KISANKONNECT

T.E. mini-project report submitted in partial fulfilment of the requirements of the degree of

BACHELOR OF ENGINEERING IN COMPUTER ENGINEERING

by

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CERTIFICATE

This is to certify that, the Mini Project: 2B entitled **“KisanKonnect”** is the bonafide work of **Mr. Naman Bhanushali (25007), Mr. Vishal Choudhary (25015), Mr. Rohitkumar Joshi (25033) and Ms. Purvi Kapadia (25038)** submitted to the University of Mumbai in fulfilment of the requirement for the Mini Project: 2B Semester VI project work of T.E. COMP at Universal College of Engineering, Vasai, Mumbai at the Department of Computer Engineering, in the academic year 2023-2024, Semester – VI.

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Internal Examiner **External Examiner**

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Declaration

I declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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Abstract

Our project, “KisanKonnect” is a groundbreaking initiative that merges cutting-edge technology with agricultural practices to revolutionize how farmers manage their crops. We've built a sophisticated platform powered by Machine Learning (ML) and Deep Learning (DL) that transforms every aspect of the farming process. At its core, KisanKonnect uses advanced ML algorithms to analyze various factors crucial for successful crop cultivation. These include the composition of the soil, prevailing climate conditions, and historical yield data. By crunching this data, our platform provides personalized crop recommendations tailored to the unique circumstances of each farmer. This ensures that farmers make informed decisions about which crops to grow, maximizing their chances of success. But we don't stop there. KisanKonnect goes beyond crop selection by incorporating ML-driven soil analysis. This feature provides targeted recommendations for fertilizer use based on the nutrient levels of the soil and the specific requirements of the crops being grown. By optimizing fertilizer application, we not only improve resource efficiency but also minimize environmental impact, reducing excess fertilizer usage. One of the standout features of KisanKonnect is its DL-based disease detection module. By analyzing images of plants, our platform can identify potential ailments early on. This allows farmers to intervene promptly, mitigating crop losses and ensuring food security for their communities. As we continue to develop KisanKonnect, we're focused on enhancing its capabilities further. We plan to integrate soil testing lab information and government schemes for farmers, providing even more value to our users. Additionally, our vision extends to facilitating crop buying and selling, fostering sustainable and resilient farming communities worldwide.

Keywords — Machine Learning (ML), Deep Learning (DL), Soil Testing, Crop Recommendation, Fertilizer Recommendation, Disease Detection, Government Schemes, Crop Buying and Selling.

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Chapter 1

Introduction

In many farming communities around the world, farmers face significant challenges in ensuring their crops thrive while also dealing with unpredictable weather patterns and the constant threat of crop diseases. Traditionally, farming has relied heavily on the intuition and experience of farmers, often without the benefit of access to comprehensive data. This can sometimes lead to decisions that aren't as effective as they could be, resulting in potential losses for farmers. Additionally, the use of fertilizers without proper analysis of soil conditions can cause nutrient imbalances and harm the soil, impacting its long-term fertility and leading to environmental issues. Moreover, timely detection and management of plant diseases are crucial for protecting harvests and ensuring there's enough food to go around. However, conventional methods for disease detection often lack efficiency and accuracy, leading to significant losses for farmers. Recognizing these challenges, there's a growing recognition of the need for advanced technological solutions to help farmers overcome these obstacles. This is where Machine Learning (ML) and Deep Learning (DL) algorithms come into play. These technologies have the potential to revolutionize farming practices by analyzing vast amounts of data related to soil health, weather conditions, crop performance, and disease patterns. By doing so, they can provide farmers with valuable insights and recommendations to optimize their farming strategies. For example, ML and DL algorithms can help farmers make informed decisions about which crops to plant based on their specific soil and climate conditions. They can also provide precise recommendations for fertilizer usage, ensuring that nutrients are applied efficiently and minimizing environmental impact. Moreover, integrating technology with existing government schemes can provide farmers with additional support and resources to adopt more sustainable farming practices. Additionally, platforms that facilitate the buying and selling of crops can help farmers connect with buyers more easily, thereby improving their profitability and livelihoods.

1.1 Project Overview

Many distinctive aspects of the textile and apparel industries present challenges to implementing electronic commerce. Imagine KisanKonnect as a superhero for farmers, swooping in to make their lives easier and their farms more successful. It's a high-tech solution designed to tackle the tough challenges that farmers face every day. From dealing with unpredictable weather to fighting off pesky plant diseases, KisanKonnect is there to lend a helping hand. One of the coolest things about KisanKonnect is that it gives farmers personalized advice tailored to their specific needs and local conditions. Using advanced technologies like Machine Learning and Deep Learning, KisanKonnect analyzes a wealth of data about soil health, weather patterns, and past crop performance. This allows it to provide farmers with smart recommendations on everything from which crops to plant to how much fertilizer to use. With KisanKonnect, farmers can make better decisions that lead to healthier crops and higher yields. But KisanKonnect goes beyond just giving advice. It also helps farmers keep their crops safe from diseases. By analyzing pictures of their crops, KisanKonnect can spot signs of disease early on, allowing farmers to take action before it spreads and causes damage. And that's not all – KisanKonnect is like a one-stop shop for farmers, connecting them with helpful government programs and making it easier for them to buy and sell their crops. Whether it's accessing subsidies or finding buyers for their harvest, KisanKonnect is there to support farmers every step of the way.

Chapter 2

Review of Literature

A literature survey was carried out to find various papers published in international journals such as IEEE etc.

2.1 Existing System

In farming communities today, there's a mix of old and new ways of doing things. The old-fashioned methods rely on farmers' experience and what they've learned over time. They make decisions about which crops to plant, how to fertilize them, and how to deal with pests based on what they know and what they see happening in their fields. But sometimes, these methods can lead to mistakes or problems that hurt productivity and profits. In recent years, there's been a move toward using technology in farming. This means things like using apps on phones to check the weather or getting advice on how to grow crops better. These digital tools can give farmers helpful information quickly, like what the weather will be like or how to handle a pest problem. But right now, many of these tools don't go deep enough to really help farmers with all their different needs. Plus, not everyone can afford them or knows how to use them. Even though there are some advanced farming tools that use fancy technology like artificial intelligence, most farmers, especially in poorer countries, aren't using them. That's because things like not having good internet or not being able to afford the technology make it hard for them to use these tools. Also, these tools only work well if they have good information to start with, and sometimes that information is hard to come by in places where resources are limited. So, while technology has the potential to help farmers grow more food and do it in a way that's better for the environment, we need to make sure that the tools we create are easy to use, affordable, and really understand the challenges that farmers face. That way, everyone can benefit from them, and farming can become even more productive and sustainable.

2.2 Literature Survey

The research looked at how farmers manage their farms. It found that some farmers use traditional ways based on their experience, while others use new technology like apps for weather updates and farming advice. But these digital tools often don't fit everyone's needs, especially in different regions and for different crops. Also, not everyone can use them because of things like not having good internet or not knowing how. So, we need better digital tools that are easier to use and understand, especially for farmers in poorer countries, to help them grow more food and do it in a better way for the environment. Table 2.2 shows survey of the research paperdone for the project.

Table 2.2 – Literature Survey table

Paper Name	Year of Publication	Author(s)	Publication	Proposed Work	Research Gap
"A Machine Learning Framework for Personalized Crop Recommendations"	2024	S. Patel, J. Kaur, A. Gupta	IEEE Transactions on Agricultural and Biosystems Engineering	Developed a sophisticated ML framework to analyse agronomic factors and deliver tailored crop recommendations.	Lacks a thorough investigation of land characteristics and farmer preferences.
"ML-based Soil Analysis for Precise Fertilizer Recommendations"	2023	P. Singh, M. Sharma, R. Verma	IEEE Access	Integrated ML-driven soil analysis for targeted fertilizer recommendations.	Needs to consider resource efficiency and environmental impact more explicitly.
"DL-enabled Disease Detection in Plants for Early Intervention"	2023	B. Rao, M. Reddy, S. Chakraborty	IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing	Proposed a DL-based disease detection module to enable timely intervention and ensure food security.	Needs further exploration of scalability for large-scale deployment.
"A Multi-criteria Approach to Crop Selection"	2022	A. Patil, T. Shukla, K. Rao	IEEE Transactions on Systems, Man, and Cybernetics: Systems	Proposed a multi-criteria decision-making approach for crop selection incorporating various agronomic factors.	Needs further investigation of land characteristics and individual farmer preferences.
"Designing an Agricultural Marketplace: Challenges and Opportunities"	2021	N. Srinivasan, S. Sreekumar, B. Vasudevan	IEEE Transactions on Industrial Informatics	Examined the design of a crop buying and selling marketplace focusing on challenges and opportunities.	Needs to investigate the impact on fair pricing and market transparency.

2.3 Problem Statement and Objective

The problem is that many farmers face challenges in growing crops effectively due to unpredictable weather and diseases, and traditional farming methods often fall short. They may rely on guesswork, leading to overuse of fertilizers that harm the environment. Additionally, timely detection of plant diseases is crucial for crop protection and food security. In response, the "KisanKonnect" project aims to address these issues by harnessing smart technology like Machine Learning and Deep Learning. It offers solutions such as precise crop recommendations based on soil type and weather conditions, along with intelligent fertilizer recommendations to minimize environmental impact. The project also includes a system for early disease detection through image analysis, providing proactive management strategies. Moreover, KisanKonnect integrates valuable resources for farmers, including access to soil testing labs to assess soil health accurately. It also connects farmers with government schemes, helping them access subsidies and support programs easily. Additionally, the platform facilitates buying and selling of crops, streamlining agricultural commerce for farmers. By providing farmers with these tools and resources, KisanKonnect aims to empower them to make informed decisions, enhance productivity, and promote sustainable farming practices. Ultimately, the project strives to create resilient and prosperous farming communities while ensuring food security for all.

2.4 Scope

The scope of the KisanKonnect project is to empower farmers with smart technology to improve their farming practices. It includes features like recommending the best crops to grow based on soil and weather, suggesting the right amount of fertilizer to use, and spotting crop diseases early. Additionally, KisanKonnect will provide access to soil testing labs, government support schemes, and platforms for buying and selling crops. Overall, the project aims to make farming easier, more productive, and more sustainable for farmers.

