

## Similar Script Character Recognition on Kannada and Telugu

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**Abstract :** This work presents a robust approach for the recognition of characters in Telugu and Kannada, two South Indian scripts with structural similarities in characters. To recognize the characters exhaustive datasets are required, but there are only a few publicly available datasets. As a result, we decided to create a dataset for one language (source language), train the model with it, and then test it with the target language. Telugu is the target language in this work, whereas Kannada is the source language. The suggested method makes use of Canny edge features to increase character identification accuracy on pictures with noise and different lighting. A dataset of 45,150 images containing printed Kannada characters was created. The Nudi software was used to automatically generate printed Kannada characters with different writing styles and variations. Manual labelling was employed to ensure the accuracy of the character labels. The deep learning models like CNN (Convolutional Neural Network) and Visual Attention neural network (VAN) are used to experiment with the dataset. A Visual Attention neural network (VAN) architecture was adopted, incorporating additional channels for Canny edge features as the results obtained were good with this approach. The model's accuracy on the combined Telugu and Kannada test dataset was an outstanding 97.3%. Performance was better with Canny edge characteristics applied than with a model that solely used the original grayscale images. The accuracy of the model was found to be 80.11% for Telugu characters and 98.01% for Kannada words when it was tested with these languages. This model, which makes use of cutting-edge machine learning techniques, shows excellent accuracy when identifying and categorizing characters from these scripts.

**Keywords :** base characters, modifiers, guninthalu, aksharas, vattakshara, VAN

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