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Abstract: ***The total number of people has been exponentially growing, and it is predicted that by the middle of 2030, there will be 8.6 billion people on the planet. Due to the enormous growth in population, there will be an increase in both food production and consumption. Crop diseases that harm agricultural products as they grow are the main threat to food security.***
Due to the lack of adequate infrastructure, it is still difficult to quickly identify crop-damaging diseases in several parts of India. By utilizing the app to take crop photographs and analyze. the presence or absence of illnesses, the farmer can have a solution which is workable.
Farmers now have a diverse array of crops on their land. Additionally, they aim to expand the variety of crops they grow on their farm. Because they don't foresee crop illnesses at an early stage, farmers with this kind of "Experimental farming" mentality occasionally incur significant losses. They now find it more costly to draw lessons from the past.
The purpose of this article is to examine the requirement for an electronic expert system (android app) that enables farmers to make wise decisions and enhance their farming operations without incurring significant losses.
The suggested system employs an innovative method of object detection to identify plant diseases, which significantly improves the speed and precision of disease detection on leaves. We have utilized CNN models to detect diseases. The CNN model is more accurate than other models in the market. In the suggested approach, we identify whether crops are infected or not, and if they are, the user will be informed and can take appropriate action if the crop is sick.
Keywords: Plant Disease Prediction, Farmer, crop,

I. INTRODUCTION

According to our survey in some villages and city; more than 70 percent farmer heists to try new kind of crops instead of their traditional crops because they don't have required knowledge or experience. There are other instances where new crops are tried, but they are severely harmed by diseases, nutrient deficiencies, or other factors. several of the farmers in the area invest in farming based more on experience than on proper understanding. Additionally, make selections based on ocular inspection of plants. However, this necessitates ongoing assessment of expertise, which in huge farms could be too expensive.

Additionally, in some regions, farmers may need to travel a great distance to reach specialists (agricultural officers of panchayat samiti or zilla parishad), making the cost and time of expert consultation excessively high. The automatic diagnosis of plant illnesses from the symptoms that occur on the plant leaves is an interesting study area since it may prove advantageous in monitoring vast fields of crops. This makes machine vision possible, which will allow for image-based process control, robot navigation, and autonomous inspection. The process of diagnosing plant diseases by optically seeing their symptoms on plant leaves is extremely difficult.

Even seasoned agronomists and plant pathologists frequently struggle to accurately diagnose specific diseases, which leads them to draw incorrect conclusions and administer incorrect treatments, because of this complexity, there are vast number of cultivated plants, and their Phyto pathological issues. Agronomists who are requested to make these diagnoses through the optical examination of diseased plants' leaves would benefit greatly from the development of an automated computational system for the identification and diagnosis of plant diseases. Farmers in regions of the world without the necessary infrastructure for the provision of agronomic and Phyto pathological advice may find the system to be a useful tool if it was simple to use and available through a straightforward mobile application. Additionally, the system might be used in conjunction with autonomous agricultural tractors in the case of large-scale cultivations to find Phyto pathological issues precisely and quickly across the cultivation field via continuous image collecting. All of these are, of course, true provided that the system can detect and diagnosing certain diseases in real-world settings (i.e., a cultivation field) and that it can be used in conjunction with a suitable, simple-to-use mobile application.

II. LITERATURE REVIEW

Konstantinos P. Ferentinos. “Deep learning models for plant disease detection and diagnosis”. Computers and Electronics in Agriculture [4]. In this article they have implemented CNN Model for disease detection and diagnosis.

Alam, Mohammad Jahangir, Md Abdul Awal, and Md Nurul Mustafa. "Crop disease detection and solution system." International Journal of Electrical and Computer Engineering [2]. In this article an Android app is developed to predict the plant disease and give a solution for the disease. The BRISK algorithm is used to detect disease in plants.

Z. Doshi, S. Nadkarni, R. Agrawal and N. Shah. "AgroConsultant: Intelligent Crop Recommendation System Using Machine Learning Algorithms". International Conference on Computing Communication Control and Automation (ICCUBEA) [6]. In this article they have compared the accuracy of 4 different algorithms i.e., Decision tree, K-NN, Random Forest and Neural Network. Rainfall prediction model is also implemented for helping the model to make better decision for crop recommendation.

S. M. PANDE, P. K. RAMESH, A. ANMOL, B. R. AISHWARYA, K. ROHILLA and K. SHAURYA. "Crop Recommender System Using Machine Learning Approach." 2021 5th International Conference on Computing Methodologies and Communication (ICCMC) [20]. In this paper they have used various Machine Learning algorithms, with a comparison of error rate and accuracy for predicting crop yield for specific region. They have developed an android application most profitable crop. A GPS based location identifier to retrieve the rainfall estimation at the given area. A recommender system to suggest the right time for using fertilizers.