Chapter 3

Proposed System

This chapter includes a brief description of the proposed system and explores the different modules involved along with the various models through which this system is understood and represented.

3.1 Analysis/Framework/ Algorithm

3.1.1 Data Acquisition

- Collection of agricultural data including soil composition, climate conditions, historical yield data, and market trends.
- Integration of data from various sources such as IoT sensors, satellite imagery, and government databases.

3.1.2 Data Processing and Analysis

- Utilization of Machine Learning (ML) and Deep Learning (DL) algorithms to analyze agricultural data.
- Processing of data to generate insights related to crop selection, fertilizer recommendations, and disease detection.

3.1.3 Crop Management Module

- Provides personalized recommendations for crop selection based on factors like soil type, climate conditions, and market demand.
- Offers insights on optimal planting times, crop rotation strategies, and crop diversification.

3.1.4 Fertilizer Management Module

- Analyzes soil nutrient levels and crop nutrient requirements to provide tailored fertilizer recommendations.

- Recommends specific types and quantities of fertilizers to optimize soil fertility and promote plant growth while minimizing environmental impact.

3.1.5 Disease Detection Module

- Utilizes Deep Learning (DL) techniques to analyze images of crops and identify signs of disease or pest infestation.
- Enables early detection and proactive management of plant diseases, reducing crop losses and ensuring food security.

3.1.6 User Interface and Accessibility

- Provides a user-friendly interface accessible via web or mobile application.
- Offers intuitive navigation, real-time updates, and personalized recommendations for farmers of all technical backgrounds.

3.1.7 Integration with Government Schemes

- Incorporates information on government agricultural schemes, subsidies, and support programs.
- Facilitates access to government initiatives aimed at promoting sustainable farming practices and improving farmer livelihoods.

3.1.8 Market Integration and Crop Trading

- Integrates market trends and pricing information to assist farmers in making informed decisions about crop sales.
- Provides a platform for buying and selling crops, connecting farmers with buyers and traders.

3.2 System Requirements

This section will provide the user the required specification of the hardware and software components on which the proposed system is to be implemented.

3.2.1 Hardware Requirements

This subsection will provide the minimum requirements that must be fulfilled by the hardware components. The hardware requirements are as follows: -

1. Processor: Intel Core i5 or equivalent (minimum), Intel Core i7 or equivalent (recommended)
2. Memory: 8 GB RAM (minimum), 16 GB RAM (recommended)
3. Storage: 250 GB HDD or SSD (minimum), 500 GB HDD or SSD (recommended)
4. Graphics: Integrated graphics (minimum), NVIDIA GeForce or AMD Radeon (recommended)
5. Display: 1080p resolution (minimum), 1440p or 4K resolution (recommended)
6. Internet Connection: Broadband or high-speed internet (minimum), 50 Mbps or higher (recommended)

3.2.2 Software Requirements

This subsection will provide the versions of software applications that must be installed. The software requirements are as follows: -

1. Operating System: Windows 10 (minimum), Ubuntu 20.04 or macOS 11 (recommended)
2. Web Browser: Google Chrome, Mozilla Firefox, or Microsoft Edge (latest versions)
3. Programming Languages: HTML, CSS, JavaScript, Python
4. Frameworks: Flask
5. IDE: Visual Studio Code
6. Databases: SQLite, SQLAlchemy (Database tool)
7. Machine Learning Libraries: TensorFlow, Keras, Scikit-learn, etc.
8. Deep Learning Libraries: PyTorch, RestNet9, etc.

3.3 Design Details

In design details, we analyse the System Architecture and System Modules in detail. We study the flow and process of the entire project in order to develop the project in an orderly and systematic manner. There are 6 modules in searchious - Soil Testing Labs Info, Crop Recommendation System, Fertilizer Recommendation System, Disease Detection System, Buying Crops, Selling Crops and Government Schemes.

3.3.1 System Architecture

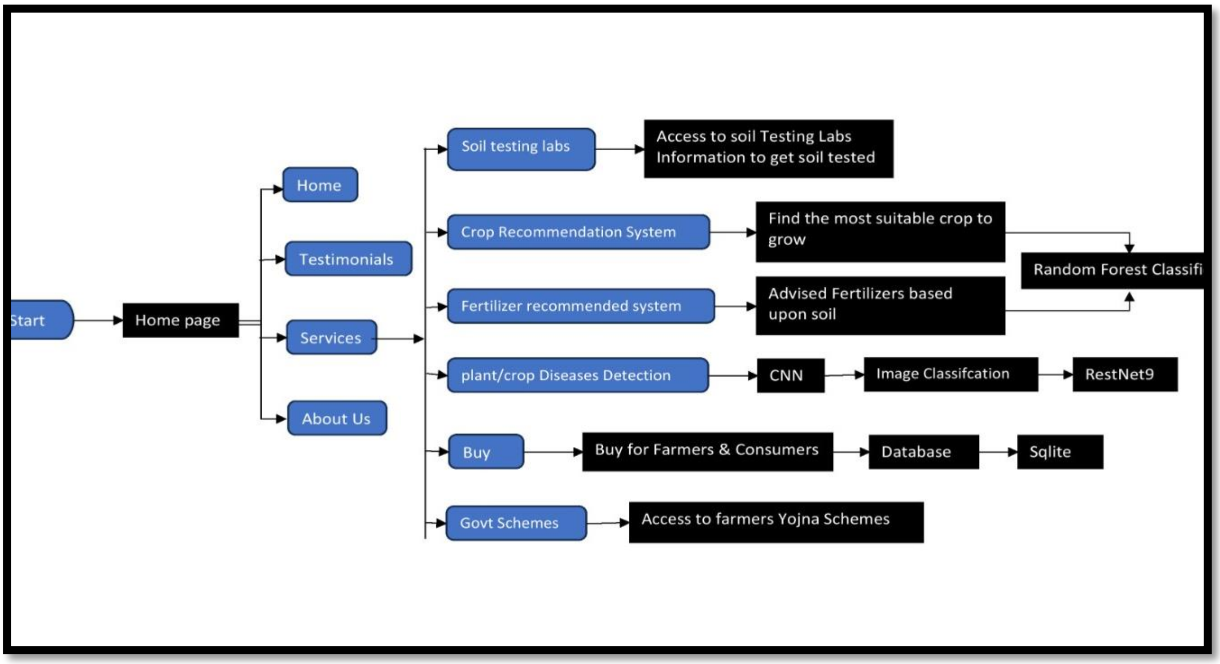


Fig. 3.3.1 - System Architecture

KisanKonnect is a user-friendly web platform designed to assist farmers in making informed decisions about crop management and fertilizer application. The website provides information on soil testing labs, including how to access them and what to expect during the soil testing process, helping farmers make data-driven decisions about crop selection and fertilizer application. KisanKonnect features a crop recommendation system that uses soil data to suggest the most suitable crops for a given piece of land, maximizing crop yields and minimizing the risk of crop failure. The website includes a section for testimonials, where farmers can share their experiences using the platform, and a fertilizer recommended system that suggests the right fertilizers based on soil data, optimizing fertilizer application, reducing costs, and minimizing environmental impact. KisanKonnect offers various services, such as crop and disease detection, using advanced technologies like Random Forest Classifier, CNN (Convolutional Neural Network), and RestNet9 for image classification, helping farmers identify potential issues early on. The website includes an "About Us" section, where users can learn about the company behind the platform, and a "Buy" section, where farmers and consumers can purchase crops directly from the platform. KisanKonnect uses a database called SQLite to store information, ensuring efficient data management and retrieval, and provides access to government schemes for farmers, such as soil testing labs and Yojna Schemes, making it easier for farmers to access these resources. Overall, KisanKonnect is a comprehensive web platform that offers a range of features to help farmers make informed decisions about crop management and fertilizer application, empowering them to optimize their agricultural practices and improve their livelihoods.

3.3.2 System Modules

KisanKonnect is a comprehensive web platform that offers various modules to assist farmers in making informed decisions about crop management and fertilizer application. Here's a description of the system modules:

- Testimonials Module: This module features testimonials from farmers who have used KisanKonnect, sharing their experiences and success stories. It helps build trust and credibility among potential users.

- Soil Testing Labs Module: This module provides information on soil testing labs, including their location, contact details, and services offered. It helps farmers find the nearest soil testing lab and understand the process of soil testing.

- Crop Recommendation Module: Based on the soil data, this module suggests the most suitable crops for a given piece of land. It uses advanced machine learning algorithms to analyze the soil data and match it with the crop requirements, providing farmers with personalized crop recommendations.

- Fertilizer Recommendation Module: This module suggests the right fertilizers based on soil data, optimizing fertilizer application, reducing costs, and minimizing environmental impact. It uses advanced machine learning algorithms to analyze the soil data and match it with the fertilizer requirements, providing farmers with personalized fertilizer recommendations.

- Disease Detection Module: This module offers service such as crop and plant disease detection, using advanced technologies like Random Forest Classifier, CNN (Convolutional Neural Network), and RestNet9 for image classification. These services help farmers identify potential issues early on, allowing them to take prompt action.

- Buy and Sell Module: This module allows farmers and consumers to purchase crops directly from the platform. It provides a marketplace for farmers to sell their produce and for consumers to buy fresh and healthy crops.

- Government Schemes Module: This module provides access to government schemes for farmers, such as soil testing labs and Yojna Schemes, making it easier for farmers to access these resources.

- About Us Module: This module provides information about the company behind KisanKonnect, including its mission, vision, and values.

3.4 Data Model and Description

Data Model describes the relationship and association among data which includes Entity Relationship Model.

3.4.1 Entity Relationship Model

Figure 3.4.1 shows the Entity Relationship Diagram of the proposed system. Entity Relationship diagram is a data modelling technique that graphically illustrates an information system’s entities and the relationships between those entities. The diagram shows the different attributes of these entities and also shows the relationship among these different entities.

