

Sinhala Font Recognition Using Transfer Learning

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The optical character recognition field for printed and handwritten Sinhala characters is still under research. The unique cursive nature of Sinhala characters makes character recognition a difficult process. Furthermore, Sinhala characters have been incorporated into a variety of fonts and font styles. Distinguishing between fonts requires professional knowledge, which almost always results in errors. In the current context, detecting and recognising these fonts and font styles efficiently and accurately has become critical and important. Font recognition has numerous practical applications, including but not limited to graphic designing, user interface designing, intellectual property, handwriting identification, and typography. Its ability to quickly and accurately detect and recognize font styles makes it a valuable tool in these fields and beyond. Much research has been conducted to identify the Sinhala characters and feature identification like bold, italic, regular etc. But there is a research gap in the existing literature regarding the recognition of Sinhala fonts in the context of the Sinhala language, as no studies have considered font type recognition. Since to provide an effective mechanism for font recognition, this research has taken Sinhala font types Abhaya Libre, Astro11, DL-Araliya, FM Abhaya, GemunuLibre, Iskoola Pota Regular, NotoSansSinhala, NotoSerifSinhala, StickNoBills, and Yaldevi into consideration when creating the dataset with the aim of devising a model to recognize printed Sinhala fonts using transfer learning. Four transfer learning models, VGG-16, VGG-19, Xception and ResNet50 were used in the creation of the models. Each model was implemented and evaluated separately. Among the models selected, Xception model yielded a better macro F1 score of 0.79 and also a higher accuracy rate of 80%. This study demonstrated that transfer learning can be an effective approach for Sinhala font recognition.

Keywords: Deep Learning, Font Recognition, Sinhala Characters, Transfer Learning