Medar, R., Rajpurohit, V. S., & Shweta, S. (2019). "Crop Yield Prediction using Machine Learning Techniques." 2019 IEEE 5th International Conference for Convergence in Technology (I2CT) [18]. In this paper they have used two algorithms i.e. Naïve bayes and KNN to predict the crop yield. Naive Bayes is having high accuracy as compared to KNN

III. PROBLEM STATEMENT

The farmer should have greater production in the field, which he can do by routinely examining the crops for pests and illnesses. However, the main issue for farmers is that they are unable to spot infections in time. Even if they phone a helpline for farming professionals, the response time will be lengthy.

Therefore, to address this problem, we are developing an android application that will help farmers spot diseases using plant photographs that are provided to the application. Additionally, the app will be extended with prices of different crops of nearby mandis using API, rental options for farming equipment, and support for several regional farmers through its multilingual nature.

IV. CONCLUSIONS

We have successfully developed and implemented an intelligent crop recommendation system in this study that Indian farmers can utilize right away. The farmers would benefit from this system's help in making educated decisions about the types of diseases affecting their crops and possible treatments. Mandi Price, the ability to rent out equipment, and the ability to support many languages have also been included. Utilizing the methods outlined previously, the building of an electronic expert system for the identification of plant diseases affecting the leaves is accomplished with the inclusion of the other services outlined above.

V. ACKNOWLEDGMENT

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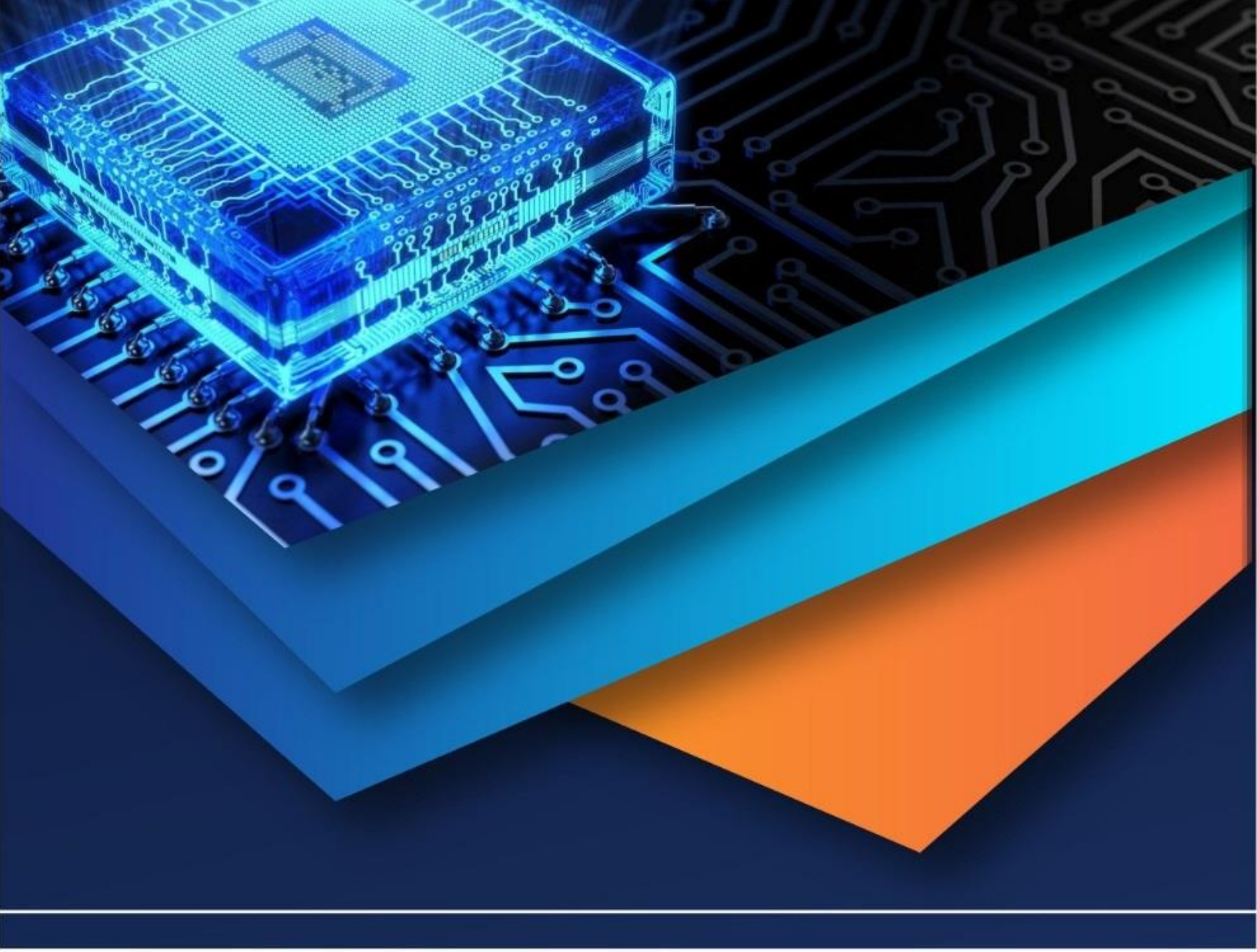

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