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## Classification of Sri Lankan Coconut Types Using CNN

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This research develops an efficient and accurate methodology for classifying the types of coconut in Sri Lanka. At present, coconut-type identification can only be done by the best professionals and those who are well-trained in the particular section. Normal people find it difficult to identify the coconut type accurately before farming. So, as proposed in this research, a simple application is developed to identify the type of a coconut. CNNs have an effective architecture compared to other Deep Learning algorithms since they can detect patterns with high accuracy. Therefore, in this study, a CNN architecture has been used to identify the shape as a pattern along with its color. Also, the convolutional layer reduces the high dimensionality of coconut images without losing its information. CNN automatically recognizes significant features of coconut images. The coconut images are grouped into five according to their type, “Typica”, “Navasi”, “Bodiri”, “Eburnea”, and “Regia”. Here 80% of the images are used for training while 20% of the images are used for validation. Each group has 1000 images in the dataset. In building the CNN sequential model, the layers transform one activation to another through a differentiable function. Here, three main layers are used to build CNN architecture: the convolution layer, the non-linearity layer, and the pooling layer. This proposed research announces that the CNN algorithm reached 85% accuracy perfectly. The future work of this research is to implement this methodology to develop a mobile application to scan and identify all types of coconuts in Sri Lanka.

**Key words:** Convolutional Neural Network, Coconut, Segmentation

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