



## ENHANCEMENT OF SECURITY OF ELECTRONIC CHEQUE BY INTEGRATION OF BIOMETRIC TECHNIQUES

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**ABSTRACT:-** An electronic check, also referred to as an e-check, is a form of payment made via internet, or other data network, designed to perform same function as a conventional paper check. Since cheque is in an electronic format, it could be processed in fewer steps. Additionally, it has more security features than standard paper checks including authentication, public key cryptography, digital signatures & encryption, among others. A reformatting service offered by banking merchants. Cheque conversion allows banks to convert paper checks into electronic ones & then send them to appropriate receiving bank. Electronic cheque is forwarded on via automated clearing house.

Keyword Electronic, Payment, Capital, Cryptography, Cheque

### [1] INTRODUCTION

#### 'Electronic Cheque'

An electronic cheque is part of larger electronic banking field & part of a subset of transactions referred to as electronic fund transfers (ETFs), which includes not only electronic checks but other computerized banking functions such as ATM withdrawals & deposits, debit card transactions & remote cheque depositing features. Transactions require use of various computer & networking technologies to gain access to relevant account data to perform requested actions.



ISSN : 2348-5612 © URR



Fig 1 Electronic check

#### Process of check

A reformatting service offered by banking merchants. cheque conversion allows banks to convert paper checks into electronic ones & then send them to appropriate receiving bank. electronic cheque is forwarded on via automated clearing house.

#### Breaking Down 'Check Conversion'

This service is popular with merchants because it allows them to clear checks they get much more quickly. quickness of electronic format eliminates much or all of time spent waiting for a traditional paper cheque to clear. Furthermore, electronic checks are always processed before paper ones. This service is also known as accounts receivable conversion.



### Electronic cheque Presentment - ECP

A process allows financial institutions to exchange digital images of checks instead of paper to increase speed of of cheque cashing process. Signing of cheque Clearing for 21st Century Act by President Bush permitted use of electronic cheque presentment. Electronic cheque presentment saves financial institutions cost of sending checks & storage of those checks better customer service.

### [2] PROBLEM STATEMENT

Cheques have been a tempting target for criminals to steal money or goods from drawer, payee or banks. A number of measures have been introduced to combat fraud over years. These range from things like writing a cheque so it is difficult to alter after it is drawn, to mechanisms like crossing a cheque so that it could only be paid into another bank's account providing some traceability. However, inherent security weaknesses of cheques as a payment method, such as having only signature as main authentication method & not knowing if funds will be received until clearing cycle to complete, have made them vulnerable to a number of different types of fraud.

### Embezzlement

Taking advantage of float period to delay notice of non-existent funds. This often involves trying to convince a merchant or other recipient, hoping recipient will not suspect that cheque will not clear, giving time for fraudster to disappear.

### Forgery

Sometimes, forgery is method of choice in defrauding a bank. One form of forgery involves use

of a victim's legitimate cheques, that have either been stolen & then cashed, or altering a cheque that has been legitimately written to perpetrator, by adding words or digits to inflate amount.

### Identity theft

Since cheques include significant personal information (name, account number, signature & in some countries driver's license number, address or phone number of account holder), they could be used for fraud, specifically identity theft.

### Dishonored Cheque

A dishonoured cheque cannot be redeemed for its value & is worthless; they are also known as an *RDI* (returned deposit item), or *NSF* (non-sufficient funds) cheque. Cheques are usually dishonoured because drawer's account has been frozen or limited, or because there are insufficient funds in drawer's account when cheque was redeemed..

### [3] PROPOSED WORK

In this research we will integrate biometric security with E-CHEQUE in order to make transaction more secure. In this work we will create a biometric testing module with integrate it with E-Cheque technology.

Following is existing E-CHEQUE SYSTEM

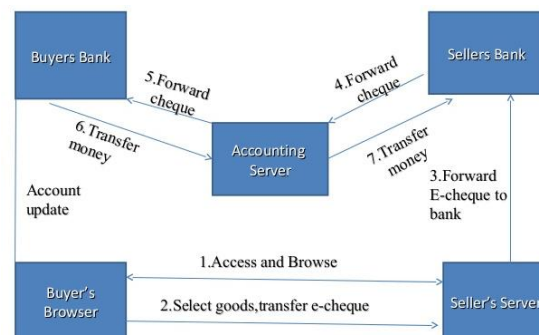


Fig 2 E-Cheque system

Palm print recognition has one of biometrics available at present. Biometric systems are used to authenticate identity by measuring physiological and/or behavioral characteristics. So, two main categories of biometrics are physiological. Physiological category includes physical human traits like palm print, hand shape, eyes, veins, etc. The behavioral approach includes movement of human, like hand gesture, speaking styles, signature etc.

