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An intelligence-sustainable system preservation of agrobiodiversity hybrid crop seeds prediction and smart farming using deep learning-optimized techniques and augmented reality in computer vision

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Agriculture being the vital source of livelihood needs an efficient system for predicting the fine quality of seeds. Crop Seed forecasting is an important part of agriculture, determining seed performance depending on the condition of the soil, climate, and pest resistance. Predictions provide informed decision-making, improving all types of seeds selection, increasing yields, and decreasing waste. The research proposed methodology using Deep Learning, a type of computational learning, transforms agriculture by delivering accurate predictions of crop viability, embryonic perspective, and total yields. Algorithms such as ResNet50, RNN, CNN, and Deep RL with LSTM have great accuracy in predicting seed-related outcomes. The hybrid deep learning techniques approaches are used to predict the quality of the crop seeds, as well as an effective optimization algorithm. The proposed methodology deep learning and augmented reality to transform seed evaluation, allowing farmers to analyze seed potential in real-time utilizing smartphones or glasses with AR. This collaborative technique promotes making choices by integrating deep learning model findings onto actual images of seeds or fields. AR produces yield maps, which help in seed choices, density of planting decisions, and distributing resources. This reduces waste, increases resource efficiency, and provides environmental advantages. The sustainability of the proposed system is understood by the accuracy results obtained from the hybrid model that is each algorithm results in an accuracy result and based on which the algorithm with high efficiency is determined. The accuracy of the ResNet50 obtained was 88%, RNN with 92%, CNN with 93%, and the Deep Reinforcement Learning algorithm with accuracy of 98%. The algorithm with high accuracy agriculture crop yields and the proposed approach guarantees that quality - checked seeds are supplied to farmers and guide smart farming, while also utilizing digital marketing approaches to promote interest and achieve desired outcomes. Overall, these developments help to promote sustainable and efficient smart agriculture methods.

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