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Namma Raitha: A Mobile Application for Direct Market Access and Fair Pricing for Farmers

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Abstract—The article introduces *Namma Raitha*, a mobile and website which reduces the middlemen between the farmer and retailer in order to provide direct market access and mutual profit for both farmer and retailer by providing the best price. The app has two types of user roles, farmer and retailer. Farmers can add specific crops and see dynamic price recommendations which are provided using “the” API key “Commodity daily market prices data by variety” from data.gov.in, which is taken from local markets, with a +5 rs profit margin. The weather API is added for the farmer role so that the farmer can analyze the weather and take decisions. Soil-test data (N,P,K and pH levels) is used for crop recommendation, including weather, humidity, and rain so it can help the farmer make profit. Image based plant disease detection is added so the farmer can predict the disease so he can reduce the loss in time and take care of plants. Retailers can view crops added by various farmers, add to cart, negotiate for the best price, order through a dummy payment option, and view their order and track orders. The app also includes multilingual labels in English, Kannada, Telugu, Tamil, Telugu, and Hindi to make it easier for farmers and retailers to use in their native language. With real time market data price and interactive negotiation, *Namma Raitha* provides transparent, efficient, and profit’s in Agriculture Supply Chain.

Index Terms—*Namma Raitha*, Direct Market Access, Farmers, Retailers, Dynamic Pricing, Weather API, Crop Recommendation, Agricultural Supply Chain.

I. INTRODUCTION

In many developing countries, farmers often face many problems in selling their crops. They usually do not get fair prices because their access to the market is limited and there are too many middlemen between the farmer and the customer or retailer. Middlemen frequently buy crops from farmers at low prices and sell them at a high profit, diminishing farmer earnings and disrupting the supply chain when farmers are removed from the direct relationship with retailers [1]–[4]. Digital technology through online platforms can link farmers and retailers directly, which has been done successfully with phone applications. Phone applications provide transparency into market prices while ensuring farmers gain access to the market [2], [5]–[9]. *Namma Raitha*, an Android phone application, serves this purpose by directly linking farmers and retailers. Farmers can enter crop information and receive suggested prices that are current for the closest market available as price options on the app. In addition, there is a picture-based disease detection feature on the app that uses deep learning

models to help farmers discover crops disease in the early stages of the disease process [10]–[12]. The system proposes crops using data on soil conditions and weather. Retailers can view the crops being sold by farmers, communicate with farmers through the app and reach agreements on price and order the crops. The app works in several languages: English, Kannada, Telugu, Tamil, and Hindi—allowing it to be used easily by people from different regions. *Namma Raitha* provides updated market data, transparent pricing, and effortless communication, bringing transparency and efficiency to crop trading and benefiting farmers and retailers alike. *Namma Raitha* builds trust between farmers and retailers and supports a fair and up-to-date agricultural system. [1]–[12]

A. Contribution

This main contributions of this project are :-

- **Direct Farmer–Retailer Connectivity:** The system removes the need of middlemen and creates a platform so the farmers can directly sell the crops to retailers.
- **Dynamic Price Recommendation:** The platform suggests the fair prices using the nearest market to the farmers location promotes transparency and fair pricing.
- **Predictive Intelligence:** The app uses an AI model for image-based disease detection and provides crop recommendations, helping farmers to select suitable crops based on soil nutrients (N, P, K, and pH levels) and local climate conditions.
- **Negotiation and Order Management:** The app provides real time negotiation between farmer and retailer through chat and makes it easier to place orders and track transactions.
- **Multilingual Accessibility:** The app label is available in many languages so that more users can use it without difficulty.

Overall, *Namma Raitha* gives farmers the right information and connects them directly to markets, making fairer, faster and more profitable

II. RELATED WORK / MOTIVATION

Many mobile apps have been made to give farmers direct access to markets. These apps help reduce middlemen and increase profits for both farmers and retailers. Kishan et al.

[1] created a mobile app that connects farmers and retailers, allowing them to list crops and sell directly. In the same way, Bhavani et al. [2] and Tati et al. [3] created apps showing farmers local market prices, transport, and fertilizer options. Sughasini et al. [4] and Gomez et al. [5] expanded on this by adding crop monitoring and data insights. Mwakalinga et al. [6] built a system for Tanzanian farmers that works on different platforms. Other projects used Flutter and Firebase [7] or Android apps in local languages [8], [9], showing that easy-to-use tools for farmers are needed globally.