#### [4] IMPLEMENTATION

##### Echeck entry system

1. E-Check would be submittal by user along with biometric sample.
2. Admin will cheque amount in users account.
3. Admin will cheque all account related detail eg:- account no., cheque no.
4. Then propose biometric security will compare biometric sample stored in existing database with biometrics sample send by users.
5. After confirmation admin would validate echeck

If paying by electronic check, please fill out the fields below:

Name of account:	<input type="text"/>
Name of Bank:	<input type="text"/>
Type of Account:	Select Account Type ▾
Check Number:	<input type="text"/>
<input type="text"/>	<input type="text"/>
Routing Number	Account Number



**Important note:** Do not click this button more than once.  
It may take up to 30 seconds for our payment processor to respond.

Continue...

Fig 3 Echeck entry system

#### Biometric Processing In Matlab Using Sobel Edge Detection

In Matlab we have used canny based edge detection to find edges of palm as it is consider better than other edge detection mechanisms.

#### Example of Edge Detection Using Sobal Operator In Matlab

The sobel operator is widely used to detect edges of image , in area of image & video processing, computer visvion, robotics etc. Here I am going to give a concise illustration of sobel operator & matlab implementation (source code) both employing **matlab** built-in function for edge detection & manually sobel edge detection (function).

##### Basics:

The sobel operator computes gradient of image intensity at each point, giving direction of largest possible increase from light to dark & degree of change in that direction.

##### Existing image

```
im=imread('1.jpg');
```

```
imagesc(im);
```

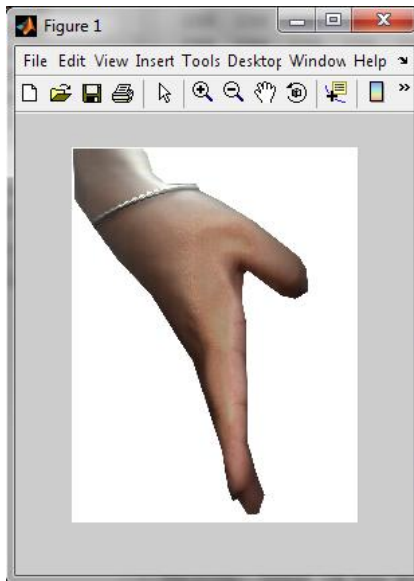


Fig 4 Existing image (1.jpg)

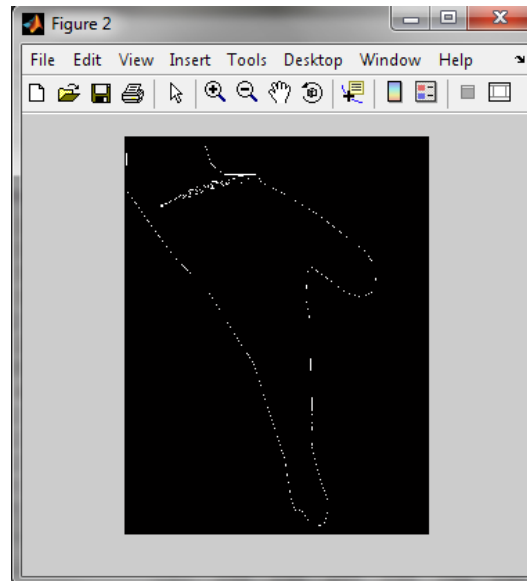


Fig5 Image (1.Jpg) After Applying Sobel Operator

#### Applying Sobel Operator Based Matlab code on image

```
im=imread('1.jpg');  
img=rgb2gray(im);  
sob_im = edge(img,'sobel');  
figure(2);  
imagesc(sob_im);  
axis('square');  
colormap('gray');  
imshow(sob_im);
```

