Automated Cheque Processing

A White Paper for Electronically Signing a Cheque

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E-Sign Cheque Processing

It has capabilities for automating signatures and verifying the Cheques without human intervention. Bank handles large volumes of cheques in the clearing process. The process involves many technical verifications including signature verification. Some of these steps are manuals and require human intervention to complete the process. The current process requires a high human capital deployment and longer processing time.

Verifying a customer's signatures with a predefined template, requires three steps to follow. First, A customers provides his details for verifying the valid Account in the bank. Second, The auto filled template will display along with a rectangle to sign the cheque, and The last step customer will click on the rectangle box to sign the cheque (Image shown). Template based processes are capable of handling all challenges that are there in the problem statement.

Step 1	Step 2	Step 3
Customer provide his/her details to verify account in the bank	Pre populated customer details on the cheque with click here to sign the box	Customer will click on the box to sign the cheque

Challenges of current manual cheque processing

Time Consuming Approach Manually processing a cheque in the bank takes lots of time, starting from when the cheque is handed over to the bank employees. They need to verify various things like - Is the customer's cheque valid or not, details provided by the customer - Name, Account number, Date, Amount and Customer signature. Assuming the information given by the customer is valid in the system, then after the employee needs to update the customer Account with Cheque No., Issues date, Issues to, Amount to be paid, Beneficiary identity for them cheque is issued. Employees need to keep a hard copy of the cheques for future reference.

Required Experienced Resources Financial transactions require extra precaution to complete the job. Appointing resources in such a position to manage work pressure with no human errors is necessary. The Bank needs to evaluate many resources and finalise resources that consume lots of human power and wealth. For instance - candidate qualification, background verifications, past experiences etc.

E-Sign using OCR/ICR/ML Technique

OCR / ICR An OCR system consists of a normal scanner and some special software. The scanner is used to scan text on a document or piece of paper into the computer. ICR (Intelligent Character Recognition) is essentially an advanced optical character recognition (OCR) technology that works towards covering all the inadequacies in the traditional OCR systems in handling different types of issues in interpreting the text.

Limitations This technique is quite popular though there are some challenges as follows -

- The accuracy of verifying a signature is Not 100%. There are likely to be some mistakes made during the process. For example - the original document is of poor quality or the handwriting is difficult to read, more character recognising issues will be there. OCR text works fine with printed text. However, its result is poor with handwritten text.
- ICR is expensive, so it is not suitable for low-cost applications. For starters, ICR is not perfect and may make mistakes from time to time. Malicious entities can abuse ICR to steal private information.
- All of the papers must be double-checked and manually corrected. The image created necessitates a large amount of room. Not worth doing for small amounts of text.

Machine Learning Technique

Machine learning enables to verify the signature & forgery detection. It determines whether the signature is real or not with the help of various algorithms.

Limitations

- **Interpretation of Results** - You must also carefully choose the algorithms for your purpose.
- **High error-susceptibility** - The data is huge, so sometimes removing errors becomes nearly impossible. These errors can cause a headache to users. Since the data is huge, the errors take a lot of time to resolve.
- **Time and Resources** - ML needs enough time to let the algorithms learn and develop enough to fulfil their purpose with a considerable amount of accuracy and relevancy.
- **Malware Detection** - One of the biggest limitations of signature-based IDS solutions is their inability to detect unknown attacks.

PDF template based E-Sign Processing

Digitally verifying the customer's signature is a challenging process to confirm whether the customer's identity is valid or not. Better performance requires many things like a device with high resolutions, compatibility, a High-speed network, and Secure. Nowadays, various techniques help to implement software for verifying customer signatures. However, each library has its limitations. This software requires compatibility with customer devices to work fine.