Machine learning is also used to suggest crops and spot plant diseases. Some work uses light CNN models [10] or deep learning [11] to find plant diseases with some success. Also, PDSE-Lite [12] uses few-shot learning to guess how bad a disease is.

Most current resources don't combine key things in one place: real-time market prices, machine learning disease finding, live weather, fair prices, and support for many languages. Our app aims to fix this by putting all these things together to aid farmers and make trading better.

III. RESEARCH AFFILIATION AND LAB SUPPORT

The *Namma Raitha* project is linked with **Presidency University, Bengaluru**, and works with different research labs in the Department of Computer Science and Engineering.

A. Bio-intelligence Lab (AI/ML/DL)

This lab studies smart computer systems like Artificial Intelligence and Machine Learning. It helps the project by using these tools to predict plant diseases from images, suggest good crops to grow, and make useful predictions from data.

B. Vision and Learning Lab (Image Processing)

This lab works on computer vision. It helps the project by giving ideas for finding crop diseases using images and improving other picture-based tools for farming.

IV. SYSTEM ARCHITECTURE & METHODOLOGY

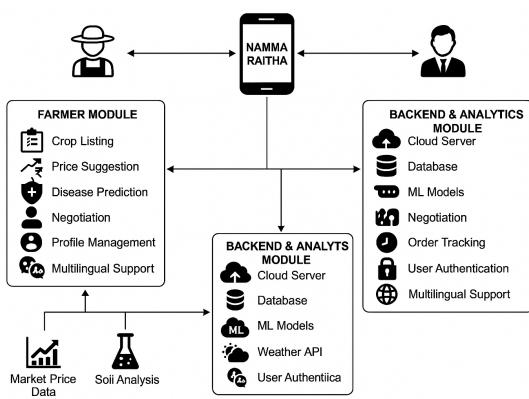


Fig. 1. System Architecture and Methodology of the Namma Raitha App

The *Namma Raitha* mobile app is a platform where farmers and retailers connect. It provides real-time crop prices, and

chat form of negotiation. The system includes three main modules..

A. Farmer Module

The unit of work permits agriculturists to insert and modify details of their crops, ascertain prices using local market data, and get the benefit of consultation by analysis of the soil test results (N, P, K, and pH). It also offers image-based disease prediction utilizing CNN models [10]–[12], price negotiation with retailers, earnings tracking, profile management, and supports multi-language (English, Kannada, Tamil, Telugu, Hindi).

B. Retailer Module

Retailers are given the chance to examine the goods of the farmers and add the necessary items to the cart, negotiate prices, place orders, and check the delivery status. A dummy payment system is incorporated to enable the simulation of transactions for the sake of the demonstration.

C. Backend & Analytics Module

The backend has database, and machine learning models. Market prices are from official data sources (data.gov.in) and live weather updates are taken from weather APIs. The app uses CNN and combined models to predict crop diseases[11]–[12].

D. Workflow

First, farmers add information about their crops. The backend gets market and weather data, soil suggestions, and checks for crop diseases. Retailers can then use the system to view crops, discuss prices, and place their orders. This platform is different from other apps because it includes smart pricing, location features, data-based predictions, and support for multiple languages [1]–[9].

V. IMPLEMENTATION FEATURES

The *Namma Raitha* app uses React Native (Expo) for the frontend. The backend is built with FastAPI (Python) to run AI models. Data entry and retrieval happen using JavaScript code inside the React Native app. Supabase is used for authentication, database storage, and media management. This makes the app secure, fast, and easy for farmers and retailers to communicate [1], [2], [7].

A. Farmer Module

The Farmer Module allow users to add crops with details such as name, quantity, and images. A dynamic pricing system fetches commodity data from data.gov.in and recommends a fair price with a 5 rs margin [3], [4]. Farmers can access real-time weather updates, receive soil-based crop recommendations using Kaggle datasets (N, P, K, pH) [2],[8], and identify plant diseases through a CNN-based model [10]–[12]. The module also includes features for negotiation, earnings tracking, and profile management.

