Department of Computer Science & Engineering

Artificial Intelligence & Machine Learning

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UNIVERSITY OF MUMBAI

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Team

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AgriforcastAI

A Flutter Based Farm Froecasting Application

Introduction

Agroforecast AI is an AI-powered farm forecasting system designed to tackle challenges like climate change, crop diseases, and market fluctuations. Traditional farming relies on manual observation, leading to inefficiencies. By integrating machine learning, real-time weather APIs, and agricultural news, Agroforecast AI provides data-driven insights for better decision-making. Built with Flutter, it ensures cross-platform accessibility for farmers, enhancing productivity, sustainability, and resource optimization in modern agriculture.

AgrocastAI: Farm Forecast App

Problem Statement

In recent times, farmers are facing various challenges such as crop diseases, unpredictable weather patterns, and uncertain markets. This results in low crop yield and financial losses for farmers. To address these challenges, DigiFarmer aims to provide farmers with a tool that can help them make informed decisions related to crop quality, disease detection, and other related factors.

Objective

To develop a comprehensive digital tool that empowers farmers with actionable insights for improving crop quality, detecting diseases, and optimizing farming practices, thereby enhancing agricultural productivity and financial sustainability.

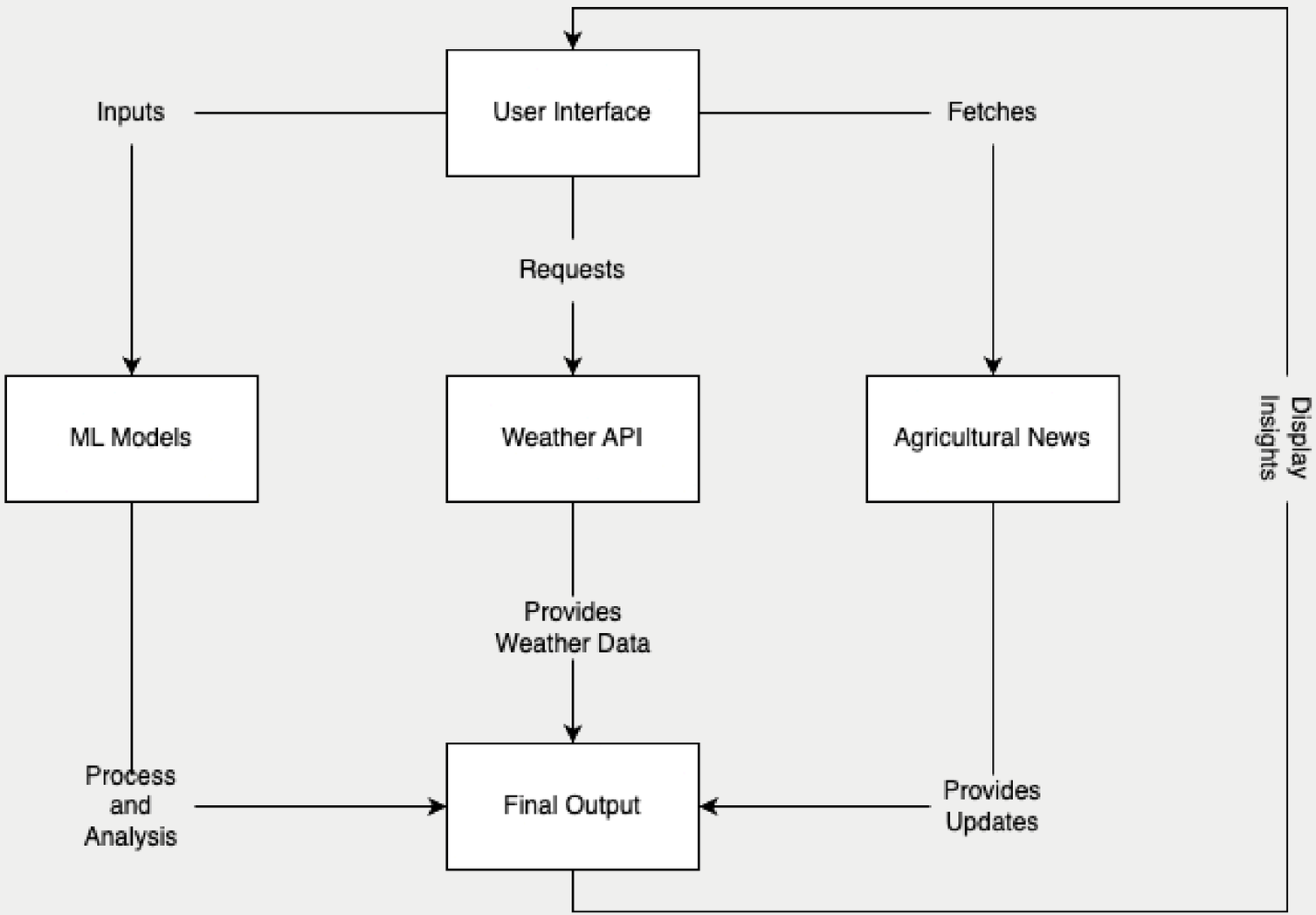
Literature Survey of the Existing System

