Title: Rice Leaf Monitoring for DOSEPCO Using K-Nearest Neighbor

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EXECUTIVE SUMMARY

Agriculture plays a big role in our industry as it pertains to the food that the people eat on a daily basis. Rice is the staple food in Asia, particularly in the Philippines. Farmers are struggling very hard and trying to achieve high yield in their crops, but there are instances sometimes that the rice crops experienced a failure which leads to scarcity of food that we eat.

The Philippine government imports rice from another country to suffice the needs of the Filipino people. The Department of Agriculture is trying their very best to educate the farmers on how to improve the productivity of their rice crops.

There are so many possibilities that might affect the production of rice farming, like diseases, whether viral, bacterial and fungal diseases or could be a common nutrient deficiency in rice.

Because of the certain problems arises, the researchers developed an Android application that can detect the nutrient deficiency of the rice leaf using the camera of the mobile phone. The researchers use different methods and algorithms such as rectilinear reference that will serve as a guide in capturing the image of the rice leaf. Once the leaf fits in the reference guide, the cropped images will be extracted to get the RGB value using the Palette Class which can get the dominant swatch from the palette, as an RGB packed integer. Each RGB value can be extracted from the integer using the Color Class from Android. In identifying the color of the rice leaf, the K-nearest neighbor algorithm will determine the parameter K of the nearest neighbors. In classification, the data points are classified by a dominant vote of its neighbors, with the object assigned to the class that is most common among its K-nearest neighbors. The application not only includes the detection of nutrient deficiency of the leaf, but also monitors the entirety of the crop.

Keywords: Leaf Color Chart, Image Recognition/Image Processing, K-Nearest Neighbor