MSc Big Data Analytics

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Project Title: Identifying Sri Lankan traditional rice species and analyzing their quality using rice seed images together with deep learning	
	Start Date: Jan 2021
	Submission Date: Aug 2021

CONSENT

I agree ☑
I do not agree ☐

That the University shall be entitled to use any results, materials or other outcomes arising from my project work for the purposes of non-commercial teaching and research, including collaboration.

DECLARATION

I confirm:

- **That the work contained in this document has been composed solely by myself and that I have not made use of any unauthorised assistance.**

- **That the work has not been accepted in any previous application for a degree.**

- **All sources of information have been specifically acknowledged and all verbatim extracts are distinguished by quotation marks.**

Student Signature:	Date Signed: 27/08/2021
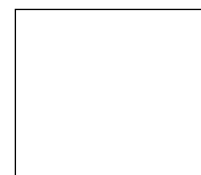
Abstract

Image classification and identification have become significant use cases in most of the domains. When it comes to agriculture, it is a preferred method to analyze the quality of the crops. There are several studies on image classification to identify rice species around the world. However, it cannot use image datasets from other countries to perform classifications in the Sri Lankan context with contextual bottlenecks. As well as Sri Lanka has more than 3000 traditional rice varieties, and some are indigenous varieties. This study on two main things with these concerns. The first one is developing an image dataset of Sri Lankan traditional rice species. Also, under the dataset development, the research proposes methodologies for performing image acquisition, segmentation, and background removal of the images. The study's initial version focuses on developing a dataset of six Sri Lankan traditional rice varieties with five thousand seed images for each rice variety.

The second part is to develop a convolutional neural network image classification model to classify the Sri Lankan traditional rice varieties. The developed neural network model is embedded into a back-end application, and it is exposed as an API to perform the rice classification. As the final part, the research focuses on a front-end mobile application to work with the back-end application to perforce a rice identification and rice sample analysis. Finally, the research is a complete solution for rice image identification using a mobile application.

Keywords—agriculture, supervised classification, rice seed images, CNN, deep learning