Banknote Authenticity

Machine Learning - Project Proposal - 05/12/2017

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Dataset

The data is obtained from genuine and forged banknote-like specimen. For the digitization of the images, an industrial print used for scanning the banknotes was used. The final images are 400x400 pixels. Due to the object lens and distance to the investigated object gray-scale pictures with a resolution of about 660 dpi were gained. Wavelet Transform tool were used to extract features from images.

The dataset consists of values of visual attributes of bank notes.
It includes 1372 examples and 5 attributes, including the label
Attributes:

1. variance of Wavelet Transformed image (continuous)
2. skewness of Wavelet Transformed image (continuous)
3. curtosis of Wavelet Transformed image (continuous)
4. entropy of image (continuous)

Label : 1: forged banknote / 0: real banknote (integer)

Problem

To predicts whether banknote is forged or real, based on visual attributes. This is a classification of two classes: 0/1

Classification algorithm

Classification algorithms:

- Support Vector Machine
- Neural Networks
- Logistic Regression

They will be evaluated using error, accuracy, tp-rate, fp-rate and precision.

Literature

https://archive.ics.uci.edu/ml/datasets/banknote+authentication# (dataset)
https://www.researchgate.net/publication/266673146_Banknote_Authentication (similar research)
http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=1699359 (similar research with same dataset)