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Plant Leaf Disease Detection in Android

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ABSTRACT: In agriculture, early ailment identification is vital for a productive crop manufacturing. Ailments which include bacterial spot, late blight, sectorial leaf spot, and yellow curved leaf the exceptional of the tomato harvest. Computerized classification strategies of plant sicknesses additionally assist in taking movement as soon as they're determined diseased leaf signs and symptoms Prescented under is a Convolutional studying Vector Quantization and Neural community (CNN) model technique for detecting tomato leaf disease based on the (LVQ) algorithm and categorization. There are 500 tomato photographs in the dataset. leaves that show 4 sickness signs. We created a version of CNN for characteristic extraction and categorization routinely. coloration studies on plant leaf sicknesses actively makes use of statistics. In our version, 3 channels based on RGB are subjected to filters.

I. INTRODUCTION

Plant diseases represent a significant threat to agricultural productivity and require advanced techniques for early detection and accurate classification. Ananthi and Vishnu Varthini's research explores the landscape of plant leaf disease detection and highlights the importance of robust classification techniques. Additionally, the introduction includes insights from Robert Krutsch and David Tenorio's work on histogram equalization, which plays a key role in improving image quality, a key aspect of disease detection. Plant diseases impact plant growth and agricultural productivity impact agriculture in a social, ecological and economic sense. Recent research on foliar diseases shows how they damage vegetation Plant foliar diseases also result in significant financial losses for farmers, so special attention should be paid to early disease identification. Plant diseases are studied in the literature, which emphasizes mainly biological problems. They make predictions based on the apparent surface of the plants and go. Early diagnosis of the disease is important for proper treatment. Discovery is usually performed by human professionals. Human experts visualize diseases, although they encounter several problems that could undermine their work. In this situation, recognition and categorization of diseases. Using edge detection and machine learning, leaf diseases are detected in their early stages. The model, which helps in making informed decisions about diseases, was trained using machine learning techniques. The user is advised to use insecticide as a remedy for infectious disorders to control them. The proposed system can be improved by including new features such as list of pesticides and fertilizers, location of stores near the user, list of pesticides and fertilizers, real-time interaction with video or chat with agricultural specialists, etc. Build and deploy the model, the implementation is divided into two parts. The first part is to create a REST API model and the second part is to integrate it into the application

II. LITERATURE REVIEW

Literature Survey on Plant Disease Analysis:

1.Introduction Overview of the importance of plant disease analysis in agriculture. The importance of early diagnosis a nd correct diagnosis in disease control. A brief description of the purpose of the research data.
2. History and Evolution A historical look at the diagnostic process. The transition from manual analysis to modern tec hnology has brought about significant progress and progress in the field.
3. Diagnostic Procedures A traditional diagnostic procedure such as visual examination and diagnosis based on sympto ms. Limitations and problems with a diagnostic procedure are always there.
4. Development of technology in plant disease analysis, image processing technology for plant disease diagnosis, comp uter vision algorithm and its application in disease diagnosis, training machine and artificial intelligence-

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based automatic diagnosis model.
5. Collection of data and information Data on plant disease data for education and practice Characteristics and issues rel ated to obtaining only reliable data.
6. Case Studies and Applications Review of important case studies using image processing and machine learning for di sease detection. Use of this technology in real agriculture.
7. Challenges and future directions Discuss current problems in plant disease analysis Identify pontial areas for improve ment and research directions for technological advances needed to make it more accurate and more powerful.
8. Comparison of methods Comparative analysis of different methods in terms of accuracy, efficiency and scalability A dvantages and disadvantages of different methods.

III. METHODOLOGY

1. Data Collection Dataset Description: Explain the datasets used for training, validation and testing. Data Sources: Enter the sources from which the datasets were obtained (public repositories, field samples, etc.). Data Preprocessing: Describe any preprocessing steps applied to the raw data (image enhancement, noise reduction, etc.).

