Handwritten-Captcha-Solver

 # A captcha solver which uses Deep Learning techniques to detect handwritten captchas.

*** Two different Convolutional Neural Networks are trained to predict characters from an input image.**

*** The character set used was "A C E H J K L M P Q R T U W X Y d h n 0 2 3 5 6 8 9" since there was confusion among characters like (1, L, I),(9,q,g),(0, O,o), etc so, the characters causing this were removed and 26 were selected.**

*** Data was augmented using ImageDataGenerator in Keras**
*** Augmentation included rotation of characters by 45 degrees, width_shift of 0.1, height_shift of 0.1, shear of 0.2, and zoom of 0.1 magnitudes.**

*** The first model trained on images achieved a training accuracy of ~90% and validation accuracy of ~82%**

*** The second model trained on the EMNIST dataset achieved a training accuracy of ~95% and validation accuracy of ~85%**

*** *Weighted Ensembling* was used to get the best out of both the models.**

*** The captcha image was preprocessed using the OpenCV library in python to remove noise, separate characters, etc, and then each character was individually fed into the Neural Network for prediction.**

*** The final ensembled model was able to identify captchas even with a noisy background, dark background, etc.**