AI Powered Crop Yield Prediction Modeling Environment Factors

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Abstract*: In this innovative project, we aim to revolutionize agriculture by harnessing advanced technology to empower farmers with predictive insights into crop yields even before the planting season begins. Our approach combines the analysis of soil data and images of the soil to develop a robust predictive model. By leveraging machine learning algorithms, we can decipher intricate patterns within the soil data and images, enabling accurate predictions of crop growth potential based on soil characteristics. This groundbreaking technology holds immense promise for optimizing farming practices, allowing farmers to make informed decisions regarding crop selection and yield expectations, ultimately leading to increased efficiency and productivity in food production. The foundation of our project lies in the comprehensive analysis of soil data, encompassing crucial parameters such as nutrient composition and moisture levels. Soil health plays a pivotal role in determining crop growth and yield, making it imperative to understand its characteristics thoroughly. Through advanced sensing technologies and data collection methods, we gather detailed information about the soil, providing a comprehensive dataset for analysis. By scrutinizing this data, our machine learning algorithms can discern meaningful patterns and correlations, thereby gaining insights into the soil's suitability for different crops. These images offer a visual representation of the soil's physical attributes, such as texture, structure, and moisture distribution. By integrating image analysis with soil data, we enrich the dataset and enhance the depth of our predictive model. Machine learning algorithms trained on this combined dataset can effectively interpret visual cues and extract valuable insights, contributing to more accurate predictions of crop yield potential.*

Keywords: Machine learning, Soil, Crop yield