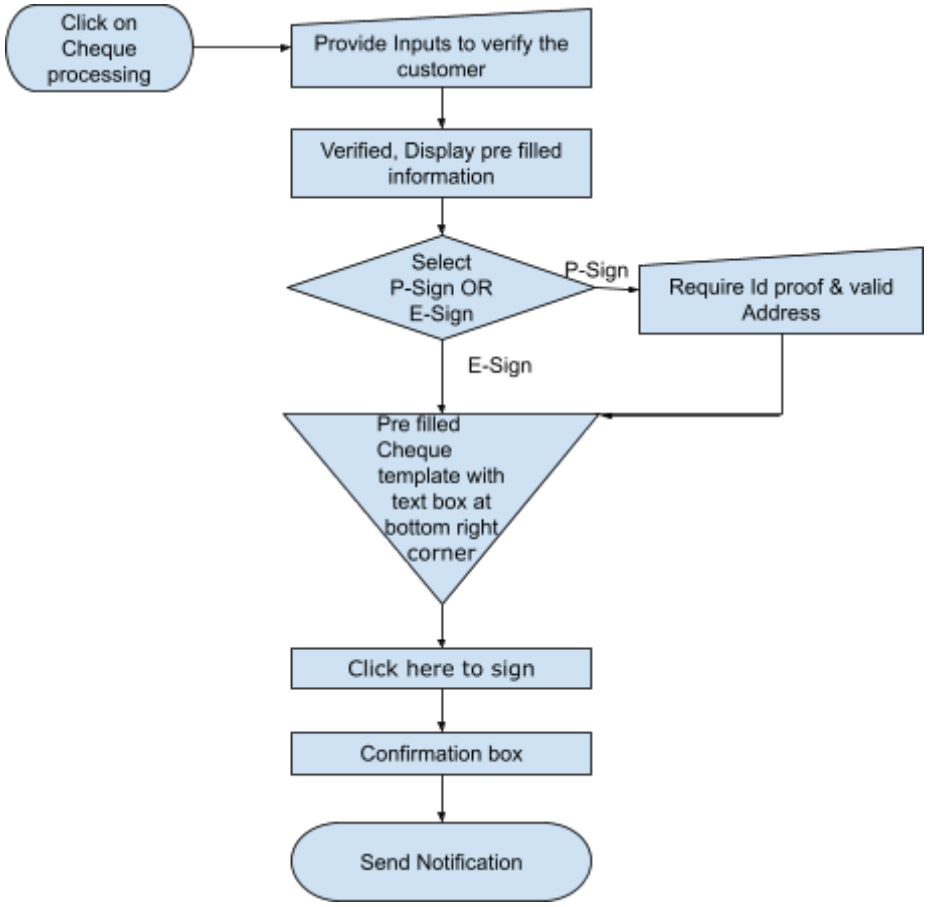
I would propose another approach called **template-based signature** that supports signing the cheque digitally without any risk. In the template-based solution, the customer has to click on the exact place to verify the signature instead of signing the device.

The customer/s opens **the Bank of Baroda** applications and provides the details that verify whether the customer is real or not by generating an OTP on a registered mobile no or an email id. Assuming the customer is genuine, he/she navigates to the next page with prefilled bank details in read-only format along with options Electronic-Sign or Printed-Sign.

E-Sign: E-Sign will allow a customer to sign a cheque electronically and store it in the Bank Database for future reference.
P-Sign: P-Sign will allow a customer to sign the cheque electronically then print and post it to the beneficiary's home via courier. When the customer visits to withdraw an amount from the bank, ask him/her to carry the same Id proof that is mentioned by the Issuer whilst applying the cheque.

The customer will have the flexibility to select one method E-Sign or P-Sign & click on the Submit button. The application navigates to the Pre Filled cheque template with a rectangle box called **"Click here to Sign".**

After clicking on the Sign button a new popup will appear with the following message depending upon the selection method.



E-Sign *"Are you sure, you want to pay Mr. XYZ amount of 50,000/- on 29 Sep 2022, Please click on confirm button"*

P-Sign *"Are you sure, you want to pay Mr. XYZ amount of 50,000/- on 29 Sep 2022, and post the cheque via courier with courier charges 100/- Please click on confirm button"*

The final step to notify customer via email and phone Send Confirmation Message on registered Mobile no. and an Email.

Handle Challenges of current approach The provided techniques in the problem definition are useful in many applications. However, there are challenges to the end users -

- The end user does the same signature that he signed on the bank account. However, it may differ due to device resolution.
- Writing on an Electronic device is more challenging than on paper.

The template-based solution is a simple and easy process for ensuring customer identity. It doesn't require high device compatibility of the customer. This approach doesn't require any expertise and training to sign the cheque.

- PDF template is an automated approach that doesn't require human intervention. It allows the customer to begin and get a notification at the end of completing the signing of the cheque.
- The customer may use a P-Sign approach that permits delivery of a signed check at the beneficiary's home.
- It supports any device on which the BOB application works well.
- Maintenance cost is minimum.
- It nails the challenges of hiring experienced resources in the Bank as the technique is fully automated.

Why Clickable E-Sign

- Automated
- Easy to use for the end user
- No Maintenance cost
- Implementation is simple
- Highly Secure
- Cost saving approach

About the Author

Ajay Sharma is a Technical Architect at **Mastek Ltd,** where he is working for UK Clients. He is a Full stack developer working on various technologies.
He has extensive working experience in the financial and banking domain.

Before that, he worked with various clients like - JPMC, ABN AMRO, and Fidelity and is now associated with Novuna.

Ajay is currently a full-stack developer playing various roles like Solution Provider, DevOps, and Developer.

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