2. Image Capture and Processing Image Capture: Explain the process of capturing images of plants, including the equipment used by smartphone cameras. Image Processing Techniques: Describe the image processing methods used (segmentation, feature extraction, etc.) to prepare images for analysis.

3. Feature Extraction Feature Selection: Explain the selected features used for disease identification (shape, color, texture, etc.). Feature Construction: Describe any transformation or manipulation of features to optimize model performance.

4. Model development Machine learning algorithms: Specify the machine learning models used (CNN, SVM, etc.) and the reasons for their selection. Training and Validation: Describe the training procedure, hyperparameter tuning, and validation techniques used. Evaluation metrics: Explain the metrics used to evaluate model performance (accuracy, precision, recall, F1 score, etc.).

5. Implementation software and tools: List the software frameworks and programming languages used (Python, TensorFlow, etc.). Platform Development: Describe the development environment (Android Studio, mobile app integration, etc.) and implementation of analytics for practical use.

6. Experimental design Experimental setup: Explain the experimental conditions (cross-validation, test scenarios, etc.) and any control groups used. Performance evaluation: Detail the performance evaluation methodology of the developed application.

7. Ethical Considerations Privacy and Consent: Discuss the ethical aspects of data collection, use and user consent in the application.

8. Limitations of Scope: Address any limitations or restrictions encountered during the methodology.

9. Assumptions: Highlight any assumptions made during the study.

10. Methods of validation and reliability: Explain how the reliability and validity of the results was ensured.

11. Description of reproducibility: Provide detailed instructions or references that will allow reproduction of study results.

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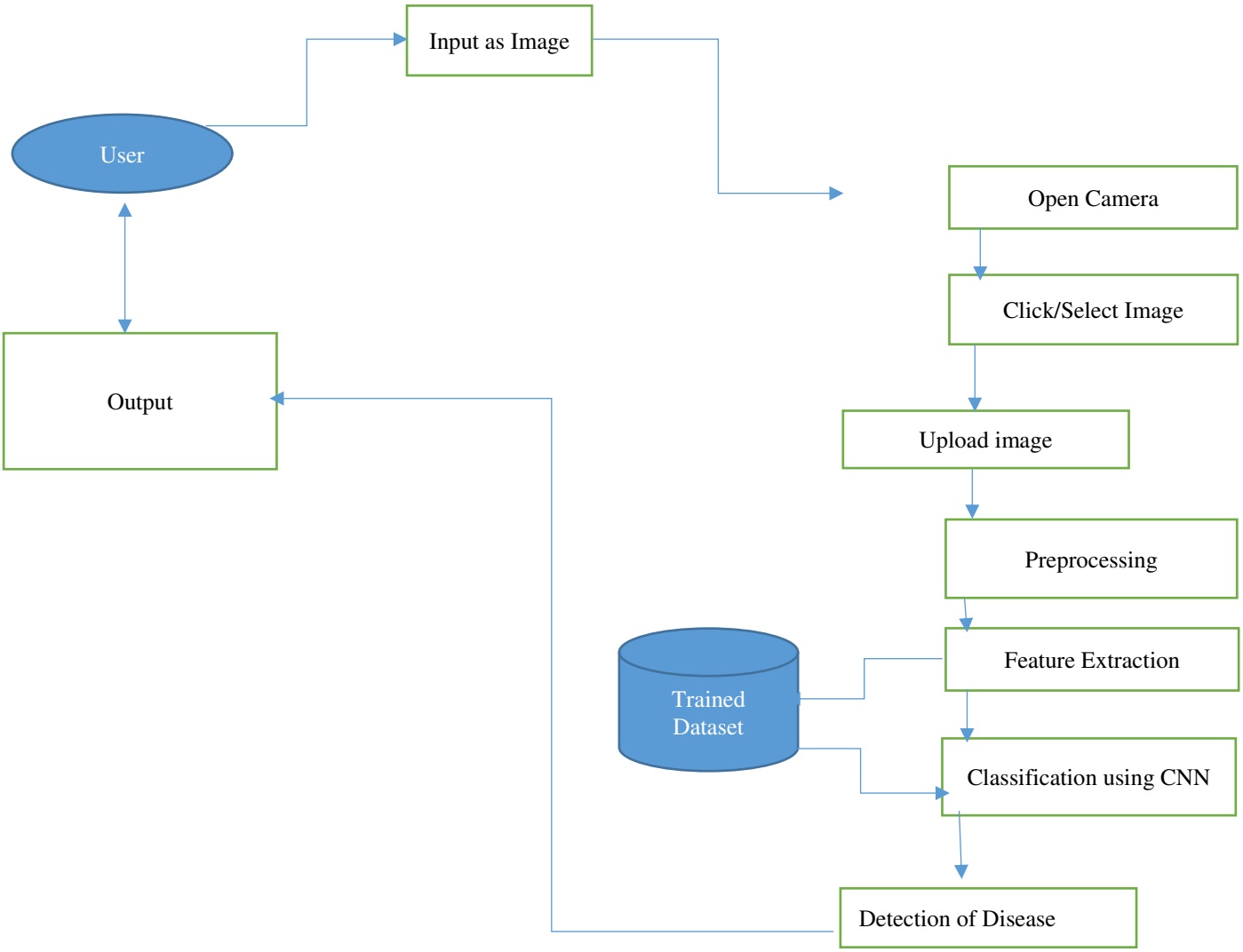
IV. SYSTEM ARCHITECTURE



