FORGERY DETECTION

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Objectives

- Our idea is to extract the previously stored signature from the system using the concept of image segmentation using OpenCV.
- Then apply deep learning model that we have developed and classify if the signature under scrutiny is right and matching or falsified.
- Our final task will be to ensure that the model that we have developed is scalable and can be used across all the places of interests easily and can be used by even the common people without knowing indepth about the system.

Introduction

Current methods in machine learning and statistics have allowed for the reliable automation of many of these tasks (face verification, fingerprinting, iris recognition). Among the numerous tasks used for biometric authentication is signature verification, which aims to detect whether a given signature is genuine or forged.

- Assumes Scanned images of signatures are available
- We need to provide a signature which needs to be verified

The approach

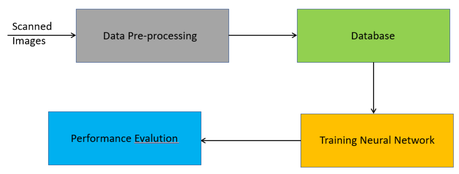
In the signature classification model, pre-processing of the dataset is very important wherein have done the noise removal and property adjustment part(angular rotation, resizing and exact position detection). In the signature classification model we would be using Neural Networks.

- Data Pre-processing
- Database
- Designing of Neural Network
- Training and Testing
- Performance Evaluation

Contributions

- Developed a Neural Network for training image recognition
- Proposed a scheme that is based on FAR and FRR
- Added a new prepossessing method "Thinning"

Graphical work flow

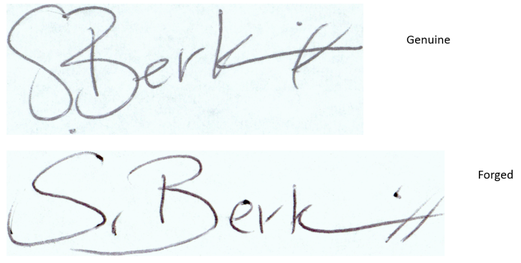


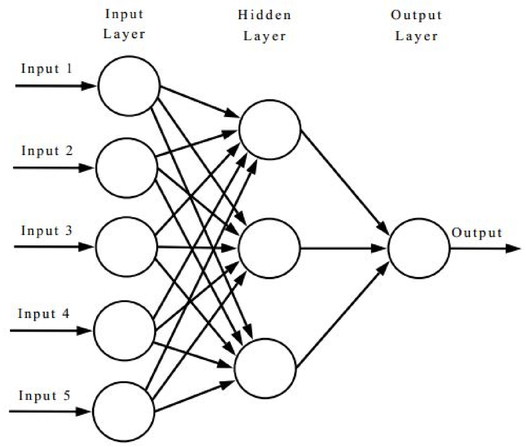
Inference

False Acceptance Rate (FAR) and False Rejection Rate (FRR) are the two parameters used for measuring performance of any signature verification method.

- FAR = Numbers of forgeries accepted/Numbers of forgeries tested X 100
- FRR = Numbers of originals rejected/Numbers of originals tested X 100

Experiments and analysis





References

- https://ieeexplore.ieee.org/document/4054529
- https://towardsdatascience.com/image-forgery-detection-2ee6f1a65442

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