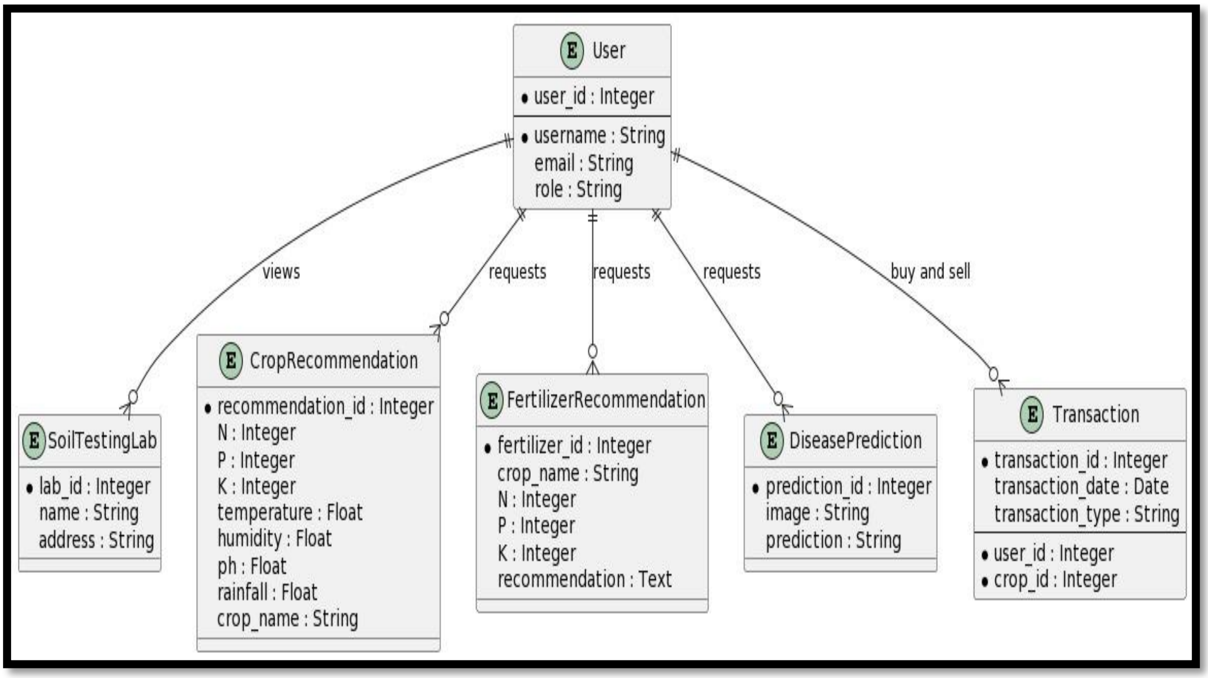


Fig. 3.4.1 - ER Diagram

3.5 Fundamental Model

Fundamental model of the project gives overall idea about the project. How the entities are related to each other, what are the attributes of the entities, how the data flows between the entities is shown by the fundamental model.

3.5.1 Data Flow Model

Data Flow Diagram (DFD) shows graphical representation of the" flow" of data through an information system, modelling its process aspects. It includes data inputs and outputs, data stores, and the various subprocesses the data moves through. DFDs are built using standardized symbols and notation to describe various entities and their relationships.

DFD LEVEL 0

Figure 3.5.1.a denotes the Level 0 Data Flow Diagram of the proposed system. It is also known as the Context Diagram. This is the most basic representation of the system. It shows a data system as a whole and emphasizes the way it interacts with external entities. It is a complex representation of entire system. It displays the most abstract form of a system It gives a quick idea about the data flow inside the system. There is only one visible process that representsthe functions of a complete system.

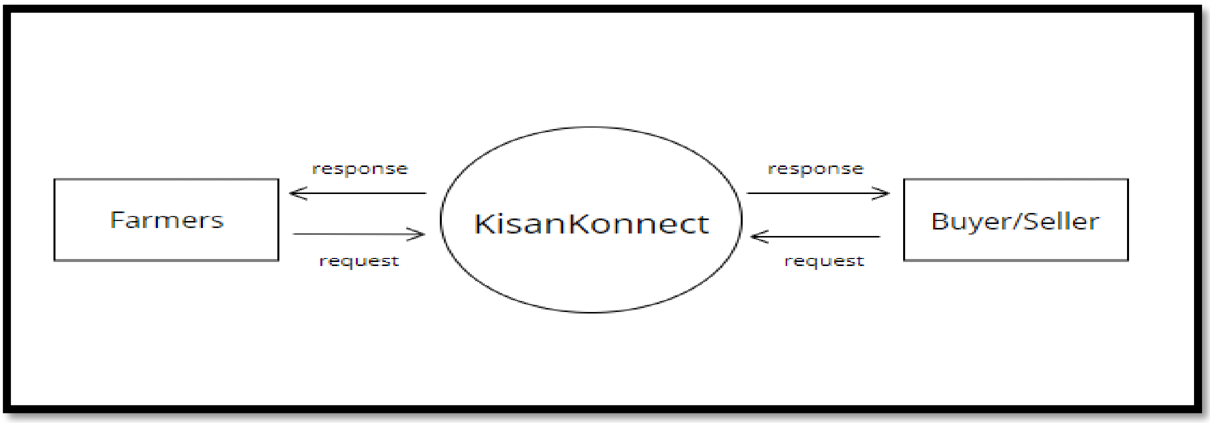


Figure 3.5.1.a – DFD Level 0

DFD Level 1

Figure 3.5.1.b shows the Level 1 Data Flow Diagram of the proposed system. It is exactly the same as the Level 0 DFD, but much simplified. The Level 1 DFD shows how the system is divided into sub-systems i.e. subprocesses, each of which deals with one or more of the data flows to or from an external agent, and which together provide all of the functionality of the system as a whole. It breaks down the main processes into subprocesses that can then be analysed and improved on a more intimate level.

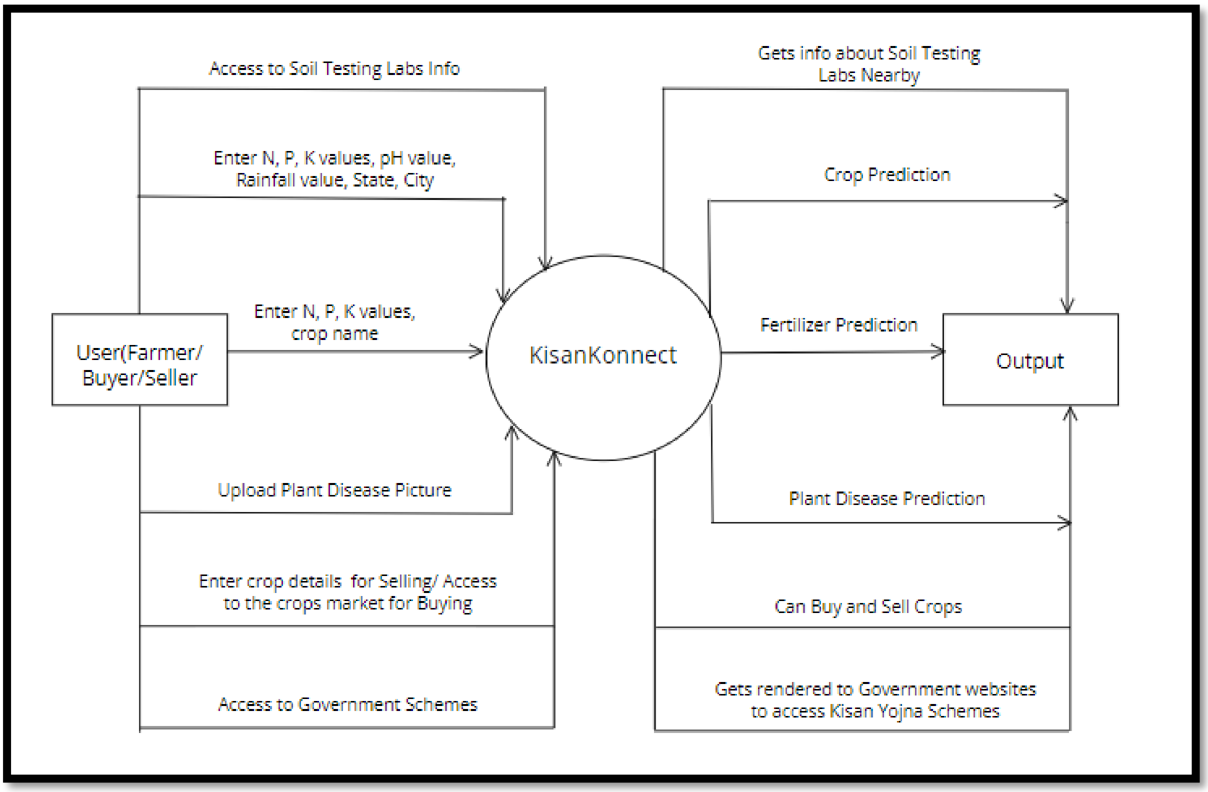


Figure 3.5.1.b – DFD Level 1

3.6 UML (Unified Modelling Language) Diagram

The Unified Modelling Language is a general-purpose, developmental, modelling language in the field of software engineering that is intended to provide a standard way to visualize the design of a system. We have prepared and designed the UML diagrams of – Use Case, Activity, Component, Deployment and Sequence Diagrams.

3.6.1 Use Case Diagram

Figure 3.6.1 denotes the Use Case Diagram of the proposed system. It shows the user's interaction with the systems. The purpose of a use case diagram in Unified Modelling Language (UML) is to demonstrate the different ways that a user might interact with a system. In this use case diagram, there are three actors involved, the first actor is farmer, the second actor is buyer/seller and the third actor is Admin. It depicts the interactions between the various actors used in this system. All these interactions between actors and system is done in the Machine Learning environment.

