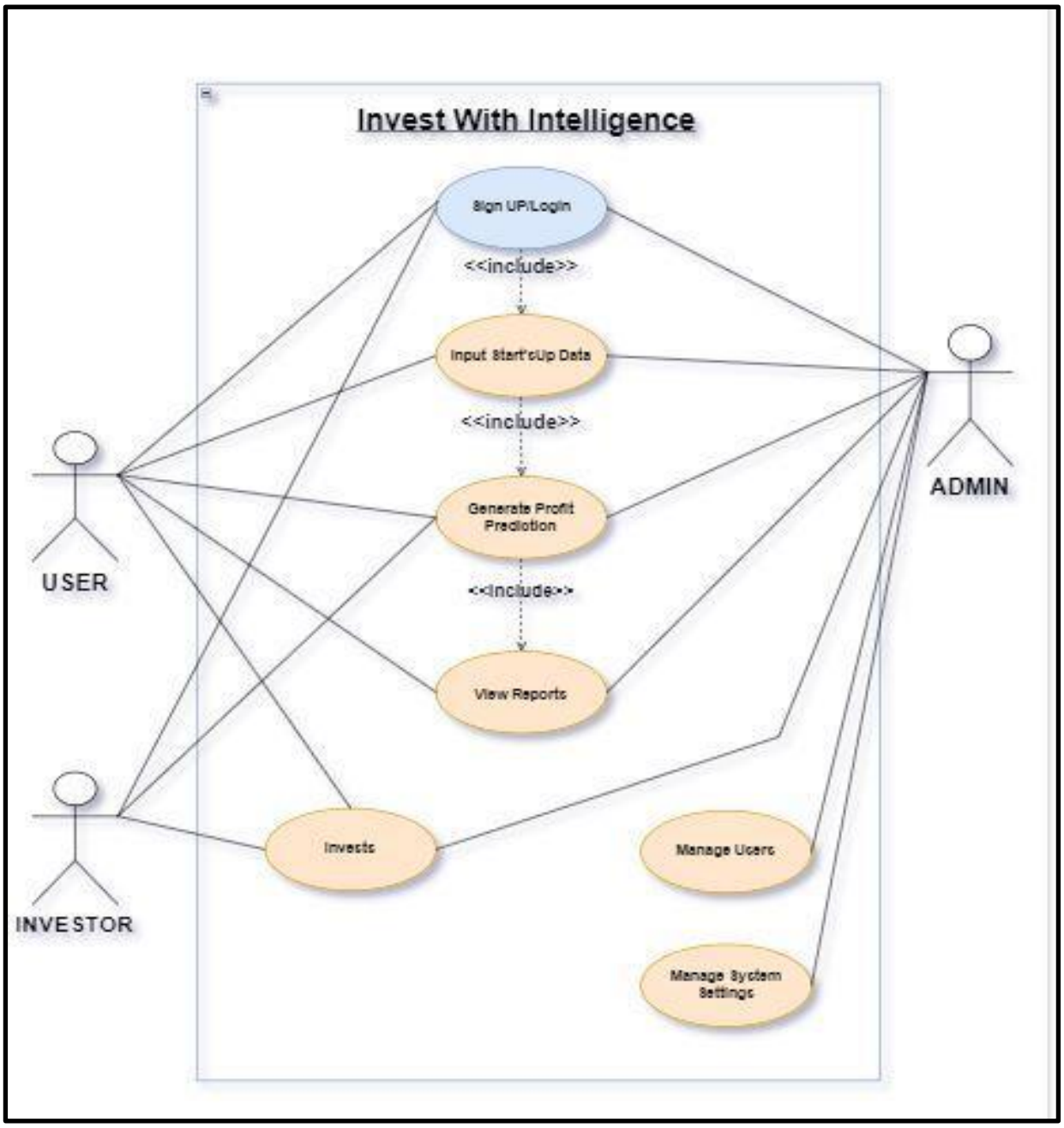


Figure 5.0: Use Case Diagram 1

4.5 Summary:

In this chapter, we met with the data flow diagrams, entity relationship diagrams and uml diagram. Our application covered the all-major modules, which were used to fulfill the requirements so the data flow diagram (dfd's) and entity relationship diagram (erd's) elaborate this in detailed because when we gathered the information so it show the flow of our system specifically like in implementation we make sure that the development is start or not then after this testing process will be occurred so if there is any error occur so it must be solved at that time then we monitor our application by time to time to make sure that everything is complete or not that why we make data flow diagram and entity relationship diagram to focus on our mistake. In spite of everything, information has been accumulated and layout has been created so now, the implementation has been initiated according to the applications' requirement to make sure that it is beneficial for the user on a long run.

CHAPTER – 5

5.1 Introduction:

In this chapter we are discussing aspects which are used in our project, and prototype design which is generally used to evaluate a new design to enhance precision by system analysts and users and frontend and backend design of our project. We are also discussing about the database queries which are used in firebase and some external libraries and we are showing screenshots of our application as it fulfills user requirements. We have briefly provided a few clarifications about the sort of functionalities available on the system, source code of validation and etc.

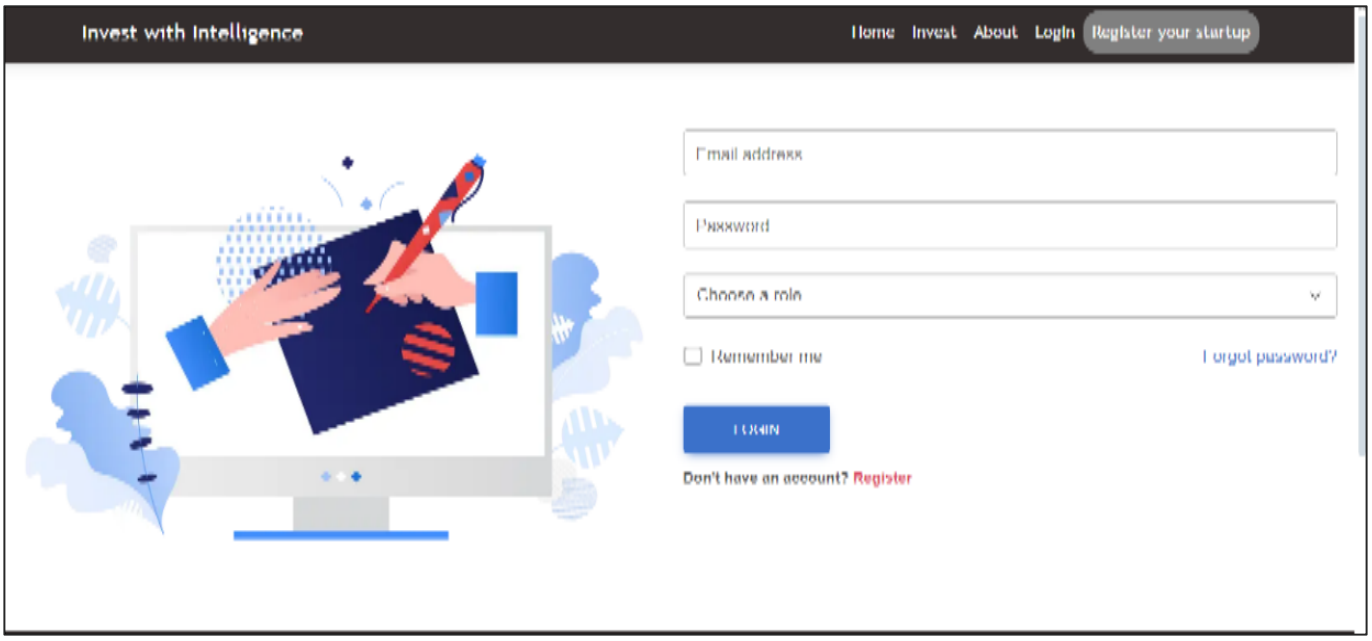
5.2 Screenshots:

Header/navbar:

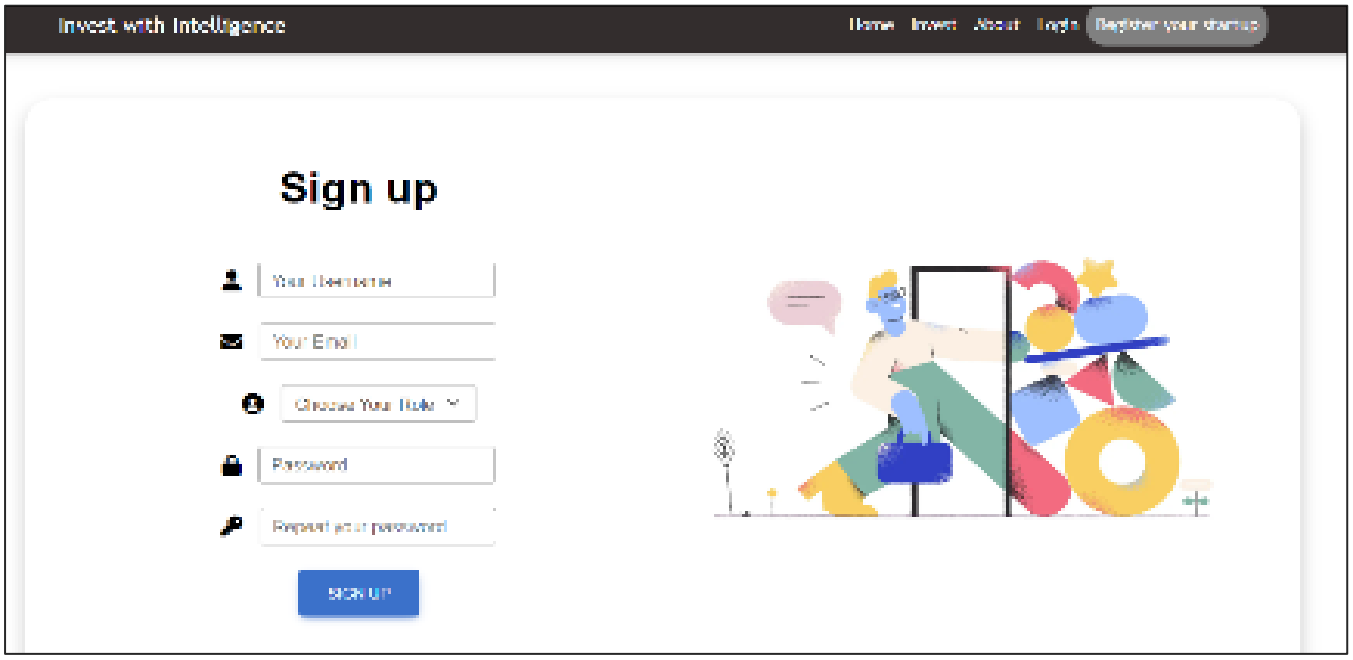
Home Page:

Popular startups home page:

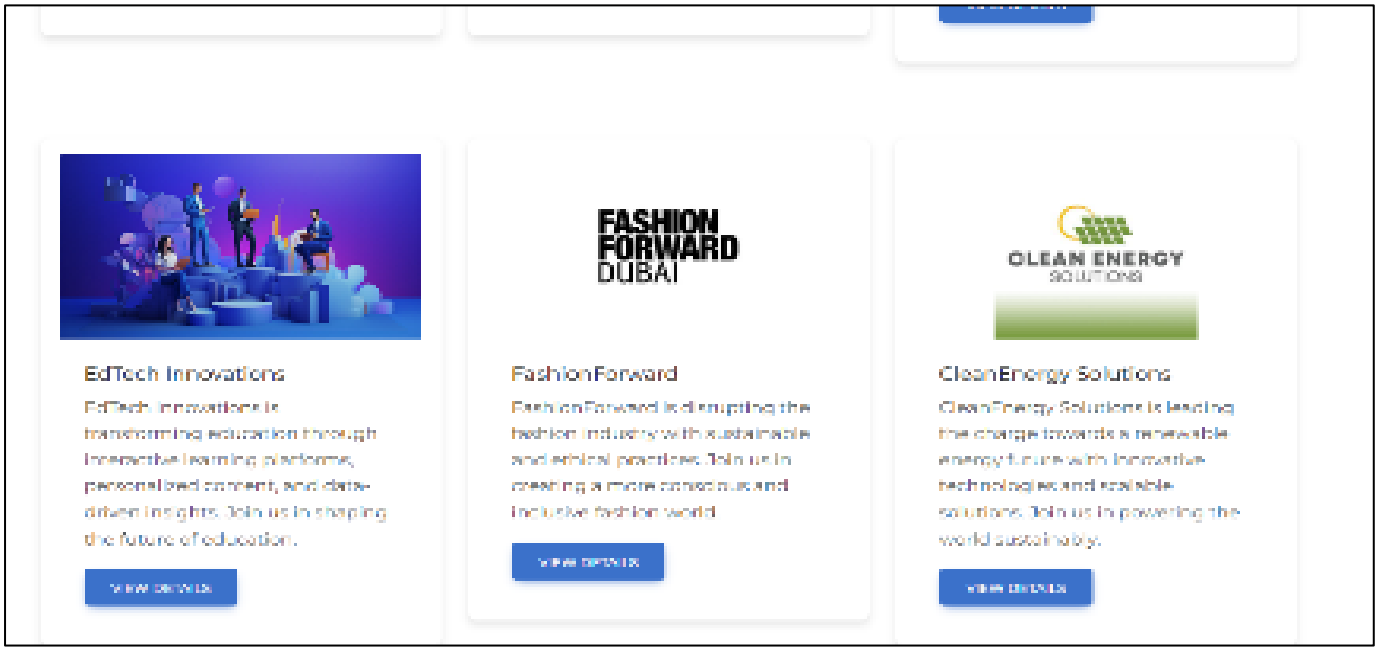
Login Form:

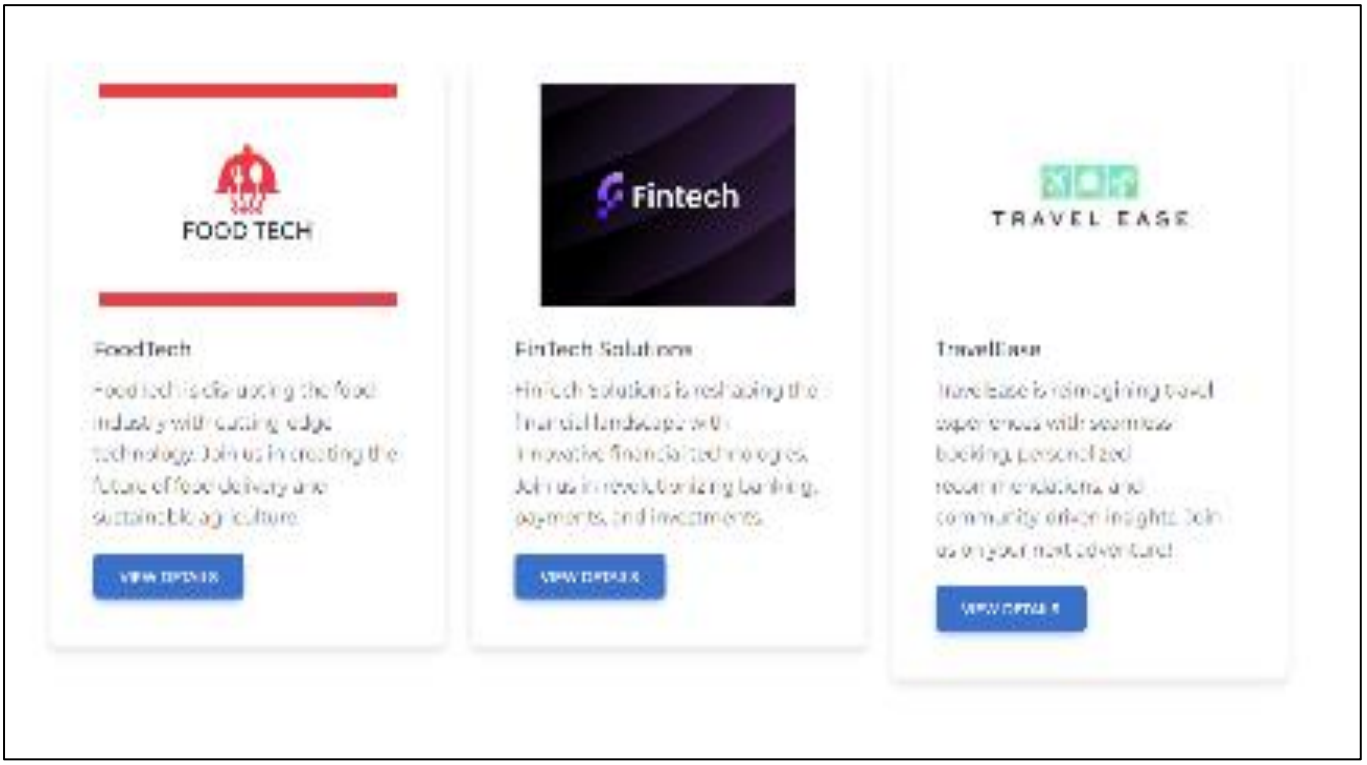


Signup Form:

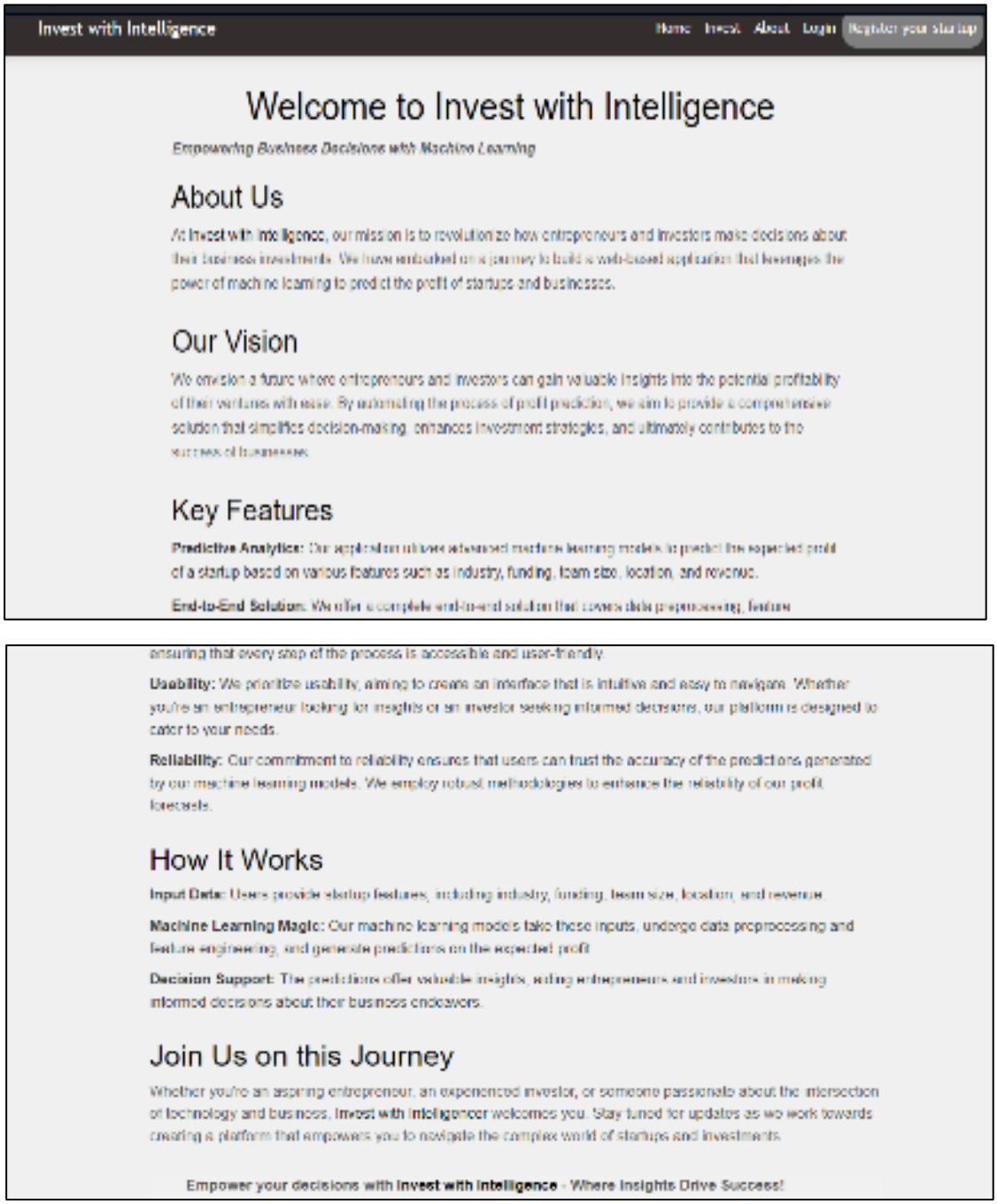


INVEST PAGE:

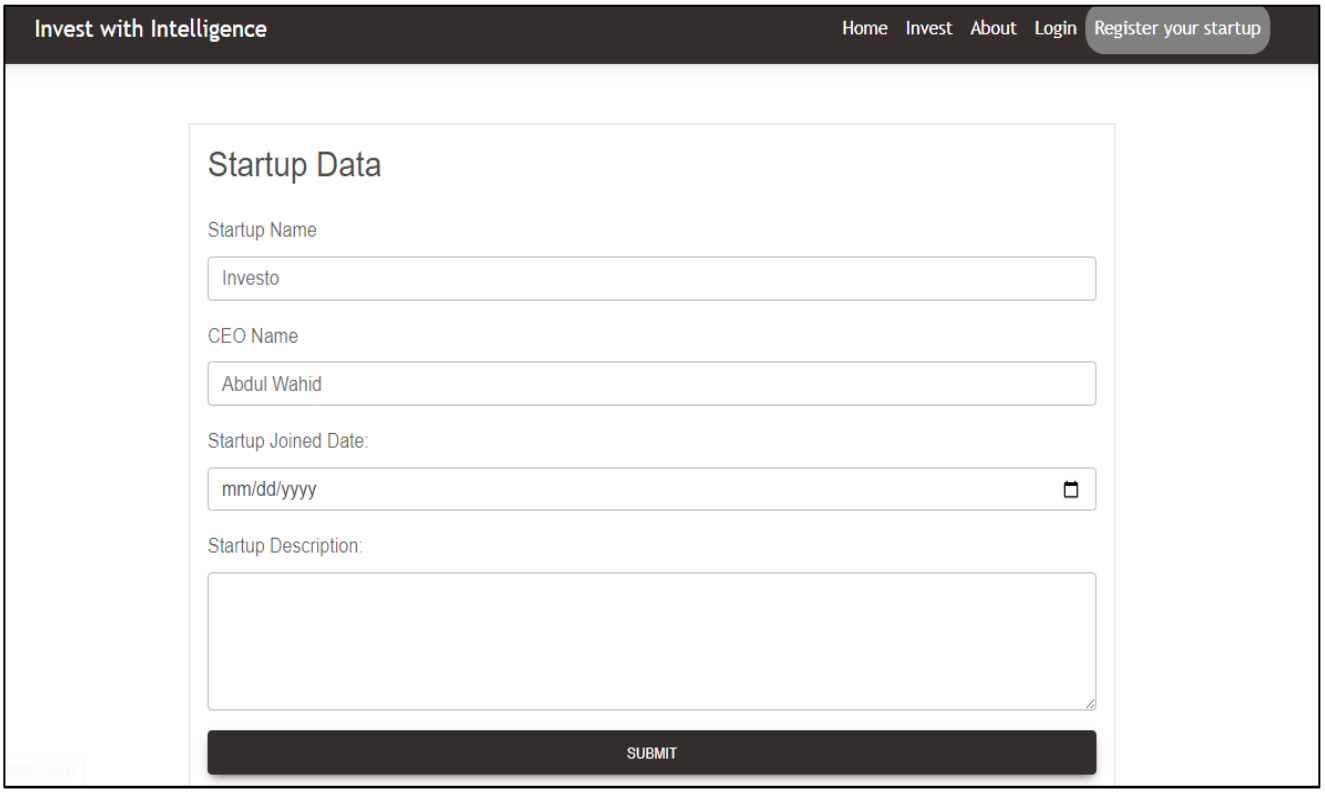

FASHION FORWARD DUBAI
CLEAN ENERGY
EdTech Innovations
FashionForward
CleanEnergy Solutions


FOOD TECH
Fintech
TRAVEL EASE
FoodTech
FinTech Solutions
TravelEase

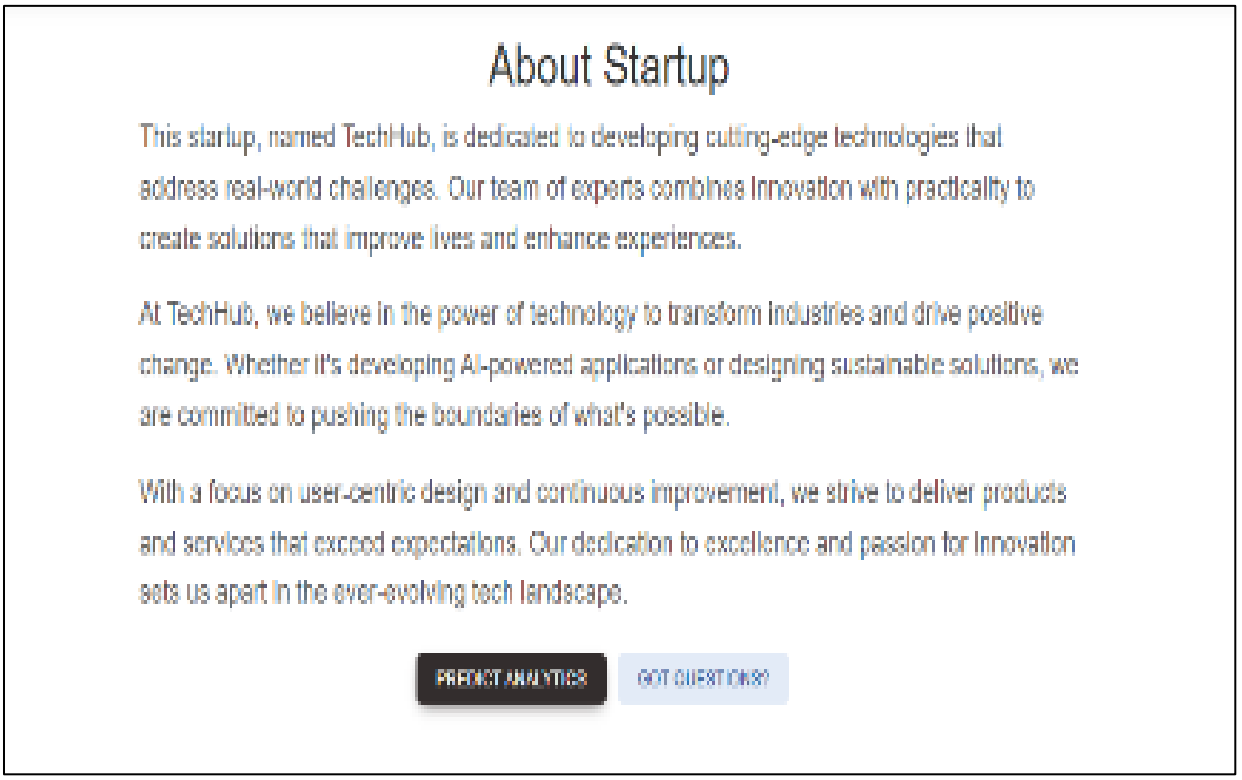
About Us Page:

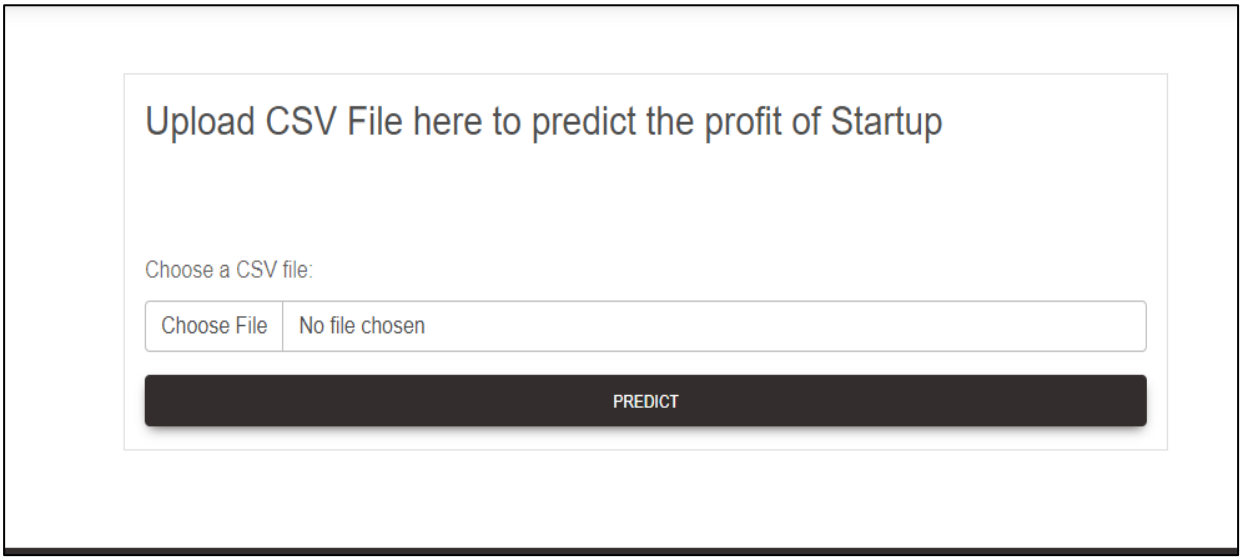


Startup Data Registration form:

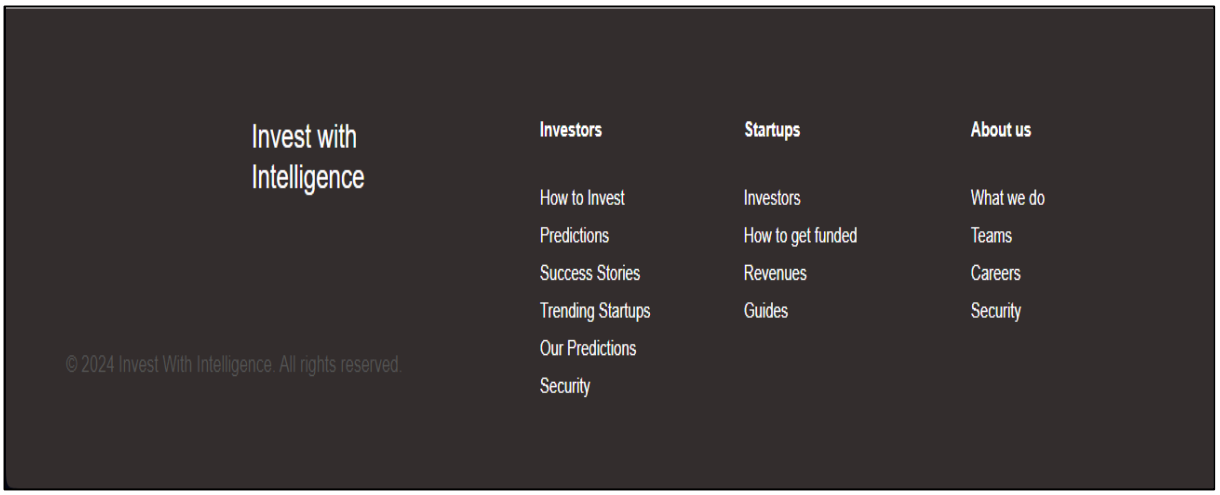


Startup Detail Page:





Footer:



5.3 Summary:

This Chapter consist of system prototype and development in which we explained about the prototype, frontend and backend design some database queries with the external libraries and some screenshot of our application. In this chapter we briefly give some explanation about the type of error happen on the system, source code of validation and etc. So from the next part some information flows are given to know how to system assignation works. The prototype design provides the clear view of working screens one by one. The prototype table consist of project title, observation date, screen name, screen number, and link of the screen. The table also informs about the overall description and functionality of the screen, while providing a specific description trough background, color scheme, video/audio connections and still images. The database queries are also provided to show how the system retrieve the data while functioning. As the system is very complex multiple external library were required to fulfill the requirement of the user, all the external libraries are mentioned below to give a detail description and screenshot of the application.

CHAPTER – 6

6.1 Introduction:

In this chapter, we have discussed about the test cases to determine whether the software is working the way it should and producing the expected results. We also test cases and usabilitytest cases to test our software. This will help the readers to know about all the minor as well asthe major working options of the software. After the completion of the implementation phase testing plays a vital role for making sure that the system works properly. Once the software was developed the testing phase started. Each and every screen and button were tested according to the requirements and functionalities. Even though the application is complex it does use I treated functionality as one window is being used multiple times for different kindsof functionalities. For instance, the same data is being utilized for the learning objectives as well as the quiz section. do to the re usability of our code the total test cases of the applicationturned out to be 16. Each test case has the requirement reference, project name, application name while providing all the details of the test case. in detail attributes of the test case, such as test case ID, Test case description, test steps, expected result, pass or fail status, preparationdate, running date end the date at which it was tested.

6.2 Test Cases:

Requirement Reference	1	**Project Name**	Invest with Intelligence
Test Case Id	1.1	**Test Type**	Validation
Test Case Description	Verify that user Signup is working properly.		
Test Steps	• Verify that a new user can successfully create an account by providing valid information. • Validate that all mandatory fields (e.g., username, email, and password) are correctly validated. • Test for error handling when attempting to create an account with existing credentials.		
Expected Result	User account created successfully.		
Actual Result	User see the signup page		
Pass/Fail	Pass		
Date Prepared	07-03-2024		
Date Run	08-03-2024		
Prepared By	Subhash Kumar Ratnani		
Tested By	Abdul Wahid		

Table 23: Test case 1

Requirement Reference	1	**Project Name**	Invest with Intelligence
Test Case Id	1.2	**Test Type**	Validation
Test Case Description	To verify that the login page functions correctly and securely.		
Test Steps	• Confirm that registered users can log in using their valid credentials. • Validate that appropriate error messages are displayed for invalid login attempts. • Test for successful redirection to the home screen after successful login.		
Expected Result	The application should launch without errors and load the home screen.		
Actual Result	The application launches without errors and loads the home screen.		
Pass/Fail	Pass		
Date Prepared	07-03-2023		
Date Run	08-03-2024		
Prepared By	Subhash Kumar Ratnani		
Tested By	Abdul Wahid		

Table 24: Test case 2

Requirement Reference	1	**Project Name**	Invest with Intelligence
Test Case Id	1.3	**Test Type**	Validation
Test Case Description	Verify that the "Register Start-up" button is present in the navigation bar.		
Test Steps	• Open the Web application. • Navigate to the navigation bar.		
Expected Result	The "Register Startup" button is visible and accessible in the navigation bar.		
Actual Result	The button is redirecting to the startup register page.		
Pass/Fail	Pass		
Date Prepared	07-03-2024		
Date Run	08-03-2024		
Prepared By	Subhash Kumar Ratnani		
Tested By	Abdul Wahid		

Table 25: Test case 3

Requirement Reference	1	**Project Name**	Invest with Intelligence
Test Case Id	1.4	**Test Type**	Functionality
Test Case Description	To test that the fields on Login screen Login id should be mandatory.		
Test Steps	Blank Textbox and click on submit		
Expected Result	Login screen should be displaying the error.		
Actual Result	Invalid Credential error		
Pass/Fail	Pass		
Date Prepared	07-03-2024		
Date Run	08-03-2024		
Prepared By	Subhash Kumar Ratnani		
Tested By	Abdul Wahid		