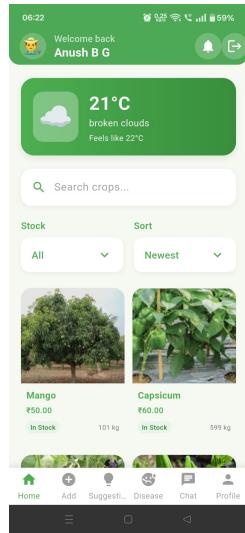


Fig. 2. Farmer Dashboard

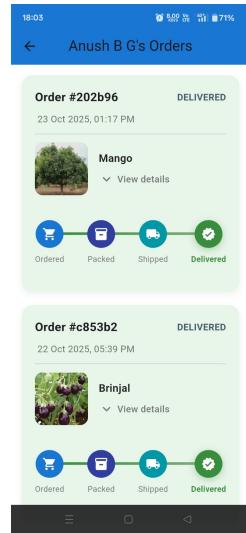


Fig. 4. Order Screen

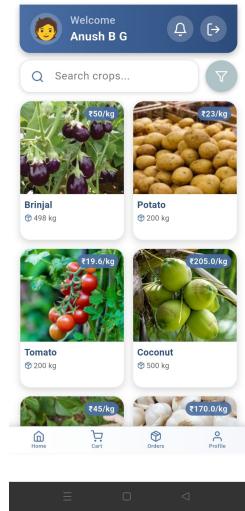


Fig. 3. Retailer Dashboard

B. Retailer Module

The Retailer Module allows searching for crops, adding items to a cart, negotiating prices, and placing orders using a dummy payment system. Retailers can also track orders and transactions through a their dashboard [1], [5], [7].

C. Multilingual and System Support

This software caters to users in five languages, namely English, Kannada, Tamil, Telugu, and Hindi."

User-specific experiences are tailored by keeping their preferences in the profiles.

The app makes use of updated data and API calls to make sure users always see the latest information. This helps to save time and build trust among users.

The Namma Raitha app adds market data, weather information, and machine learning so that farmers can get fair prices for the crops.

VI. RESULTS EVALUATION

The success of Namma Raitha was tested using system checks, model testing, and API speed tests. These tests check the app's accuracy, speed, and ease of use.

A. Model Performance

The CNN model for the prediction of plant disease was built based on the Kaggle "New Plant Diseases Dataset", which contains 38 different kinds of diseases. The model reached a performance level of 98 percent by using data augmentation and dropout layers. Adding extra layers made the model more accurate and reduced overfitting[10]-[12]. It is able to make a diagnosis in approximately 0.8 seconds with a typical smartphone; hence, the model can be regarded as a mobile device-friendly model.

B. System and API Efficiency

In all, the average length of the FastAPI endpoints is about 10 seconds, which is the time they take to return market data to users. The Supabase query times during local tests are under 250 milliseconds, hence allowing real-time interaction and the system to be scalable[1],[2],[7].

C. User Experience

The app allows farmers and retailers to negotiate directly, supports multiple languages, and gives dynamic price suggestions[8][9]. These features make it easier for people from different regions to use and benefit from the app.

D. Comparative Summary

Compared to other farming apps[1],[2], Namma Raitha is the first to bring together location-based pricing, disease detection, soil suggestions, and real-time weather updates in one platform, helping farmers make better decisions and increasing transparency.

VII. CONCLUSION & FUTURE WORK

This paper introduces *Namma Raitha*, an app that connects farmers and retailers by providing direct market access, fair pricing and predictive analytics. The platform includes location-based market prices, crop recommendation , real-time weather information, and image-based disease prediction using CNN models.Multilingual support provides access for users who speak different languages.Negotiation and order-tracting features improves user interaction and promote transparency in transactions.With this real-time data processing and modular structure, the application enables farmers to make best decisions . It also improves the efficiency in agricultural transactions and reduces farmers' dependency on middlemen.

In future development, the platform can be improved by iterating real-time IoT-based crop and soil monitoring, advances crop yield forecasting models. User tests and field trials can be carried out to evaluate how efficient the app is to use, how many people adopt it, and how it affects the farmer's income.Adding features for farmers' and retailers' transport and supply management can make the system work more smoothly and efficiently.Ultimately, these improvements will support the long-term digital transformation the agricultural ecosystem.

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