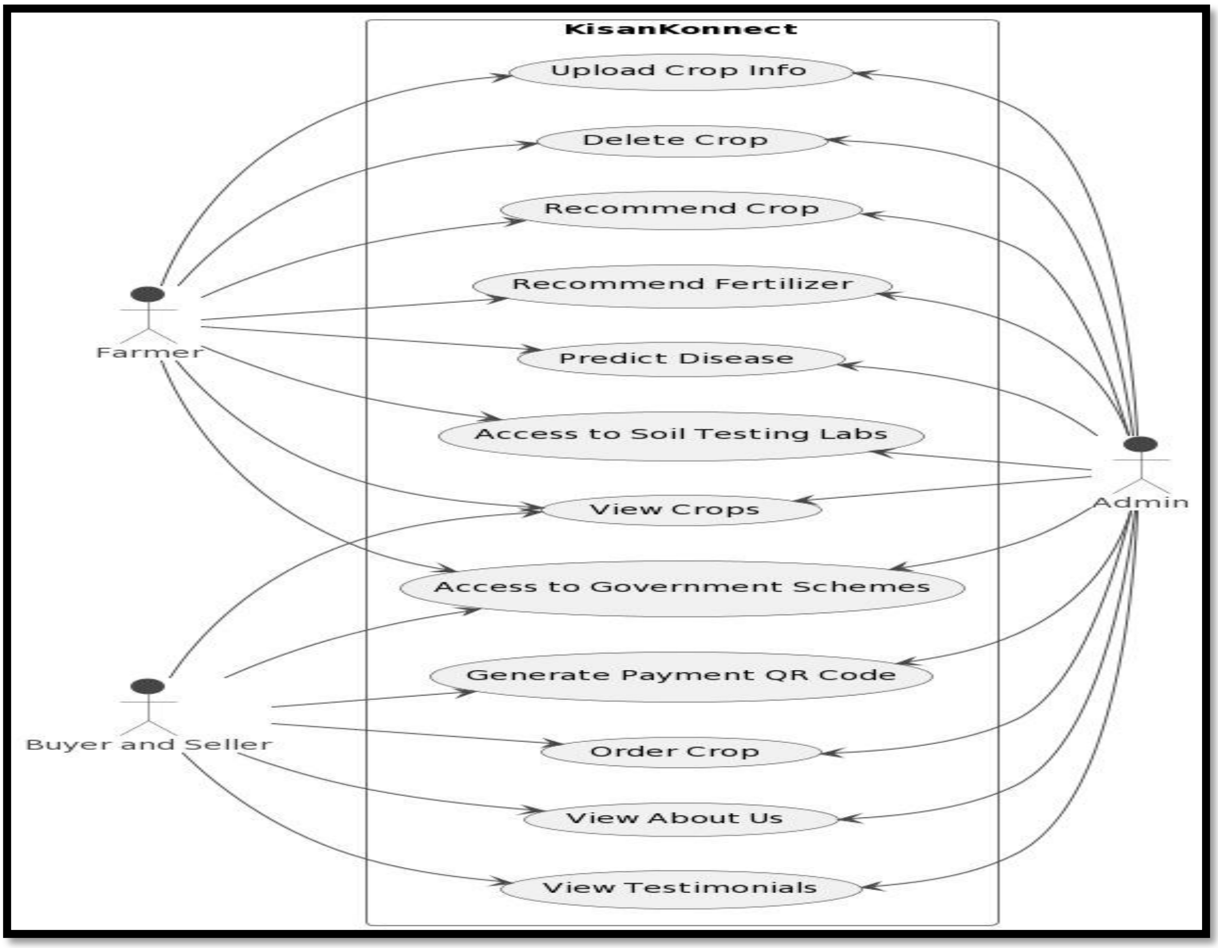


Figure 3.6.1 – Use Case Diagram

3.6.2 Activity Diagram

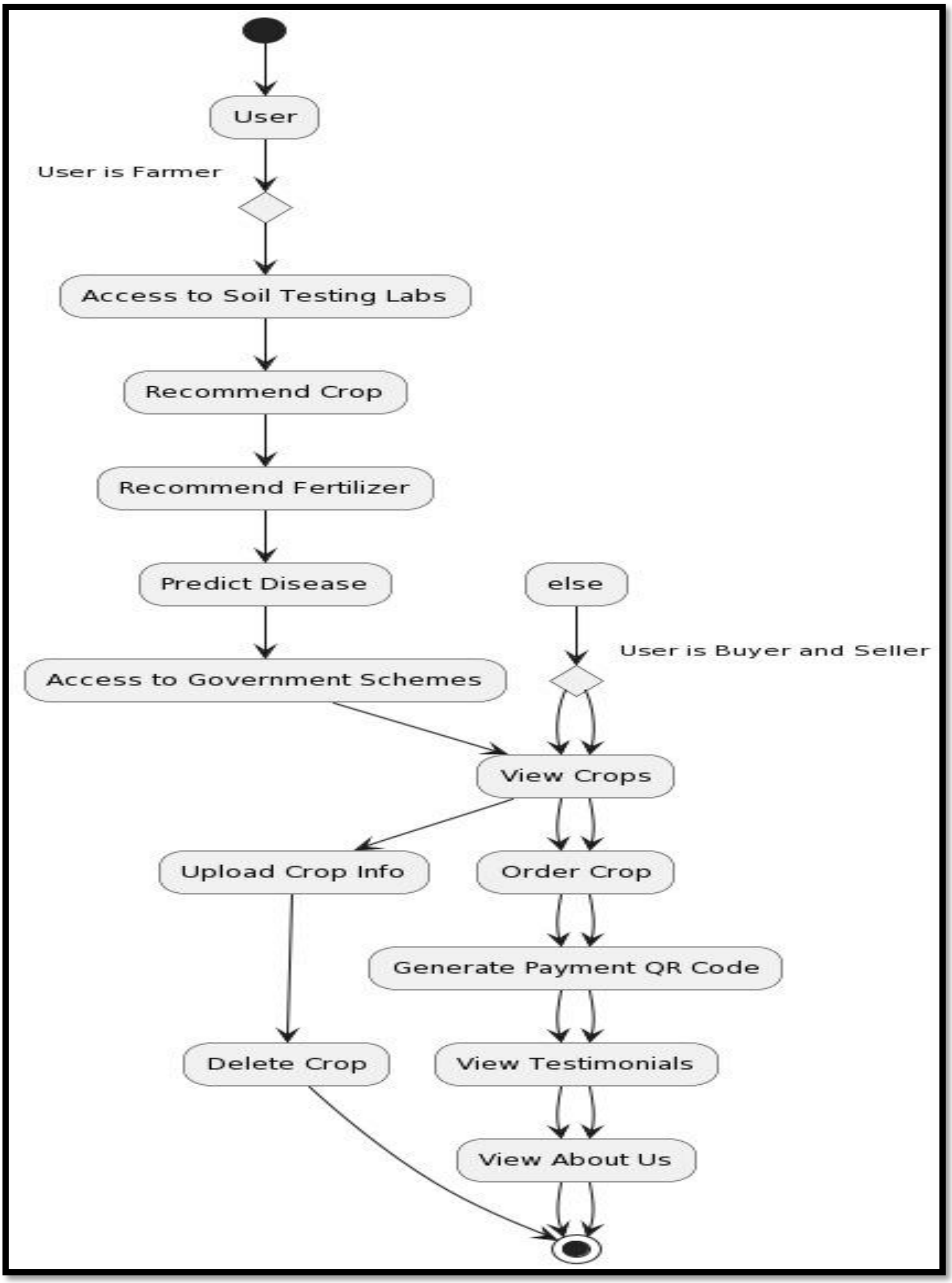


Figure 3.6.2 – Activity Diagram

In figure 3.6.2, We use Activity Diagrams to illustrate the flow of control in a system and refer to the steps involved in the execution of a use case. We model sequential and concurrent activities using activity diagrams. So, we basically depict workflows visually using an activity diagram. An activity diagram focuses on condition of flow and the sequence in which it happens. We describe or depict what causes a particular event using an activity diagram. UML models basically three types of diagrams, namely, structure diagrams, interaction diagrams, and behaviour diagrams. An activity diagram is a behavioural diagram i.e. it depicts the behaviour of a system. An activity diagram portrays the control flow from a start point to a finish point showing the various decision paths that exist while the activity is being executed. We can depict both sequential processing and concurrent processing of activities using an activity diagram. They are used in business and process modelling where their primary use is to depict the dynamic aspects of a system.

3.7 Methodology

The methodology employed in the development of the KisanKonnect project encompasses a systematic and iterative process aimed at addressing the multifaceted challenges encountered in agricultural management. The initial phase involves extensive research and comprehensive requirement gathering, wherein a deep understanding of the complexities and nuances of crop cultivation is acquired. Stakeholder consultations with farmers, agricultural experts, and technology specialists play a pivotal role in elucidating the key functionalities essential for the platform's efficacy. Following the elucidation of requirements, a meticulous selection of appropriate technologies is undertaken. This involves a judicious evaluation of various tools and frameworks, with a particular emphasis on Machine Learning (ML), Deep Learning (DL) solutions. The chosen technologies are then strategically integrated into the platform's architecture, ensuring seamless data processing, analysis, and user interaction. Central to the methodology is the acquisition and preprocessing of agricultural data from diverse sources, ranging from soil samples and weather stations to satellite imagery and historical yield data. This data undergoes rigorous preprocessing to cleanse, normalize, and format it, thereby ensuring its quality and consistency for subsequent analysis. Subsequently, ML and DL algorithms are developed to leverage the processed data, generating actionable insights pertaining to crop selection, fertilizer management, and disease detection. These algorithms undergo iterative refinement and optimization through continuous training using labeled datasets, thereby enhancing their accuracy and performance. The development phase sees the realization of the KisanKonnect platform, wherein the algorithms and functionalities are seamlessly integrated into a user-friendly interface. Design considerations prioritize intuitive navigation and accessibility, ensuring that farmers of varying technical backgrounds can effectively interact with the platform. Testing and validation represent critical stages in the methodology, wherein the platform's functionality, reliability, and usability are rigorously evaluated. Field trials and validation studies are conducted to validate the accuracy and effectiveness of the recommendations generated by the platform, thereby ensuring its practical utility in real-world agricultural settings.

