Enhancing Paddy Crop Quality through Object Detection Techniques

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Rice is a crucial staple crop globally, providing over half of humanity's caloric intake. It supports the livelihoods of small-scale farmers and landless laborers worldwide. With the growing population, there is a high demand for rice production. Sri Lanka is renowned for its high-quality rice and has a long history of paddy cultivation. However, not all the country's 708,000 hectares of land dedicated to paddy cultivation are utilized due to water scarcity and unstable terrain. The objective of this project is to enhance the quality of the paddy crop during its vegetative phase by early identification of diseases through the utilization of emerging technologies. The vegetative phase constitutes a critical stage in the growth of paddy, exerting significant influence on the overall yield, resistance to pests and diseases, nutrient assimilation, and the environmental implications of agricultural practices. The primary emphasis of this project is to identify diseases to which paddy crops are susceptible during the vegetative phase and subsequently present a visual representation of their locations on a map, serving as the output for end-users. Early identification of paddy diseases is crucial for effective crop management and high yields. These diseases, caused by different pathogens, can significantly hinder plant growth and productivity if not detected and treated promptly. Identifying them early allows farmers and experts to take timely and targeted actions, like applying suitable fungicides or implementing cultural practices, to control their spread and minimize crop damage.

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