Table 26: Test case 4

Requirement Reference	1	**Project Name**	Invest with Intelligence
Test Case Id	1.5	**Test Type**	Functionality
Test Case Description	To test that the fields on Login screen password should be mandatory.		
Test Steps	Blank Textbox and click on Login		
Expected Result	Login screen should be displaying the error.		
Actual Result	Invalid Credential error.		
Pass/Fail	Pass		
Date Prepared	07-03-2024		
Date Run	08-03-2024		
Prepared By	Subhash Kumar Ratnani		
Tested By	Abdul Wahid		

Table 27: Test case 5

Requirement Reference	1	**Project Name**	Invest with Intelligence
Test Case Id	1.6	**Test Type**	Functionality
Test Case Description	To test that the fields on Login screen Login id and password should be mandatory		
Test Steps	click on Login		
Expected Result	Open the main Home Screen		
Actual Result	main Home Screen Open		
Pass/Fail	Pass		
Date Prepared	07-03-2024		
Date Run	08-03-2024		
Prepared By	Subhash Kumar Ratnani		
Tested By	Abdul Wahid		

Table 28: Test case 6

Requirement Reference	1	**Project Name**	Invest with Intelligence
Test Case Id	1.7	**Test Type**	Functionality
Test Case Description	Verify that the "Register Startup" button is clickable.		
Test Steps	• Open the web application. • Locate the "Register Startup" button in the navigation bar. • Click on the "Register Startup" button.		
Expected Result	The button is clickable, and a response (e.g., visual change) occurs upon clicking.		
Actual Result	button is clickable, and a response occurs upon clicking.		
Pass/Fail	Pass		
Date Prepared	07-03-2024		
Date Run	08-03-2024		
Prepared By	Subhash Kumar Ratnani		
Tested By	Abdul Wahid		

Table 29: Test case 7

Requirement Reference	1	**Project Name**	Invest with Intelligence
Test Case Id	1.8	**Test Type**	Functionality
Test Case Description	Verify that the startup registration page contains relevant content and form fields.		
Test Steps	• Open the web application. • Click on the "Register Startup" button in the navigation bar.		
Expected Result	The startup registration page loads successfully with appropriate form fields for registering a new startup.		
Actual Result	Invalid Error.		
Pass/Fail	Pass		
Date Prepared	07-03-2024		
Date Run	08-03-2024		
Prepared By	Subhash Kumar Ratnani		
Tested By	Abdul Wahid		

Table 30: Test case 8

Requirement Reference	1	**Project Name**	Invest with Intelligence
Test Case Id	1.9	**Test Type**	Functionality
Test Case Description	To test that the fields on Register screen Password should be mandatory		
Test Steps	click on Go		
Expected Result	• Empty Field error. • Special Character Should Allowed.		
Actual Result	Invalid Error.		
Pass/Fail	Pass		
Date Prepared	07-03-2024		
Date Run	08-03-2024		
Prepared By	Subhash Kumar Ratnani		
Tested By	Abdul Wahid		

Table 31: Test case 9

Requirement Reference	1	**Project Name**	Invest with Intelligence
Test Case Id	1.10	**Test Type**	Functionality
Test Case Description	To ensure that the "See More About Us" button functions as intended and provides users with additional information about the company.		
Test Steps	• Launch the application. • Navigate to the page/screen where the "See More About Us" button is located. • Locate the "See More About Us" button. • Click/Tap on the "See More About Us" button.		
Expected Result	• The application should respond promptly to the user's action. • The "About Us" section/page should be displayed or expanded. • The additional information about the company, such as history, mission, values, team, etc., should be visible to the user.		
Actual Result	The "See More About Us" button expands to show additional information about the company without any errors		
Pass/Fail	Pass		
Date Prepared	07-03-2024		
Date Run	08-03-2024		
Prepared By	Subhash Kumar Ratnani		
Tested By	Abdul Wahid		

Table 32: Test case 10

Requirement Reference	1	**Project Name**	Invest with Intelligence
Test Case Id	1.11	**Test Type**	Validation
Test Case Description	To test that upon logging in as an entrepreneur user, the system correctly redirects the user to the entrepreneur-specific page.		
Test Steps	• Launch the application. • Navigate to the login page. • Enter valid credentials (username/email and password). • select the entrepreneur in user type. • Click/Tap on the "Login" button. • Check if the system redirects the user to the entrepreneur-specific page.		
Expected Result	• The application should respond promptly to the user's login attempt. • The system should authenticate the user's credentials correctly. • Upon successful authentication, the system should redirect the user to the entrepreneur-specific page.		
Actual Result	The system successfully redirects the entrepreneur user to the entrepreneur-specific page.		
Pass/Fail	Pass		
Date Prepared	07-03-2024		
Date Run	08-03-2024		
Prepared By	Subhash Kumar Ratnani		
Tested By	Abdul Wahid		

Table 33: Test case 11

Requirement Reference	1	**Project Name**	Invest with Intelligence
Test Case Id	1.12	**Test Type**	Validation
Test Case Description	To test that upon logging in as an investor user, the system correctly redirects the user to the investor-specific page.		
Test Steps	• Launch the application. • Navigate to the login page. • Enter valid credentials (username/email and password). • select the investor in user type. • Click/Tap on the "Login" button. • Check if the system redirects the user to the investor-specific page.		
Expected Result	• The application should respond promptly to the user's login attempt. • The system should authenticate the user's credentials correctly. • Upon successful authentication, the system should redirect the user to the investor-specific page.		
Actual Result	The system successfully redirects the investor user to the investor-specific page		
Pass/Fail	Pass		
Date Prepared	07-03-2024		
Date Run	08-03-2024		
Prepared By	Subhash Kumar Ratnani		
Tested By	Abdul Wahid		

Table 34: Test case 12

Requirement Reference	1	**Project Name**	Invest with Intelligence
Test Case Id	1.13	**Test Type**	Functionality
Test Case Description	To test that the "Predict Analytics" button on the startup detail page functions correctly		
Test Steps	• Launch the application. • Navigate to the detail page of a startup. • Locate the "Predict Analytics" button. • Click/Tap on the "Predict Analytics" button. • Verify if the system responds promptly to the user's action.		
Expected Result	• The startup detail page should load without any errors. • The "Predict Analytics" button should be visible and accessible on the startup detail page. • Clicking/tapping on the "Predict Analytics" button should trigger a response from the system without any delay.		
Actual Result	Predict analytics button is working properly and redirecting to accurate page		
Pass/Fail	Pass		
Date Prepared	07-03-2024		
Date Run	08-03-2024		
Prepared By	Subhash Kumar Ratnani		
Tested By	Abdul Wahid		