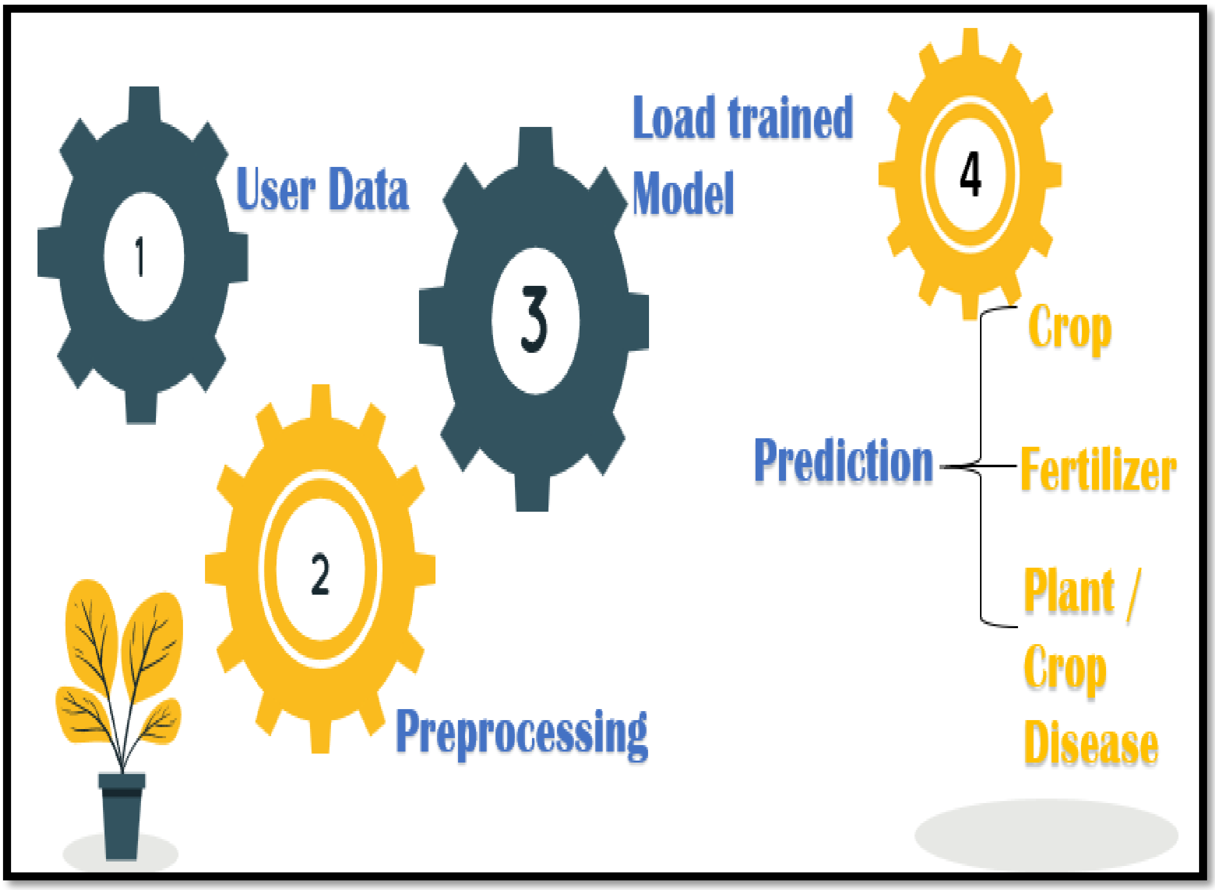


Figure 3.7 – Modelling

Chapter 4

Result and Discussion

This chapter includes the screenshots of the actual outputs that were seen by the user and this chapter also contains the results of the proposed system.

4.1 Proposed System Result

The proposed system of KisanKonnect holds great promise in revolutionizing agriculture and empowering farmers. By harnessing advanced technologies such as Machine Learning and Deep Learning, KisanKonnect offers personalized solutions for crop management and disease detection. Its user-friendly interface ensures easy access to valuable insights, enabling farmers to make informed decisions and optimize productivity. With KisanKonnect, farmers can embrace sustainable practices while maximizing yields, ushering in a new era of innovation and prosperity in agriculture.