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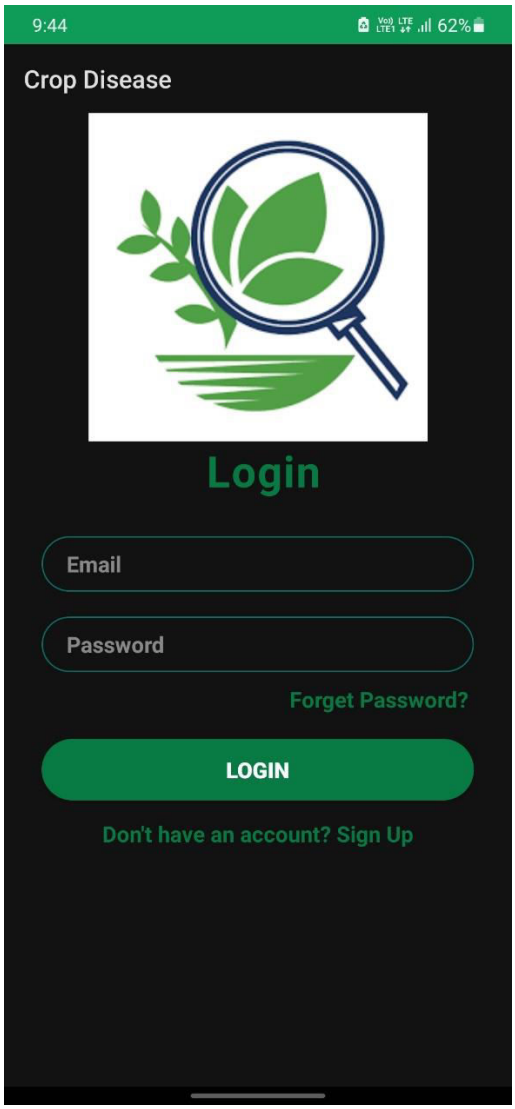
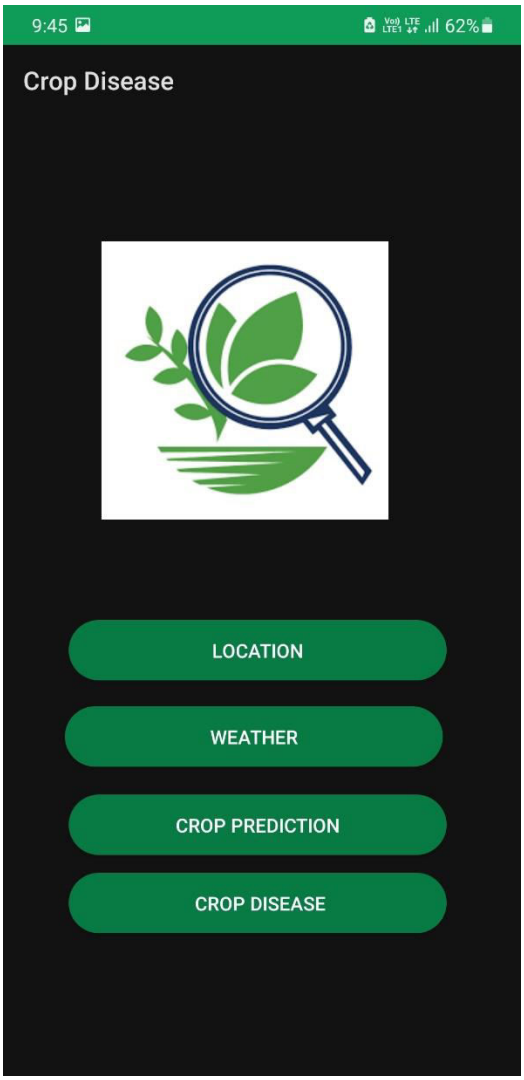
V. RESULT



