Value Creed

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Indian Society for Technical Education

present

TECHNICA 2024

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Problem Statement : In India, the increasing population and the alarming rate of famine affecting over 16% of the population highlight a pressing need for agricultural interventions. One major issue is the lack of accurate information available to farmers, leading to poor crop choices, low yields, and financial strain. This dire situation is evident in the high rate of farmer suicides, with over 300 occurring daily, often due to insufficient returns on their crops. Additionally, an integrated model is not available that provides solutions for these challenges,making the things even harder for farmers in making informed decisions and improving their livelihoods.

Proposed Solution : To address agricultural challenges in India, we plan to develop a comprehensive Machine Learning (ML) model. Our holistic approach aims to empower farmers with content and sustainable lives, optimizing farming practices and financial planning while contributing to increased agricultural output in India.

Crop Prediction: Utilizing advanced algorithms, it recommends suitable crops based on specific parameters, aiding inexperienced farmers in maximizing yield.

Pest and Disease Prediction: By analyzing historical data and real-time monitoring, this model forecasts threats to crops, enabling proactive measures to minimize losses.

Price Prediction: Forecasting market trends and prices for agricultural commodities empowers farmers to strategically plan production and negotiate better prices.

Personalized Fertilizer Recommendations: Tailored advice based on crop types and soil conditions enhances production efficiency.

Cost of Cultivation Estimation: Insights into input costs and potential returns help farmers make informed decisions, avoiding debt cycles.

Tech Stack Used :

1. **Android App** – Kotlin, Android Studio, Rest Apis, XML, Firebase
2. **Backend** – Flask, Open AI, Hugging Model
3. **ML** – Python, Numpy, Pandas, Regression Models, Random Forest, Decision Tree, Classification Models, Sklearn, Seaborn, Matplotlib, YOLO v8, TensorFlow, OpenCV
4. **Datasets** – Kaggle, Roboflow
5. **UI-UX** – Figma

Future Prospect :

Chatbot Development: Implement a virtual assistant chatbot for real-time agricultural support.

Collaboration with Agricultural Institutes and Businesses: Partner with institutes and businesses for farmers to access competitive prices on pesticides, fertilizers, and tools.

Integration with Government and Vendors: Integrate with the Government of India and vendors to enable direct crop sales, ensuring seamless transactions.

Holistic Farming Support: Leverage technology for streamlined agricultural practices, enhancing profitability.

Ecosystem Enhancement: Foster collaborations among farmers, institutes, businesses, and government entities.

Empowerment and Revolutionization: Empower farmers through innovative solutions, revolutionizing the agricultural landscape.

THANK YOU!

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