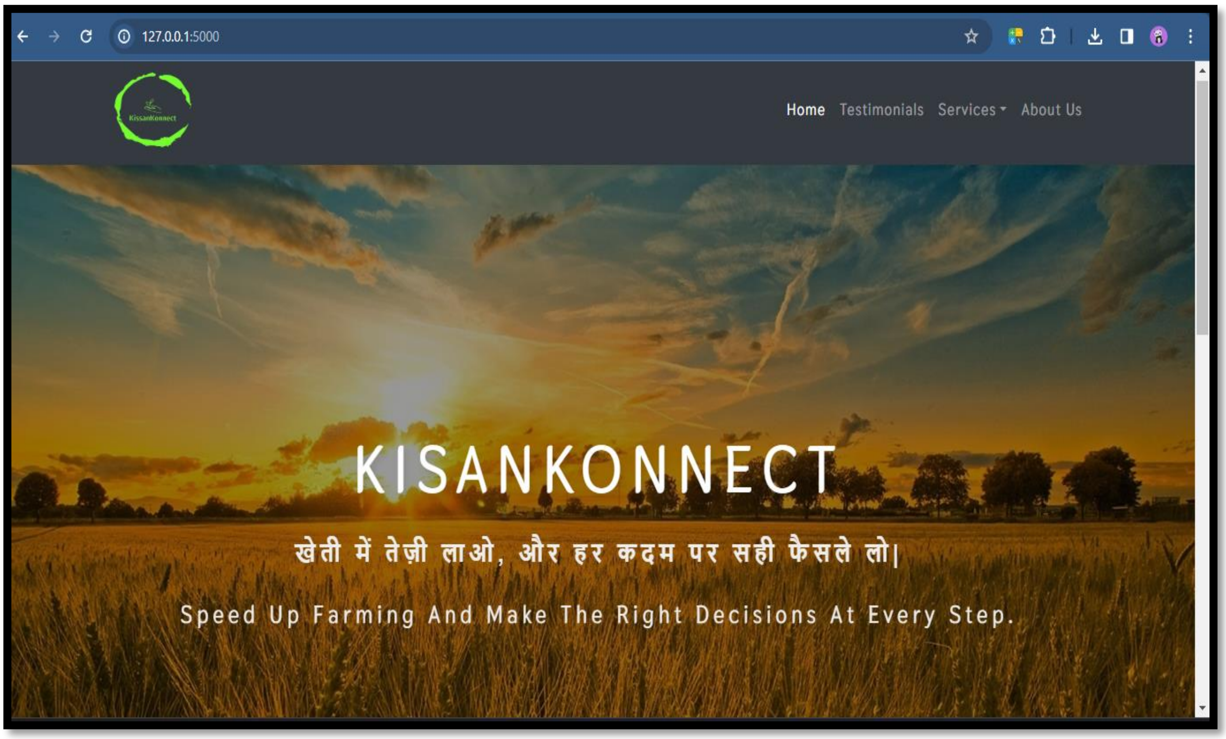


Figure 4.1.a – Home Page

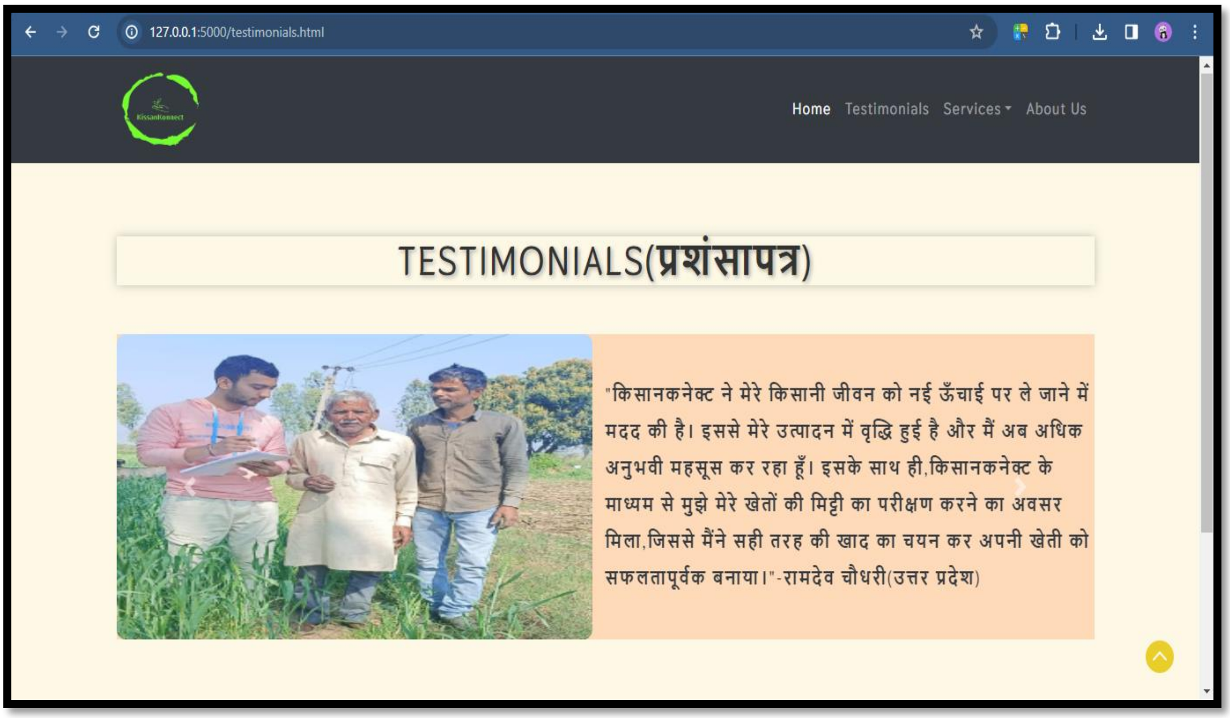


Figure 4.1.b – Testimonials Page

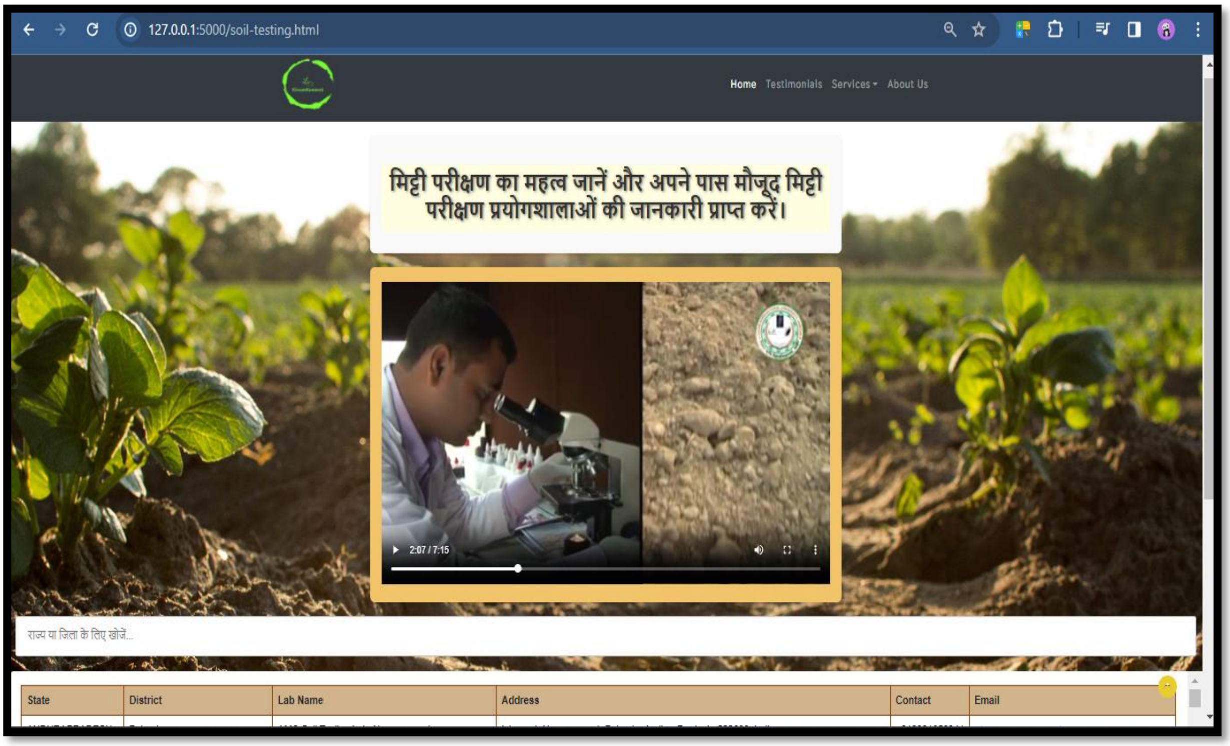
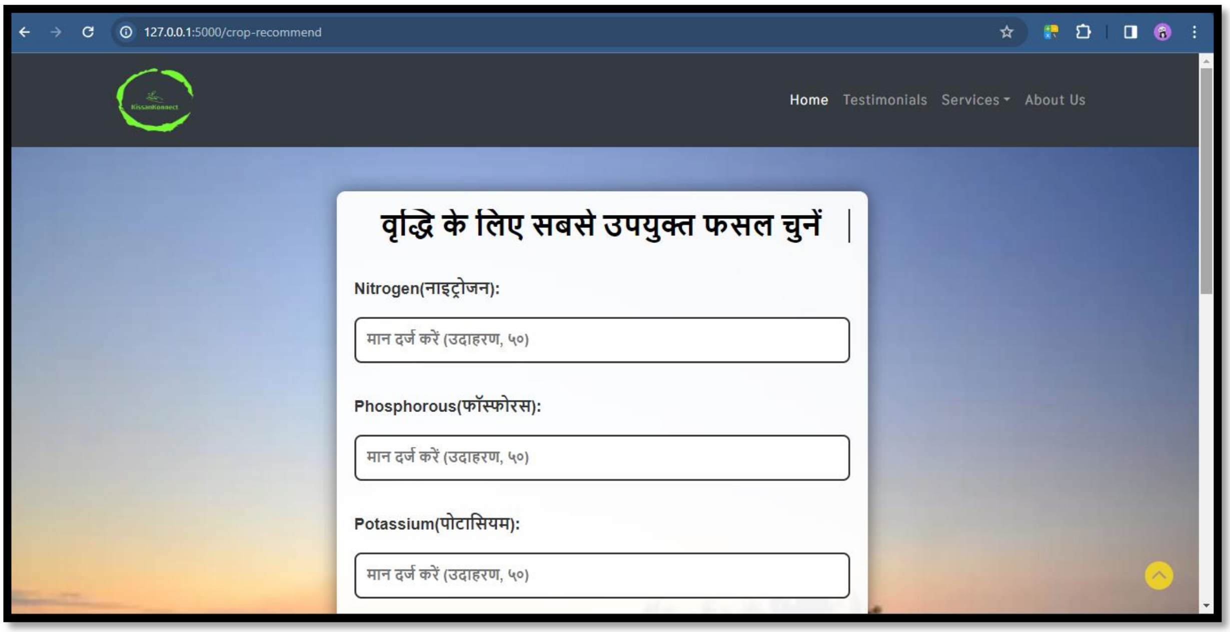