Login Page



Home Page

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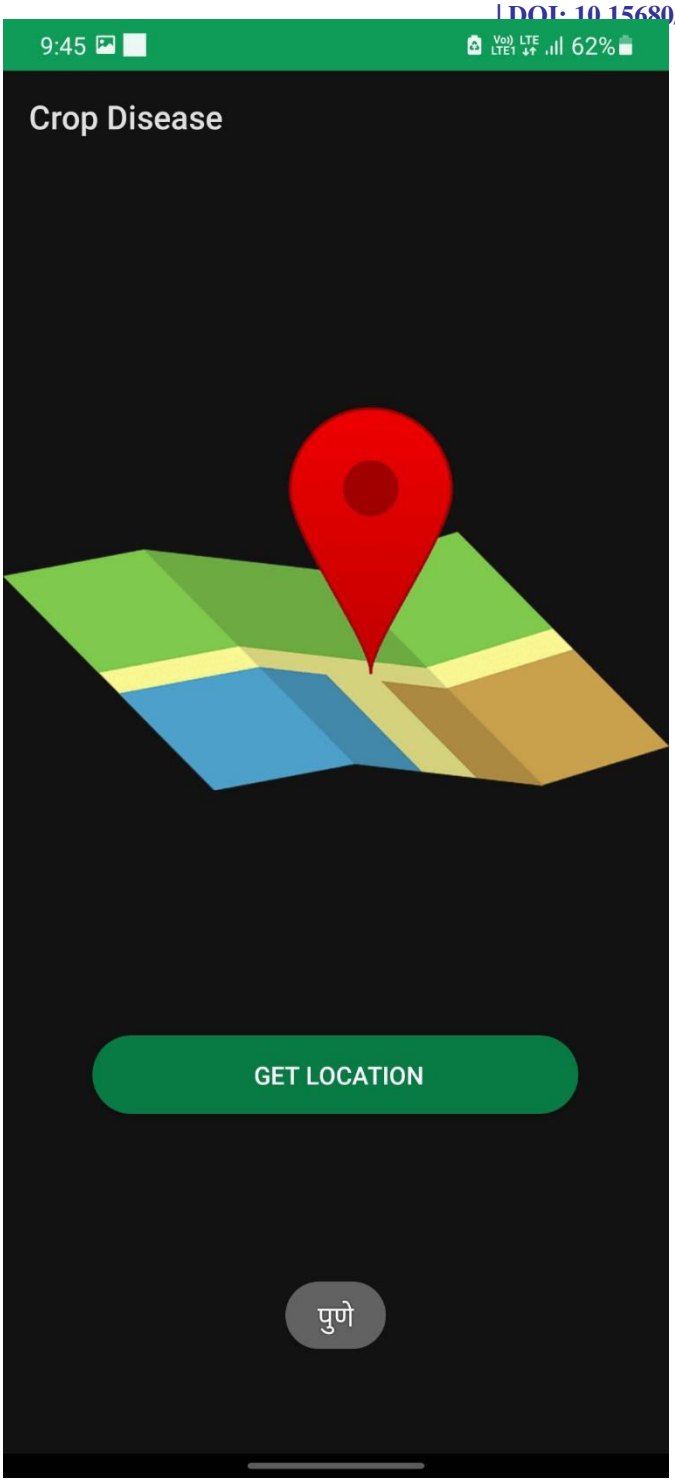

