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EVALUATION OF AGRICULTURAL LAND SUITABILITY FOR SELECTED CROPS UNDER RAINFED CONDITION IN SRI LANKA USING MACHINE LEARNING

Thesis by

Miss. Harini Hapuarachchi

W1867882

Supervised by

Mr. Cassim Farook

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ABSTRACT

Land Suitability Evaluation is a one of process which manually followed by field experts to categorize each land by recommending the most suitable crop to be cultivated. Generally, land use requirements of the crops are varying. Depend on the land use requirements of the crop, land characteristics & qualities of the land, it can be classified into four categories as (i) highly suitable (S1), (ii) moderately suitable (S2), (iii) marginally suitable (S3) and (iv) not suitable (N) based on their suitability. This Manual process will take more time and more laborious work. Also, a field expert should carry out this process to evaluate the suitability of the land.

The Land Evaluation system is built with an automated way to predict the class of the land unit based on land requirements and characteristics. As for the prediction, a Machine Learning algorithm called LightGBM has been used. Collected data sets for tea, rubber, and coconut from a field expert. Trained the model by using the dataset and the algorithm. Based on the given input from the User, the trained model will predict the class of the land unit by comparing it with collected data set.

The Land Evaluation System will provide a result showing land characteristics which user has added and the prediction of the land. By training the algorithm, around 99% accuracy was given.

Keywords: Machine Learning, LightGBM