Secret Image Sharing Based Cheque Truncation System with Cheating Detection

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Cheque Truncation System (CTS) is an automatic cheque clearance system implemented by Reserve Bank of India (RBI). CTS uses cheque image, instead of the physical cheque itself, for cheque clearance thus reducing the turn around time drastically. This approach holds back the physical movement of cheque from presenting bank to the drawee bank. In CTS, digital image of the cheque is protected using standard public key and symmetric key encryptions like RSA, triple DES etc. This involves a lot of computation overhead and key management. The security also depends on the hard mathematical problem and is only computationally secure. Information theoretically secure, secret image sharing techniques can be used in the CTS for the secure and efficient processing of cheque image. In this paper, we propose two simple and efficient secret image sharing schemes and a Cheque Truncation System based on these algorithms. In the proposed scheme, the presenting bank is acting as the dealer and the participants are the customer and the drawee bank. The dealer should generate the shares of the cheque and distributes it to the customer and the drawee bank. The validity of the shares is important during the reconstruction process. The proposed scheme also suggests a method for cheating detection which identify any invalid shares submitted by the customers, using the hashing technique. The experimental results show that the proposed scheme is efficient and secure compared with the existing scheme.

Keywords : Cheque Truncation System, Pixel Expansion, PKI, Secret Image Sharing, Visual Cryptography.

1. INTRODUCTION

Cheques represent a significant segment of payment instruments in India. Cheque Truncation System (CTS) or ICS (Image Based Clearing System) in India is a project undertaken by Reserve Bank of India (RBI) for faster clearing of cheques. CTS is basically an online image-based cheque clearing system where cheque images and Magnetic Ink Character Recognition (MICR) data are captured at the collecting bank branch and transmitted electronically. Manual clearing of cheque needs human intervention and is a time-consuming task. Cheque truncation [1] involves stopping the flow of the physical cheques issued by a drawer to the drawee branch. An electronic image of the cheque is sent to the drawee branch along with the relevant information like the MICR fields, date of presentation, presenting banks etc.

The point of truncation is left to the discretion of the presenting bank. Thus, Cheque truncation, would eliminate the need to move the physical instruments across branches and hence result in effective reduction in the time required for payment of cheques, the associated cost of transit and delays in processing, etc.

This will speed up the process of collection or realization of cheques and thus reduce the turn around time.

The system offers following benefits to the bank and customers. Banks can expect multiple benefits through the implementation of CTS, like faster clearing cycle, better reconciliation/verification process. Besides, it reduces operational risk by securing the transmission
proved cheque processing using advanced image processing technique which helps in automatic cheque processing. The operational efficiency, speed accuracy, security and authentication are the major design objectives.

REFERENCES

1. RBI. RBI CTS. http://www.rbi.org.in.
27. Guo, Huiping and Nicolas D Georganas. A


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