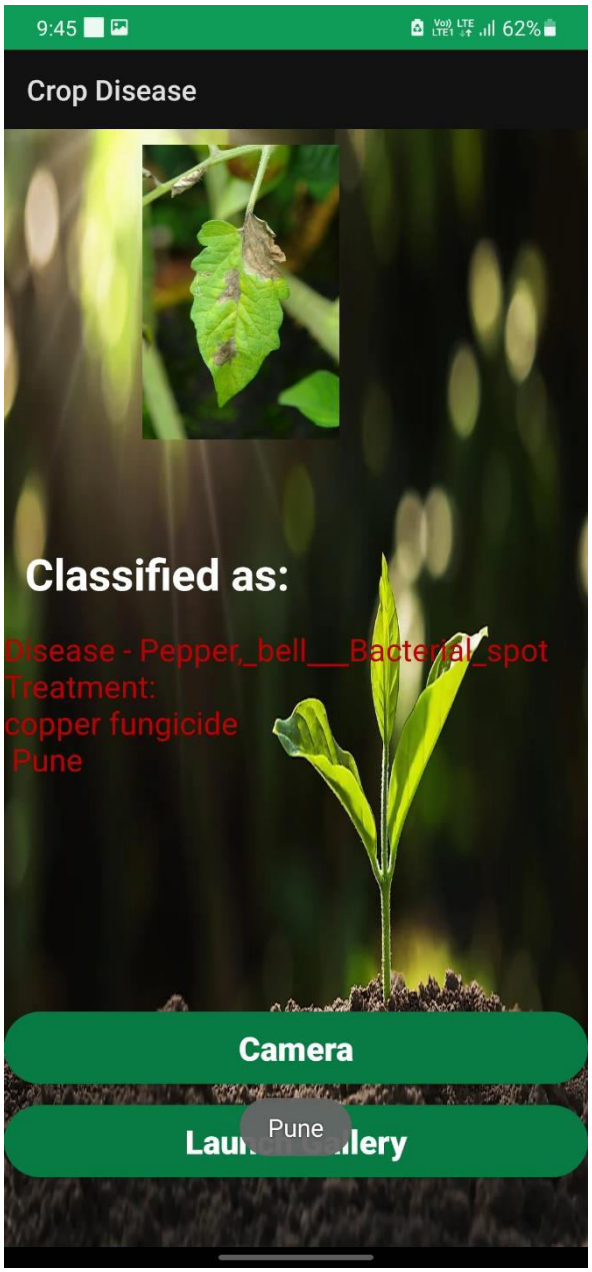

Location Page **Disease Detection Page**

VI. CONCLUSION

Grayscale images are easier to analyze and execute for a variety of applications since they are more clear and well-suited for analysis than RGB images, according to the report The usage of histogram equalization improves the contrast

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of the images and gives the human eye a crisp image. Histogram Using equalization, improved image quality can be obtained by using grayscale for different medical uses, biological uses like plant leaves digital X-rays for illness, etc. In light of this, these kinds of imagery will examination and diagnosis of plant leaf disease. determines the plant leaves' amount of illness.

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