

# A Self-Enhancing Approach for Cheque's Information Validation

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**Introduction:** In today's world banking is fastest growing sector. In a bank, lots of financial activities take place, using check for transactions is one of them. Since this kind of transactions need verification, bank take some and verifies these information thus adversely affecting service delivery. So, an alternate solution to this problem is automation. This model introduces an effective technique for text extraction & recognition (E/R) as well as for signature recognition. It is made of two main layers. 1<sup>st</sup> layer that will take the image of cheque stored in database and extract the information and validate with the server whether the information is correct or not, it will separate out the signature block for 2<sup>nd</sup> layer to recognize. This modules uses multiple text E/R algorithms for this purpose in order to reduce errors and also uses prioritization process to manage effectiveness. For second layer, which is signature recognition, will use a feature matrix for identification.

**Objective:** In this model, first we will design a UI which will keep track of events which will take place during entire process, logs of these process will we kept in records (data can be collected in standard format for further usages) and UI will keep showing the results and process execution. Second, we will develop several enhancement techniques for images (in case images are blurry, less clear) to improve the quality. This will help us in effective recognition. Now, several text detection algorithms will be implemented for recognition purpose. We will use multi-classification to take out the final text. For second layer to work, we will develop a global feature matrix that will collect the features from already present signature in data base and will compare with the features extracted from the cheque's signature. Detailed process is described below.

## Steps Involved:

1. The 1<sup>st</sup> includes designing an UI. This UI will shows information related to the current cheque which will be tested by our model. UI will include several functionalities which will ease its use for users. This UI can be modified according to its usages and requirements.
2. Now, we will implement several image enhancement techniques for better classification and recognition. This process includes but not limited to- filtering, skew-correction, binarization etc.
3. This step is for separating text-region and signature-region. This process will take these two information apart, 1<sup>st</sup> information text region will be used in text recognition and 2<sup>nd</sup> information which is signature region will be used in signature recognition.
4. Now, 1<sup>st</sup> we will look into text extraction, we will use multiple OCR algorithms for this purpose, matching results and deciding final text information will be done, based on multi-class classification. These information can also be stored in a standard type data bases which can be used for other purposes. Some examples- OCR, MSER, Edge & block methods etc.
5. We will validate the textual information first, if it stands correct then UI will start the signature recognition process. From the valid information, we will import the feature for account holder's signature (these feature we will create for already registered signature for this account) and will compare it with feature of cheque's signature. It will validate the signatures.

**Technology Used:** Python, Matlab (if necessary) will be used to implement this fully functional model. And Bank API will be used.

## Benefits:

1. UI will ease the use this model, logs will helps to keep track of process. This model can also be implemented in system that bank is using. UI will keep the information of validating textual info and signature separately, which will helps us to find out the reason of validation failure, and false negative can be improved easily.
2. Multi-class classification and use multiple recognition techniques will reduce errors in confusion matrix thus high accuracy. This model can also export this to standard format which might be usable to other process.
3. Feature matrix can be modified for a global model and for a specific model, according to our needs.

And list goes on...

Please have some reference to my own two project in recognition (text and image) [PROJECT1](#) and [PROJECT2](#) , (Note: project1 might show some insufficient data, sorry for such case).