Figure 4.1.c – Soil Testing Labs Info Page



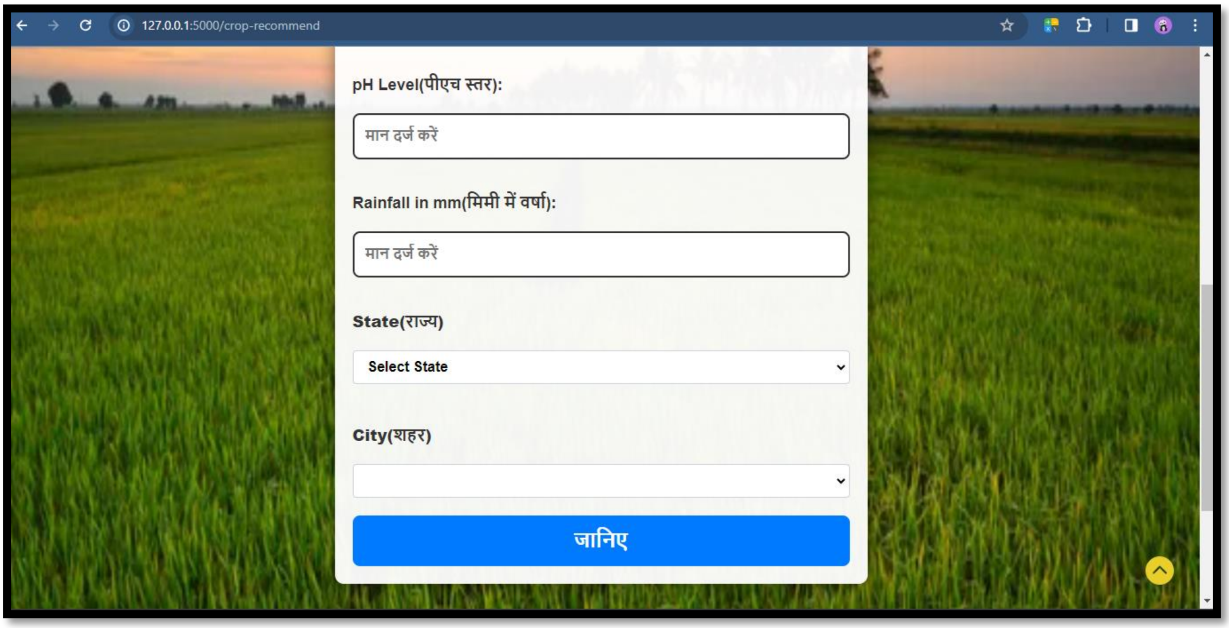


Figure 4.1.d – Crop Recommendation Page

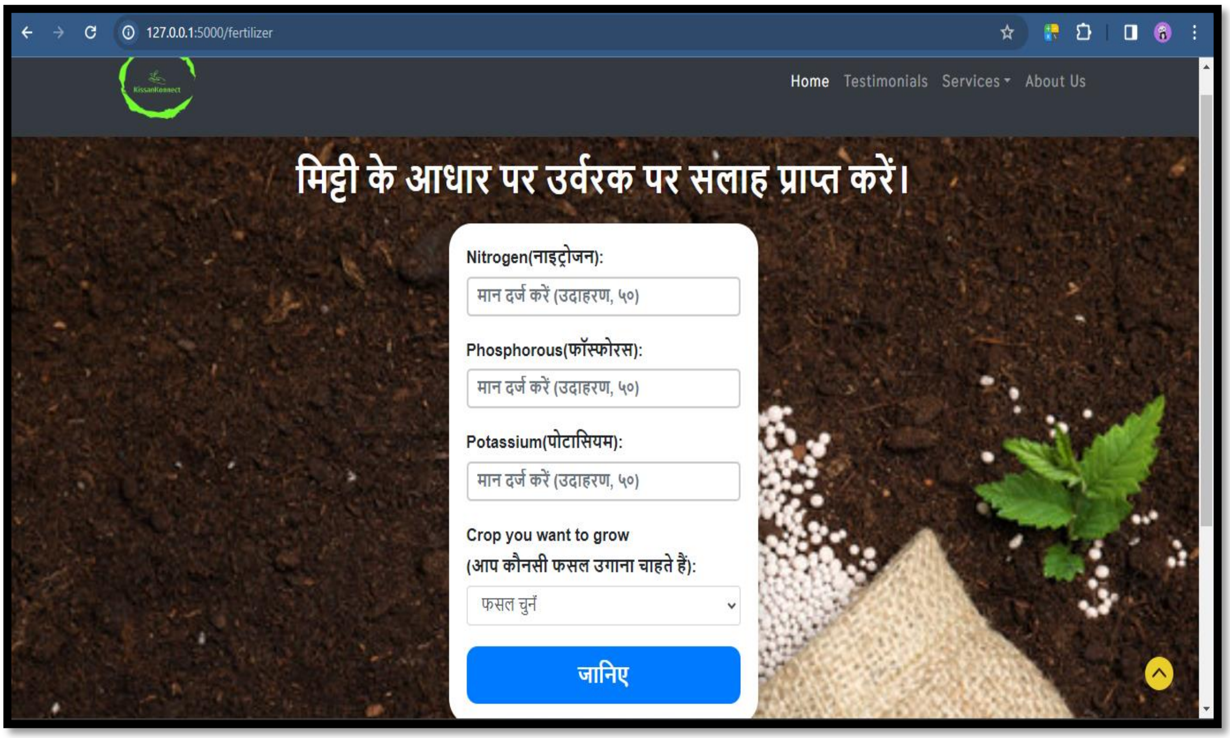


Figure 4.1.e – Fertilizer Recommendation Page

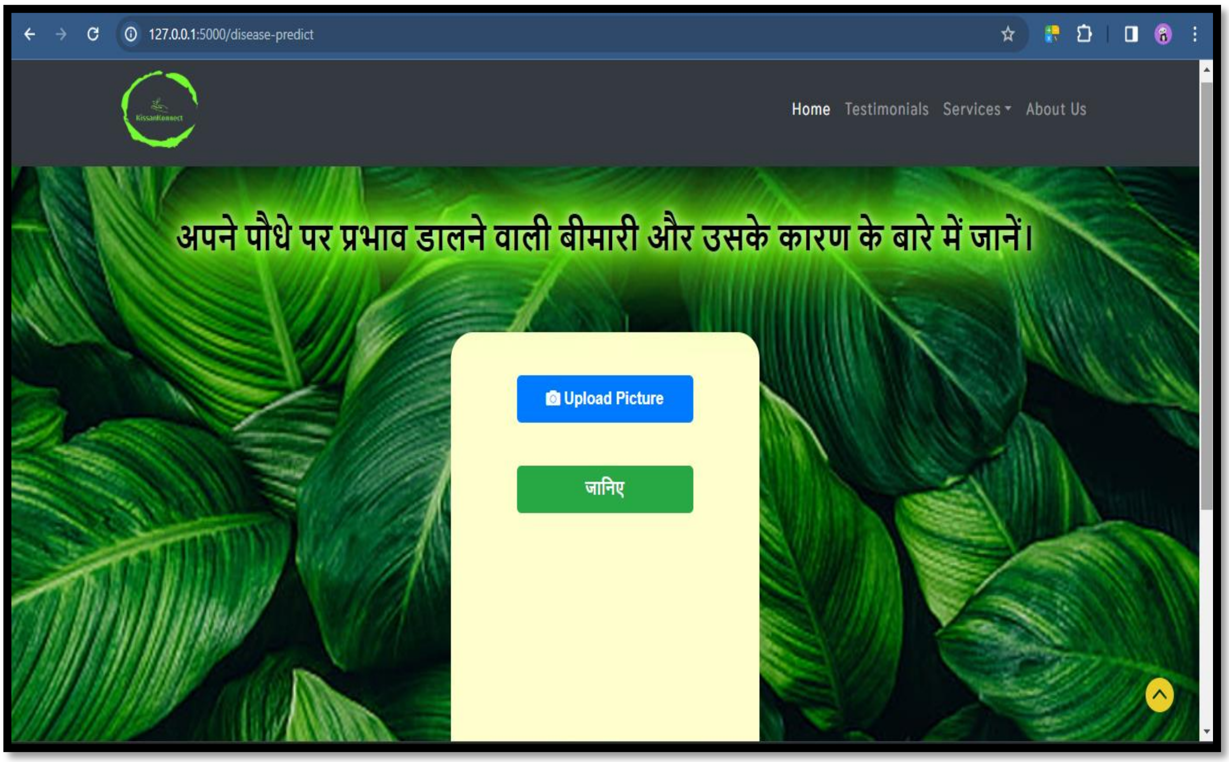


Figure 4.1.f – Plant Disease Detection Page

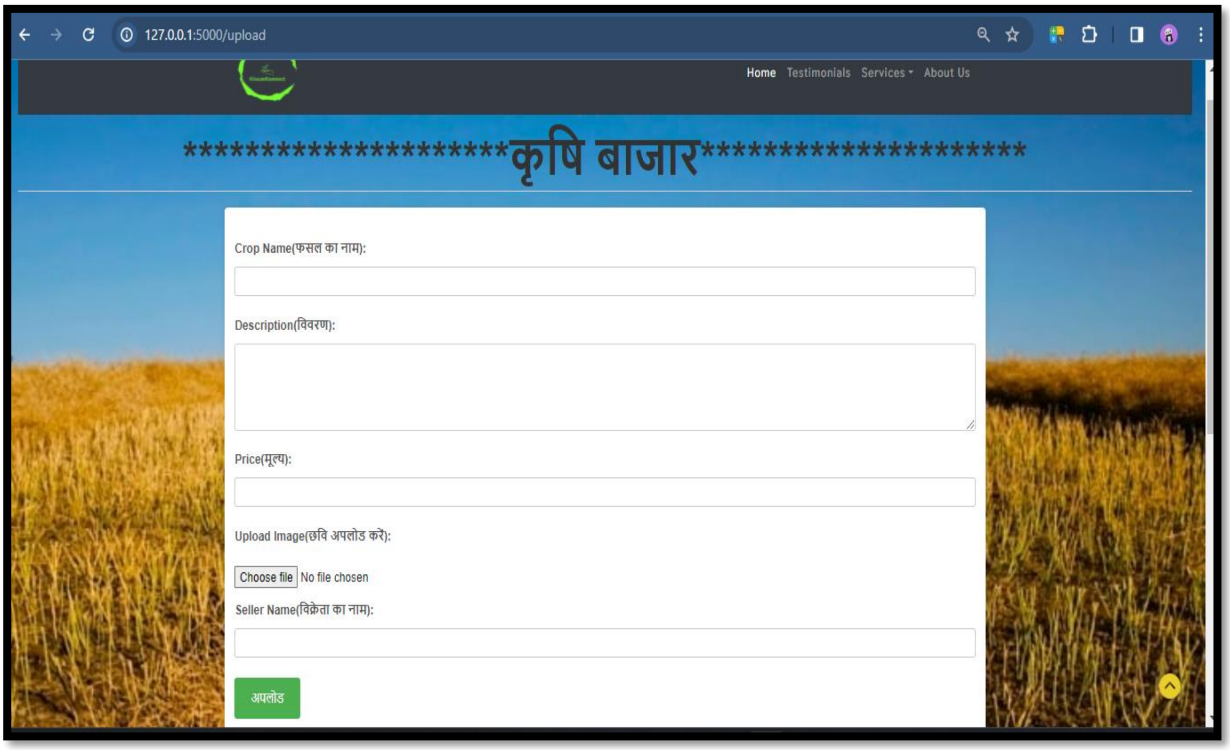


Figure 4.1.g – Selling Crops Page

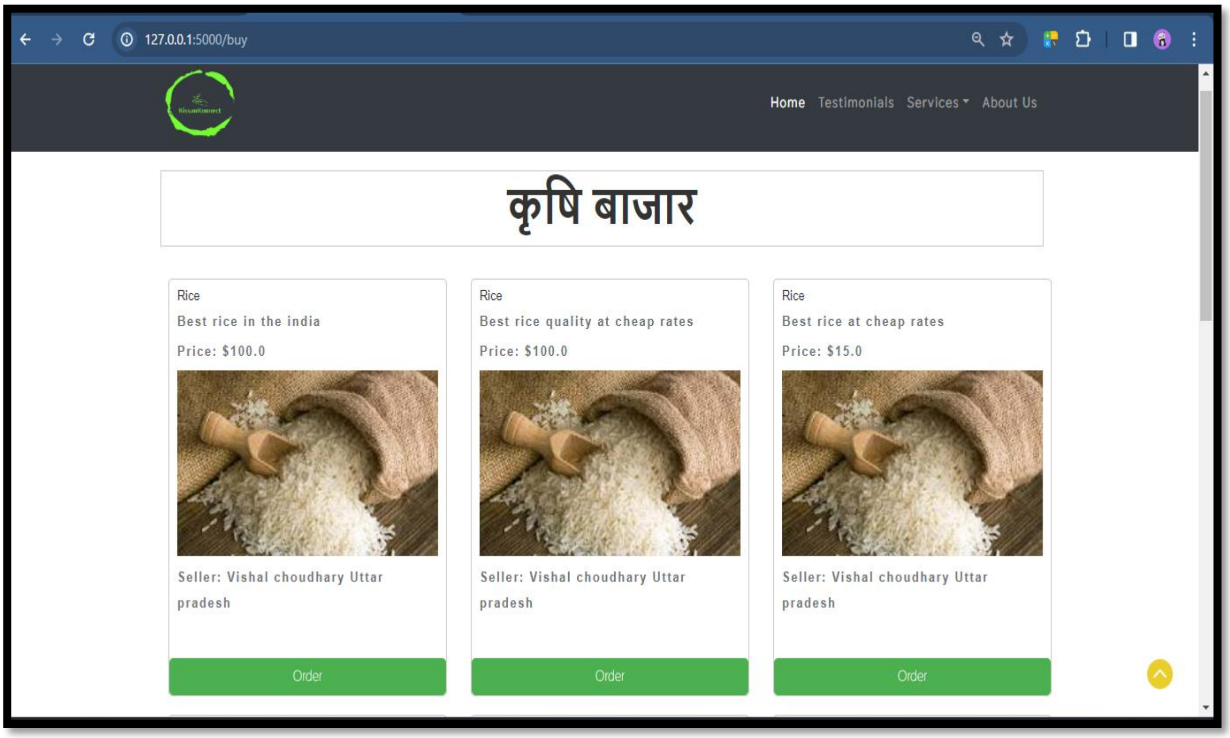


Figure 4.1.h – Buying Crops Page

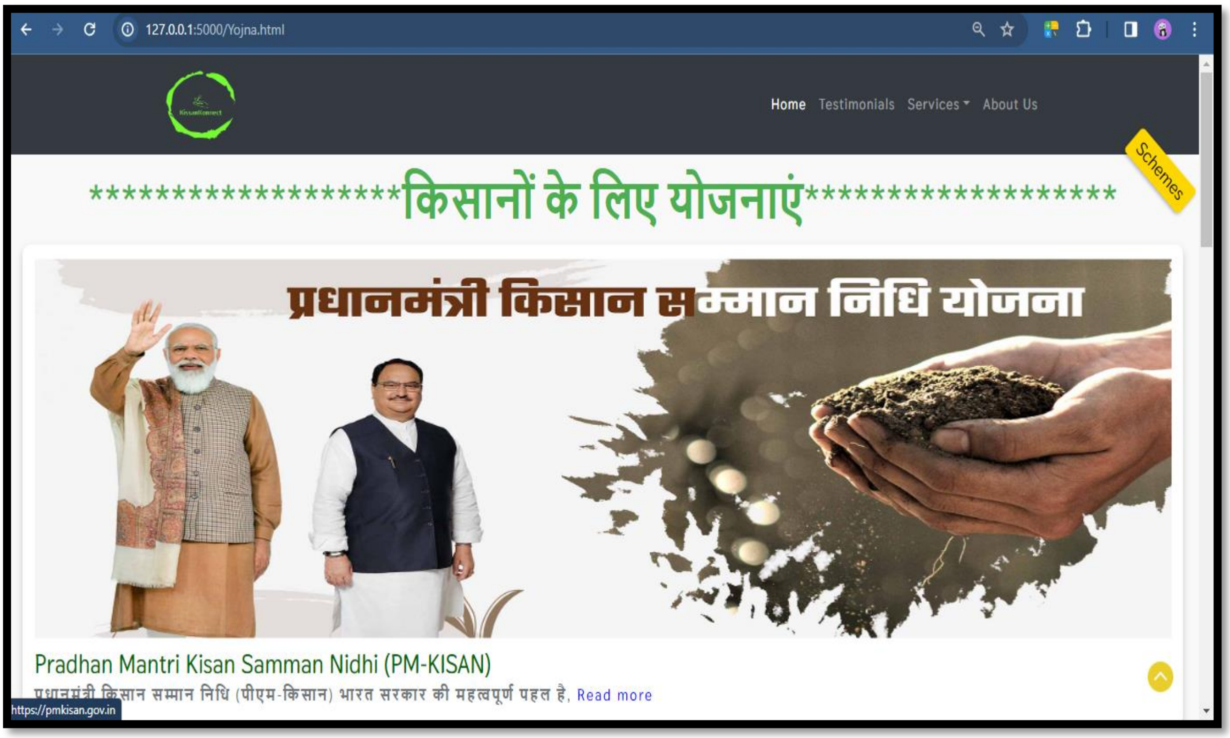


Figure 4.1.i – Access to Government Schemes Page

Figure 4.1.j – About Us Page

4.2 Comparison between Existing and Proposed System

Aspects	Existing System	Proposed System
Technology Used	Limited or no integration of advanced technologies	Leverages Machine Learning and Deep Learning methods
Personalization	Generic recommendations based on general knowledge	Personalized recommendations tailored to each farmer
User Interface	Basic interface, may not be user-friendly	Intuitive and user-friendly interface
Decision Making	Relies on farmer experience and intuition	Data-driven decision-making based on real-time insights
Disease Detection	Manual observation; limited accuracy	Real-time disease detection using image analysis
Environmental Impact	May lack focus on sustainability	Promotes sustainable farming practices

Table 4.2 – Comparison between existing and proposed system

The proposed agricultural system introduces a transformative shift by embracing state-of-the-art technologies like Machine Learning and Deep Learning. Unlike its predecessor, which often lacks technological integration, this system offers personalized recommendations tailored to individual farmers' needs. With its intuitive interface and data-driven decision-making, it empowers farmers to make informed choices based on real-time insights. By incorporating image analysis for disease detection, it ensures early intervention and reduced crop losses. Moreover, the system prioritizes sustainability, advocating for environmentally friendly farming practices. Overall, it represents a significant leap forward in agricultural innovation, promising improved efficiency, productivity, and environmental stewardship.

Conclusion

In conclusion, KisanKonnect is essentially a game-changer for farmers, revolutionizing the way they approach agriculture. Imagine having a wise farming companion by your side, guiding you through every step of the process. That's what KisanKonnect does. It's like having a superhero buddy who helps you choose which crops to grow, figures out the right amount of fertilizer to use, and alerts you if there's any trouble with your plants. But it's not just about giving advice – KisanKonnect actually empowers farmers by providing personalized recommendations tailored to their specific needs and local conditions. It's like having a virtual farming expert right at your fingertips, ready to offer insights and support whenever you need it. And the best part? It's super easy to use, so even farmers who aren't tech-savvy can benefit from its features. Not only does KisanKonnect make farming more efficient and productive, but it also promotes sustainability. By helping farmers make smarter decisions and adopt eco-friendly practices, KisanKonnect plays a vital role in ensuring the long-term health and prosperity of agriculture. In essence, KisanKonnect is not just a tool – it's a partner in farming success, dedicated to making the lives of farmers easier and the future of farming brighter.