Table 35: Test case 13

Requirement Reference	1	**Project Name**	Invest with Intelligence
Test Case Id	1.14	**Test Type**	Functionality
Test Case Description	To test that the startup registration form includes all necessary fields and validates input data accurately		
Test Steps	• Launch the application. • Navigate to the startup registration page. • Verify if the startup registration form includes the necessary fields:		
Expected Result	• The registration form should include all necessary fields for startup registration. • Each field should be clearly labeled and easily accessible to the user.		
Actual Result	The startup registration form includes all necessary fields and validates input data accurately		
Pass/Fail	Pass		
Date Prepared	07-03-2024		
Date Run	08-03-2024		
Prepared By	Subhash Kumar Ratnani		
Tested By	Abdul Wahid		

Table 36: Test case 14

Requirement Reference	1	**Project Name**	Invest with Intelligence
Test Case Id	1.15	**Test Type**	Functionality
Test Case Description	To test those startups are displayed properly on the invest page, providing investors with relevant information about each startup.		
Test Steps	• Launch the application. • Navigate to the invest page. • Verify if the invest page displays startups in a visually appealing and organized manner.		
Expected Result	• The invest page should load without any errors. • Startups should be displayed in a visually appealing and organized layout. • Each startup entry should include relevant information		
Actual Result	Startups are displayed properly on the invest page with accurate and relevant information		
Pass/Fail	Pass		
Date Prepared	07-03-2024		
Date Run	08-03-2024		
Prepared By	Subhash Kumar Ratnani		
Tested By	Abdul Wahid		

Table 37: Test case 15

Requirement Reference	1	**Project Name**	Invest with Intelligence
Test Case Id	1.16	**Test Type**	Functionality
Test Case Description	To test that clicking/tapping on the "More Details" button on a startup entry allows users to view additional information about the startup.		
Test Steps	• Launch the application. • Navigate to the invest page. • Locate a startup entry with a "More Details" button. • Click/Tap on the "More Details" button associated with the startup entry. • Verify if the system responds promptly to the user's action. • Check if additional information about the startup is displayed.		
Expected Result	• The invest page should load without any errors. • Each startup entry should include a "More Details" button that is clearly visible and accessible. • Clicking/tapping on the "More Details" button should trigger a response from the system without any delay. • Upon clicking/tapping the "More Details" button, the system should display additional information about the corresponding startup		
Actual Result	Clicking/tapping on the "More Details" button displays additional information about the startup without errors.		
Pass/Fail	Pass		
Date Prepared	07-03-2024		
Date Run	08-03-2024		
Prepared By	Subhash Kumar Ratnani		
Tested By	Abdul Wahid		

Table 38: Test case 16

Requirement Reference	1	**Project Name**	Invest with Intelligence
Test Case Id	1.17	**Test Type**	Validation
Test Case Description	To verify that the system allows users to upload a CSV file successfully.		
Test Steps	• Navigate to the page where CSV file upload functionality is available. • Click on the "Upload CSV" button or link. • Select a CSV file from the local file system. • Click on the "Upload" or "Submit" button to upload the selected CSV file..		
Expected Result	• The system should successfully upload the CSV file and provide feedback to the user indicating that the upload was successful.		
Actual Result	This test case ensures that the CSV file upload functionality works as expected and helps maintain the quality and reliability of the application.		
Pass/Fail	Pass		
Date Prepared	07-03-2024		
Date Run	08-03-2024		
Prepared By	Abdul Wahid		
Tested By	Abdul Wahid		

Table 39: Test case 17

6.1 Summary:

We test our software to get our expected results of our software or whether a system under test satisfies requirements or works correctly. After test cases, we get satisfied results the usability test case.

CHAPTER – 7

7.1 Introduction:

This chapter provides an overview of the accomplishments during the development of the mobile application for seizure detection. It also discusses the limitations encountered during development and explores potential areas for future improvement.

7.2 System Limitations and Challenges:

Starting a business through a web app presents challenges, but with strategic planning and adaptability, these hurdles can be overcome. Key challenges include defining the app's purpose, assembling the right team, developing a solid business plan, securing funding, marketing the app effectively, managing its growth, and staying updated on industry trends. Researching the subject, seeking advice from experts, and being open to course corrections are essential for success. By addressing these challenges proactively, businesses can position themselves for success with a web-based app.

• Accuracy and Generalizability:

Challenges may arise in achieving high accuracy and generalizability of predictions due to complexities in modeling startup profitability, variations in data quality, and the dynamic nature of startup ecosystems.

• Data Privacy and Security:

Ensuring the privacy and security of sensitive data, such as financial information and user inputs, poses a challenge. Compliance with data protection regulations and implementing robust security measures is crucial to mitigate risks of data breaches and unauthorized access.

The challenges we faced during the development of the project were:

i. Integration of the machine learning model was the main challenge we faced during the development.
ii. Designed a user-friendly interface for ease of use and accessibility.

7.3 Future Work:

1. Enhanced Prediction Models: Continuously refine and optimize machine learning models to improve prediction accuracy and incorporate additional features for better performance.

2. Integration of External Data Sources: Explore the integration of external data sources, such as market trends, industry reports, and macroeconomic indicators, to enhance the predictive capabilities of the web app.

3. User Feedback and Iterative Development: Gather user feedback to identify areas for improvement and iteratively enhance the user interface, features, and functionality based on user preferences and needs.

4. Real-time Prediction and Monitoring: Implement real-time prediction capabilities to provide users with up-to-date insights into startup profitability trends and enable proactive decision-making.

5. Advanced Visualization Techniques: Explore advanced data visualization techniques to present predictions and insights in an intuitive and visually appealing manner, facilitating easier interpretation and analysis by users.

6. Expansion to Additional Markets or Industries: Extend the application's coverage to additional markets or industries, allowing users to analyze startup profitability across diverse sectors and geographical regions.

7. Mobile Optimization: Optimize the web app for mobile devices to ensure seamless access and usability for users on smartphones and tablets, enhancing accessibility and user experience.

8. Collaboration and Partnerships: Forge collaborations with industry experts, research institutions, and startups to gather additional data, validate models, and refine predictions, fostering innovation and knowledge exchange.

9. Continuous Monitoring and Maintenance: Implement robust monitoring and maintenance processes to ensure the ongoing reliability, scalability, and performance of the web app, addressing any issues or updates promptly.

10. Ethical Considerations: Maintain a strong focus on ethical considerations, including data privacy, fairness, and transparency, and regularly review and update policies and practices to align with evolving regulatory requirements and best practices.

7.4 Conclusion:

In conclusion, the development of the startup profit prediction web app represents a significant step towards leveraging technology to empower entrepreneurs and investors with valuable insights for informed decision-making. By harnessing advanced machine learning algorithms and integrating robust tools and technologies, we have created a platform that offers accurate predictions and actionable intelligence to navigate the dynamic landscape of startup profitability. While challenges such as accuracy, generalizability, and data privacy persist, our commitment to continuous improvement and innovation drives us to explore future enhancements and address emerging needs. With a focus on user feedback, collaboration, and ethical considerations, we are poised to deliver a sophisticated and reliable solution that catalyzes success in the startup ecosystem.