Year	Title	Authors	Key Focus
2024	AI-Powered Mobile Apps for Smart Farming	R. Gupta, S. Mehta	Examines AI-based farming applications using machine learning, image processing, and weather prediction.
2023	Machine Learning in Precision Agriculture	A. Singh, P. Kumar	Discusses the use of deep learning models for crop yield prediction and disease detection.
2023	AI in Agriculture: A Systematic Review	J. Zha, K. Brown	Highlights the impact of computer vision and cloud computing in farm automation and real-time analysis.
2021	Deep Learning for Plant Disease Detection	X. Li, Y. Chen	Uses CNN models to classify crop diseases through image recognition.
2020	AI-Driven Weather Forecasting for Agriculture	B. Wilson, R. Kumar	Implements AI-based climate prediction models to assist farmers in irrigation planning.
2019	AI-Based Decision Support Systems for Farmers	D. Lee, S. Banerjee	Develops AI-powered advisory systems for fertilizer recommendations and crop rotation strategies.

Limitations of the Existing System

Category	Limitation	Impact
High Cost	Many systems rely on IoT sensors, drones, and satellite imagery, making them expensive for small-scale farmers.	Limited adoption in developing regions due to high infrastructure costs.
Internet Dependency	Most AI solutions require cloud connectivity for real-time data processing.	Ineffective in rural areas with poor network coverage.
Data Localization	AI models are often trained on global datasets, leading to less accurate predictions for region-specific crops and climates.	Farmers receive non-optimized recommendations, reducing system effectiveness.
Limited Offline Access	Many solutions fail to function without internet, making them unreliable in remote areas.	Farmers cannot access critical insights during connectivity issues.
Accuracy Issues	Some AI models provide inconsistent disease detection and yield predictions due to low-quality training data.	Leads to misguided farming decisions, affecting productivity.