#### Existing image

```
im=imread('2.jpg');  
imagesc(im);
```

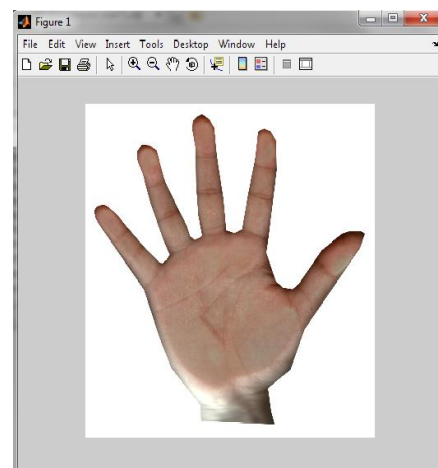


Fig 6 Existing Image (2.Jpg)

#### 4 Design View Of 3D Based Biometric Comparison

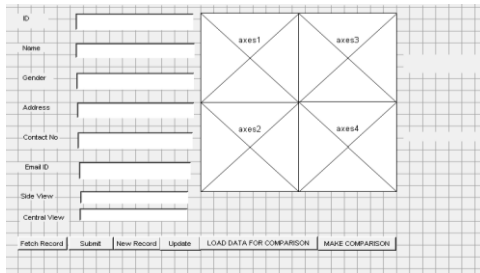


Fig 7 Design View Of 3D Based Biometric Comparison

IF we want to load existing record then enter id & click on fetch record, then multi-dimensional biometric sample stored in database would be visible to us with complete details.

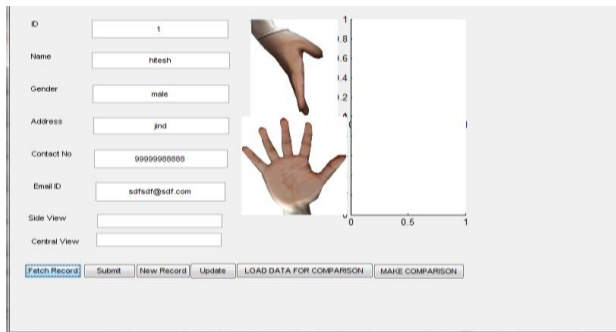


Fig 8 Fetching Of Record

If we need to add new record then add any new information & click on submit button to store record

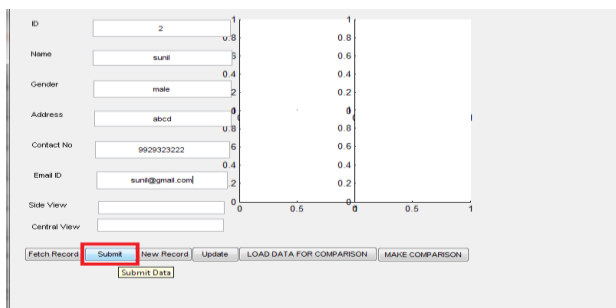


Fig 9 Submission Of Record

```
imwrite(t2, strcat('FC', x11, '.jpg'));
imwrite(t3, strcat('FFC', x11, '.jpg'));
imstate=dir(strcat('FC', x11, '.jpg'));
```

```
size=imstate.bytes;
imstate1=dir(strcat('FFC', x11, '.jpg'));
size1=imstate1.bytes;
set(handles.fs3,'string',size+size1);
```

### 5.5 In admin panel echeck would be authenticated if biometric traits are matched



Fig 10 In admin panel echeck

### [5] CONCLUSION

Parties to regular cheques generally include a *drawer*, depositor writing a cheque; a *drawee*, financial institution where cheque could be presented for payment; & a *payee*, entity to whom drawer issues cheque. *drawer drafts* or *draws* a cheque, which is also called *cutting a cheque*, especially in US. There may also be a *beneficiary*—for example, in depositing a cheque with a custodian of a brokerage account, payee will be custodian, but cheque may be marked "F/B/O" ("for benefit of") beneficiary. Here involvement of biometric has boosted security.

Proposed work would defiantly enhance security of tradition e-check based system.

Ultimately, there is also at least one *endorsee* which would typically be financial institution servicing payee's account, or in some circumstances may be a third party to whom payee owes or wishes to give money.

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*than six months after its date, but it may charge its customer's account for a payment made thereafter in good faith.*

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