Future Work

- In the future, KisanKonnect envisions expanding its capabilities to provide even greater support to farmers across the agricultural cycle. One significant improvement involves implementing real-time image processing to enhance disease detection, thereby reducing crop losses. By analyzing images of plants, KisanKonnect can swiftly identify signs of diseases, enabling farmers to take prompt action to protect their crops.
- Moreover, KisanKonnect plans to integrate a chatbot into its platform, offering farmers immediate assistance, personalized recommendations, and around-the-clock support. This chatbot will serve as a virtual assistant, providing farmers with valuable insights and guidance while also gathering feedback to continuously improve KisanKonnect's services.
- Furthermore, KisanKonnect aims to extend its services beyond crop management to include guidance on animal husbandry practices. By offering advice on raising and caring for animals such as cows and chickens, KisanKonnect seeks to support farmers in diversifying their agricultural activities and maximizing their productivity.
- Additionally, KisanKonnect will introduce post-harvest management features to assist farmers in handling and storing their produce efficiently. This initiative aims to minimize food wastage and ensure that farmers can preserve their harvests effectively, contributing to improved food security and economic sustainability.
- In essence, KisanKonnect remains committed to innovation, continuously striving to empower farmers with the tools and knowledge they need to adopt sustainable practices throughout the agricultural process. By embracing advancements in technology and expanding its range of services, KisanKonnect endeavors to become an indispensable partner to farmers worldwide, fostering resilience and prosperity in agricultural communities.

Appendix

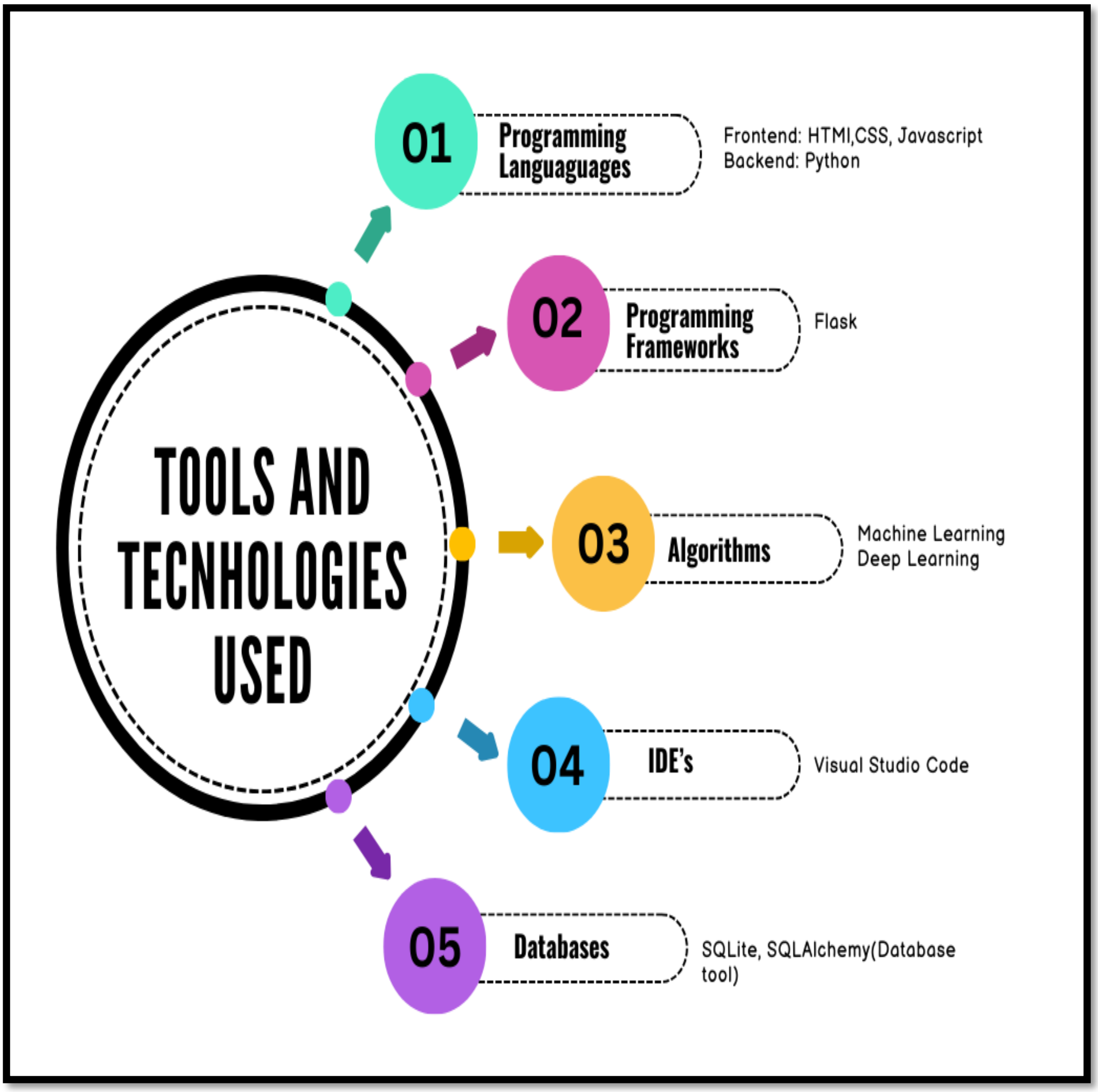


Figure a – Tools and Technologies Used

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Schedule for Mini-project

Date	Week	Contents	Remark	Guide Sign
	1	Literature Survey		
	2	Topic Selection		
	3	Further Literature Review		
	4	Design		
	5	Implementation		

Examiner's Feedback Form

Name of External examiner:____

College of External examiner:______________________________________

Name of Internal examiner:____

Date of Examination:_____/____/________

No. of students in project team:

Availability of separate lab for the project: Yes / No

Student Performance Analysis (Put Tick as per your Observation)

Excellent (3)	Very Good (2)	Good (1)		
Sr. No.	**Observation**	**(3)**	**(2)**	**(1)**
1	Quality of problem and Clarity			
2	Innovativeness in solutions			
3	Cost effectiveness and Societal impact			
4	Full functioning of working model as per stated requirements			
5	Effective use of skill sets			
6	Effective use of standard engineering norms			
7	Contribution of an individual's as member or leader			
8	Clarity in written and oral communication			
9	Overall performance			

- Can the same mini project extend to next semester by adding new objectives/ideas? (Yes/ No)
- If yes, suggest new Innovative Technique/Idea/ objectives related to this project.

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Signature of External Examiner **Signature of Internal Examiner**