Block Diagram



Tech Stack

1. Flutter
2. Dart
3. Tensorflow Lite
4. LGBM Classifier

Implementation

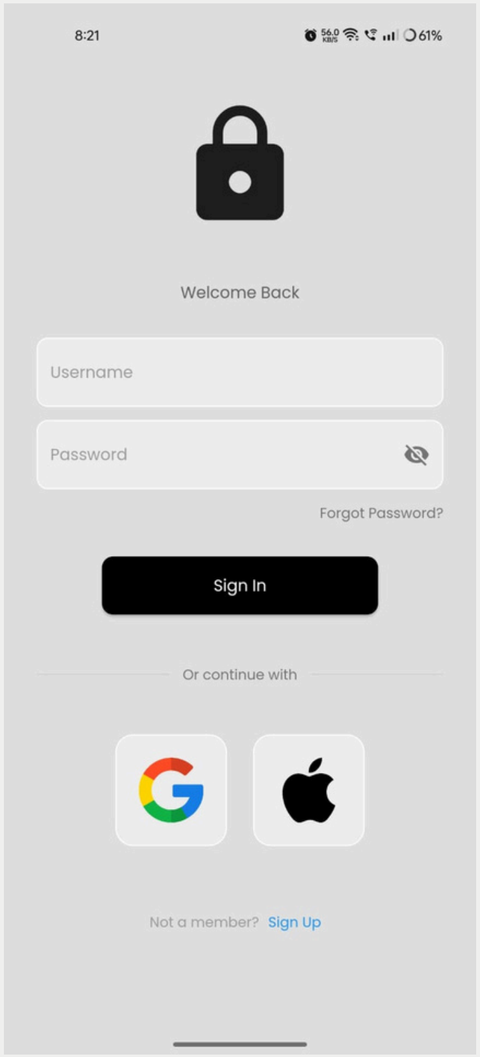


Fig.1 Login Page

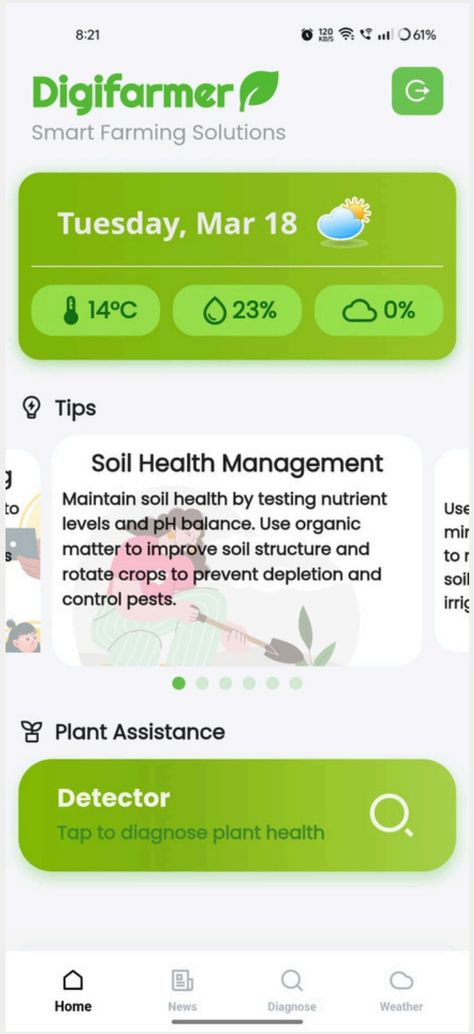


Fig.2 User Interface

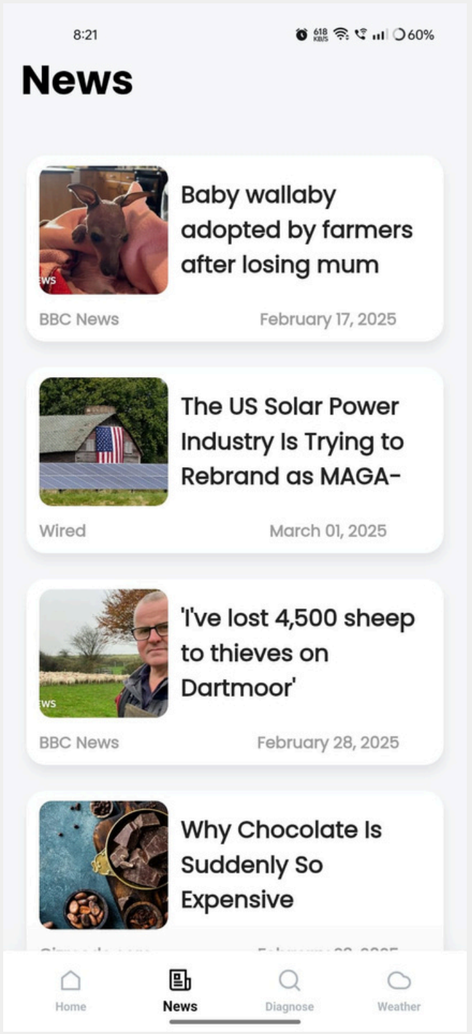


Fig.3 News Update

Implementation

Fig.4 Plant Health Identification

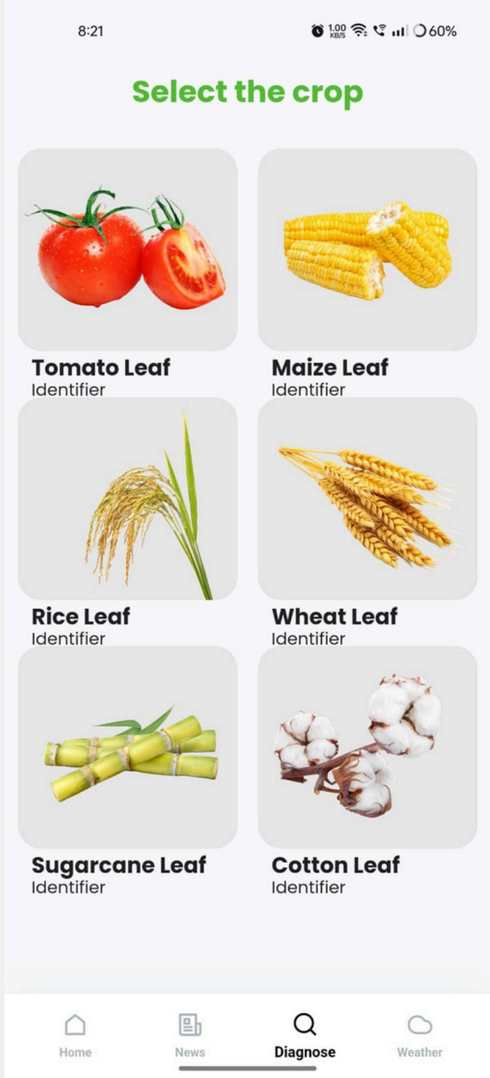


Fig.5 Crop Health UI1

Fig.6 Weather Forecast

Conclusion

Existing AI-based agricultural systems improve crop monitoring and yield prediction but face high costs, internet dependency, and limited offline access. Agroforecast AI overcomes these challenges with a cost-effective, offline-capable, and user-friendly solution, making precision farming accessible and efficient for all farmers.

References

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Thank you!

Have
a good
weekend!