Cracking CAPTCHA using Deep Learning

Motivation:

CAPTCHA is used to determine whether an entity is a human or a machine. The motivation behind this project is to study how efficiently a machine can decode and crack distorted single and multiple-letter CAPTCHAs by using Supervised and Unsupervised learning techniques.

Problem Statement:

Crack CAPTCHA images by using Deep Learning and other Machine Learning techniques.

DataSet:

Dataset available from Kaggle and can be generated by captcha library in python3.

Preprocessing:

convert CAPTCHA image into Grey Scale image, perform binarization and remove noise.

Learning Techniques:

- Baseline:
  - K-Means(Single Character)
  - SVM(Single Character)
- Advanced:
  - Convolution Neural Network(CNN)-(Single and Multi Characters)

Evaluation Metrics:

- Accuracy
- Confusion Matrix

Confusion Matrix (Error Matrix): We use confusion matrix to give us a gist of predictions in a layout manner using actual values and predicted values on columns and rows respectively. This helps us understand if the model is confusing among two classes.

Deliverables:

- Second Poster - Single character CAPTCHA image decode using SVM and K-Means.
- Third Poster - Single & Multi-character CAPTCHA image decoding using CNN.

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