“CLONEZONE”
TEA CLONE CLASSIFICATION USING DEEP CONVOLUTIONAL NEURAL NETWORK

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A dissertation submitted in partial fulfilment of the requirement for Bachelor of Arts (Honours) degree in Computer Science

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in collaboration with
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2022

ABSTRACT

Ceylon tea from Sri Lanka is often considered the greatest tea in the world. Tea Research Institutes' (TRI) cloning efforts have led to the release of many TRI series clones. These clone variants have unique physical characteristics, and some tea clones, have physical similarities. Therefore, identifying tea clones manually can lead to errors. This study is attempting to provide a solution to the identified problem by automating the tea clone identification. A critical analysis of existing works on tea clone classification was carried out to identify the gaps in the domain. Gaps in the tea clone classification domain were addressed using a CNN architecture with six convolutional layers. This research was able to achieve a higher performance in accuracy than the existing works. And this is the first research to classify any type of TRI series clones that are widely used in Sri Lanka. This research was able to contribute a novel dataset with two (TRI 4042 and TRI 4006) types of tea clone leaf images. Future researchers can proceed to incorporate the classification of other types of TRI clones that were not within the scope of this research. The success of this research was properly validated by evaluating the outcomes with the use of identified evaluation metrics.

Keywords: Tea clone classification, TRI clones, Image recognition, Deep Learning, Convolution Neural Network, image processing.