REFERENCES

1. https://www.sciencedirect.com/science/article/abs/pii/S0360835213003306#preview-section-cited-by

2. https://www.linkedin.com/pulse/startup-profit-prediction-ml-app-step-stepguide-shorthills-tech/?trk=organization-update-content_share-article

3. https://medium.com/@gerard.agada/basic-ai-machine-learning-for-financial-statement-analysis-6ccaa1bd5cec

4. https://www.diva-portal.org/smash/get/diva2:1736961/FULLTEXT01.pdf

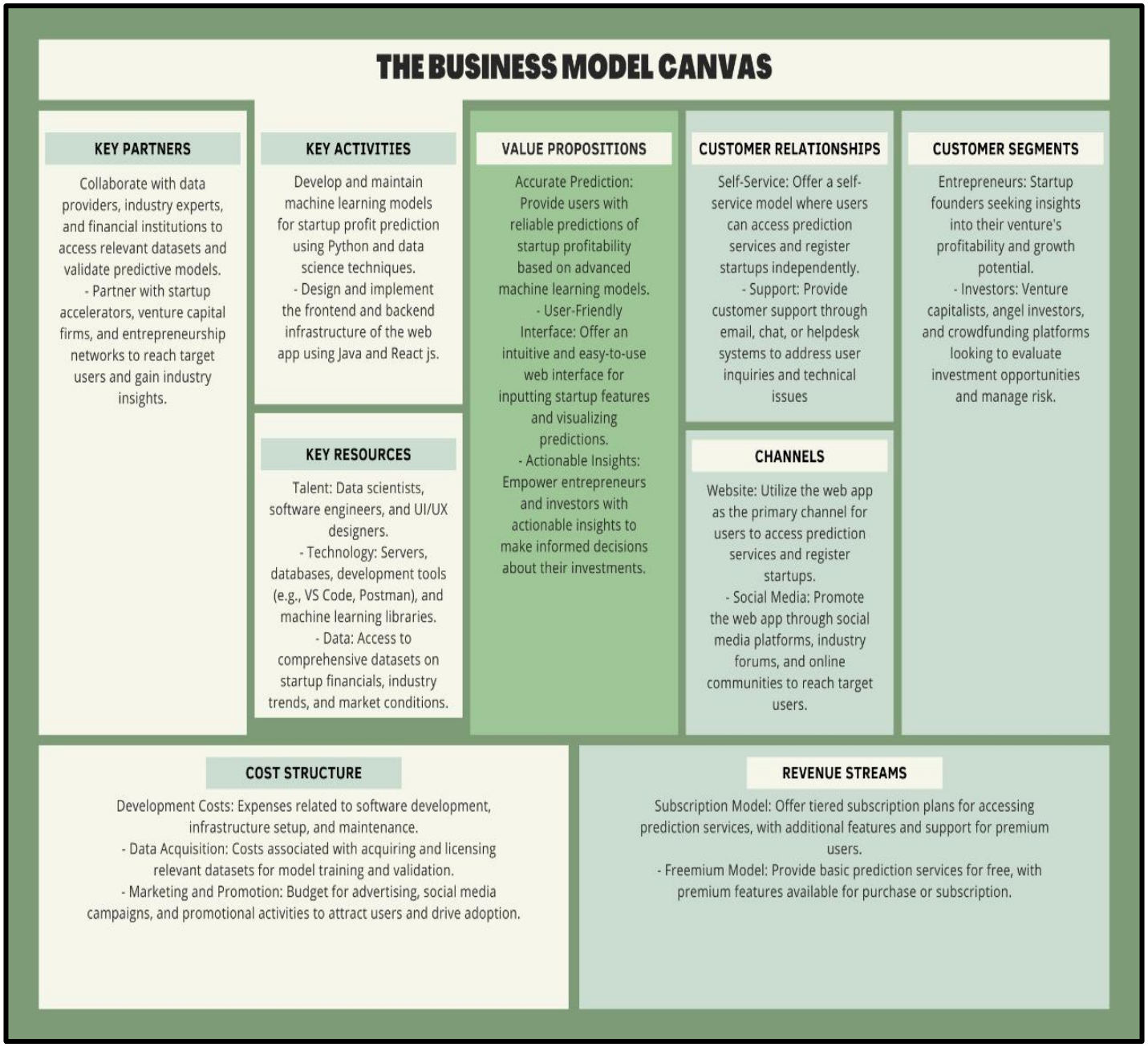
5. https://medium.com/geekculture/building-financial-model-in-python-e6375c7785b4

6. https://devpost.com/software/startup-valuation-with-machine-learning#updates

7. https://nickderobertis.github.io/fin-model-course/lectures/12-free-cash-flow-estimation-and-forecasting.html#complex-time-series-forecasting-in-python-finstmt-method

APPENDIX

Business Canvas:



Software Manual:

Introduction:

Welcome to the user manual for Invest with Intelligence This comprehensive guide is designed to assist you in navigating and maximizing the features of our startup profit prediction web application. Whether you're an entrepreneur seeking insights into your startup's profitability or an investor looking for opportunities to support promising ventures, this manual will provide you with detailed instructions and tips for utilizing our platform effectively.

Within this manual, you will find comprehensive information on the various pages and functionalities available in the web app, including registration processes for entrepreneurs and investors, exploration of listed startups, and engagement with predictive insights. Our aim is to empower you with actionable data and analytics, enabling informed decision-making and facilitating success in your entrepreneurial endeavors and investment strategies.

Home:

1. Features:

Prediction: Obtain precise predictions of startup profitability based on various factors.
Visualization: Visualize predictions and trends in an intuitive and easy-to-understand manner.
Explore Startups: Browse listed startups and their predicted profitability.

2. Navigation:

Navigation Bar: Access different pages such as Home, Invest, About Us, Login, and Register.

3. Getting Started:

Click on the "Invest" button to explore listed startups and their profitability predictions.
To learn more about our app and the team behind it, visit the "About Us" page.

Invest (Listed Startups)

1. Explore Listed Startups:

- View a list of startups along with their predicted profitability scores.
- Click on a startup to view detailed information and prediction insights.
- Click on the "See More Details" button to access comprehensive information about the selected startup.

2. Sorting and Filtering

- Use sorting options to arrange startups based on profitability or other criteria.
- Apply filters to narrow down startups by industry, location, or funding stage.

3. Invest in Startups:

- Registered investors can log in to the app and invest in startups directly through the platform.
- New investors can sign up for an account to access investment opportunities.

4. Predict Analytics:

- Click on the "Predict Analytics" button to access advanced predictive analytics for the selected startup.
- Gain insights into future growth projections, market trends, and risk assessment.

About Us

1. Our Mission:

- Learn about our mission to empower entrepreneurs and investors with actionable insights.
- Understand our commitment to innovation, accuracy, and user satisfaction.

2. Meet the Team:

- Get to know the talented individuals behind the development of the web app.
- Learn about our expertise in data science, software engineering, and entrepreneurship.

3. Contact Us:

- Reach out to us with any questions, feedback, or partnership inquiries.
- Find our contact information and social media links for further communication.

Login and Register

1. Login:

- Registered users can log in to access personalized features and account settings.
- Enter your email address and password to sign in securely.

2. Register Your Startup:

- Startup founders can register their startups to receive profitability predictions.
- Fill out the registration form with relevant details about your startup to get started.

3. Investor Signup and Login:

- Investors can sign up for an account to explore investment opportunities in listed startups.
- Once registered, investors can log in to view detailed startup profiles and make investments.

This user manual provides comprehensive guidance on navigating and utilizing the Startup Profit Prediction Web App. Feel free to explore the features and functionalities to maximize your experience.