CS 725

OCR for Telugu Script

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Motivation

Telugu OCR it is difficult problem as a single character can be formed by a single vowel or single consonant or it can be compound character consisting of a combination of vowels and consonants.• Different permutations of the 16 vowels and 37 consonants give rise to approximately 500 unique glyphs.

Dataset

Handwritten character data-set was obtained from “HPL Isolated Handwritten Telugu Character Dataset”. Numerical dataset was obtained from ”CMATERdb: The pattern recognition database repository”

Architecture

a)ANN:

Input-->Dense 1024 relu-->Dense 10 with softmax-->cross entropy loss function-->output

b)CNN:

Input-->convolution2D 5*5 30 relu-->Maxpooling2D 2*2-->convolution2D 3*3 15 relu-->Maxpooling2D 2*2-->Dense 128 relu-->Dense 50 relu-->Dense 10 with softmax-->cross entropy loss function-->output

Progress

All images in the numerical database were of size 32x32. We implemented ANN and CNN on the numerical database using Keras library. We obtained an accuracy of 90.78% using ANN and 91.73% using CNN. Improvements are due. The images in the character database were large and of different sizes. Dilation followed by resizing(without changing the aspect ratio) to maximum length of 64 was performed on the images. The images were then padded with white to get 64x64 images