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## U-SAFE

### (Universal Safe and Secure Automatic Form Filling System)

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**Abstract** —*Now a days; in government and private offices to register a service is very time consuming and vulnerable to fraud. As a result , government offices are not able to provide high-quality services to the citizens; while private offices are making very less productivity and profits from their services. The current automatic form filling systems are dedicated to only single websites or many of them are working with the static data handling so we propose this system which has following features. It is going to deal with automatic filling of application forms for universal websites with additional feature of uploading documents required by organization. The data which is going to be stored in database is in encrypted format for providing security of user's vulnerable data.*

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**Keywords-** *Bookmarklet , automted form filling on website, document uploadation.*

## I. INTRODUCTION

Current practices in government and private offices to register a service are time consuming and prone to fraud. As a consequence, government offices are unable to provide high-quality services to citizen; while private offices make less productivity and profits from their services. The current auto form filling systems are dedicated to only single websites or many of them are working with the static data handling, so we propose this system which has following features. It is going to deal with automatic filling of application forms for universal websites with additional feature of uploading documents required by organization. The data which is going to be stored in database is in encrypted format and while retrieving the data from database it is decrypted and displayed back on the form this all procedure is for providing security of user's vulnerable data. While the communication between user and server can also be prone malicious attacks, therefore for providing security for this communication we are also encrypting it using SSL algorithm.

## II. BACKGROUND

This section provides the background study used to develop U-SAFE project. It starts with the current practices that use paper based application forms and nowadays increase in number of the online forms. Then, the section presents briefly the use of the U-SAFE and its importance.

### 2.1. Paper Based and Online Application forms

Paper based application forms are widely used in government sectors and the private offices. But nowadays the number of the online forms whether it may be a college forms or a Bank account opening form. There are registration forms on many websites that are needed to be filled to use the resources of the website. Everything now is online so mostly all the people have to fill the forms each and every time. There is need of the automatic online form filling agent that will reduce the time and make the work easy. That's why U-SAFE is being proposed by us.

## III. PROPOSED SYSTEM

The proposed system enables the service registration to be made quickly and securely. To realize this system, several steps have been followed and are described in this section. It begins with the diagram of Architecture of the proposed system. Third-order headings, as in this paragraph, are discouraged. However, if you must use them, use 10-point Times, boldface, initially capitalized, flush left, preceded by one blank line, followed by a period and your text on the same line.

### 3.1. Architectural diagram

The given fig-1 is block diagram of our proposed system. As shown in given figure our system is divided into two parts;

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1. User Interface

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## 2. Client platform

In user interface Bookmarklet, IDE , SDK are used to design user-friendly architecture. JavaScript, plugins mysql database encryption technique are used to make rich client platform.

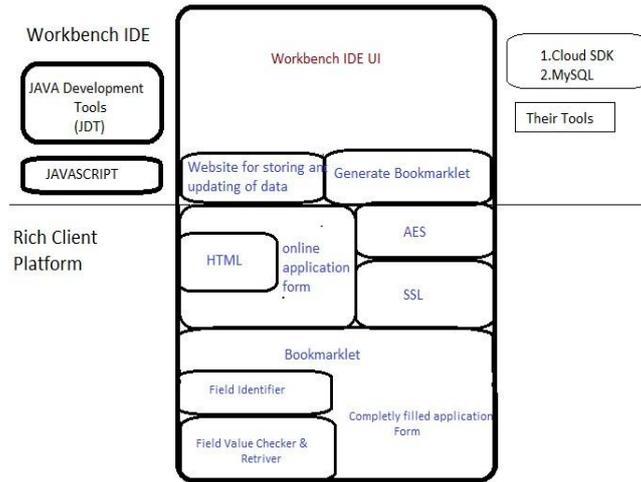


Fig-1 Architecture diagram

## 3.2. System Description

The user first has to fill the registration form on the U-SAFE website. The user will fill all the information like his personal information or we can say the static and dynamic data that is to be filled in online form. The user can save his personal information as well as he can upload the documents. After that he will be provided with the bookmarklet by us which will be used by the user for filling any online application forms automatically. The uploadation of required documents will be done automatically in this phase.

## IV. METHODOLOGY

### 4.1. Bookmarklet:

Mr. Steve Kangas of bookmarklets.com have invented the word bookmarklet when he started to create scripts based on a suggestion in Netscape navigator's JavaScript guide. Before that Mr. Tantek Çelik called these scripts "favelets and" used that word as early as on 6 September 2001. Mr. Brendan Eich, who developed JavaScript at Netscape navigator, gave this account of the origin of bookmarklets.

Bookmarklets are small programs stored in Bookmarks. Bookmarklets are shared on web pages as Web links. To use a Bookmarklet we don't need to actually "install" it, You just need to simply add it to your bookmarks Bar. It just sit there patiently until you want to use it.

### 4.2. Cryptojs:

CryptoJS is nothing but the collection of standard and secure cryptographic algorithms like AES, DES, Hashers algorithm. All this algorithm are implemented in Javascript. They are fast and they have a consistent and simple interface.

Cipher Input and Output :

The cipher input accept either string or instances of CryptoJS.lib.WordArray. The plain text you get back after decryption is WordArray object. It is a CipherParams object.

JS Code for AES is:

```
<script src="http://crypto-
js.googlecode.com/svn/tags/3.1.2/build/rollups/aes.js"></script>
<script>
    var encrypted =CryptoJS.AES.encrypt("Message", "Secret Passphrase");

    var decrypted =CryptoJS.AES.decrypt(encrypted, "Secret Passphrase");
</script>
```

Here secret passphrase is the key. Message is text to encrypt.

#### 4.3.AES and RGB pixel displacement:

This technique proposes a hybrid approach of encryption of the images using Advance Encryption Standard and a RGB cryptographic technique. The AES is used for the generation of the shared secret key. This key generated is used by the cryptographic algorithm for the process of encryption . The encryption is carried out totally on the RGB pixel shuffling and the displacement. There is no change in the quality of the image. As shown In following figures of plain image and ciphered image:

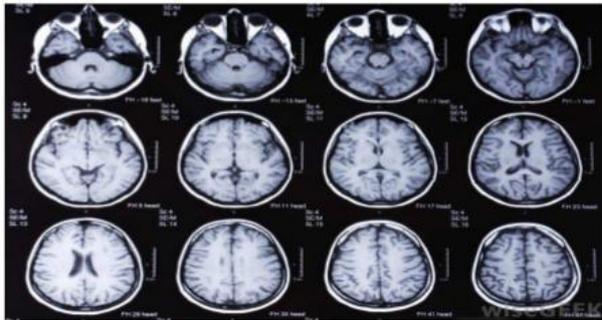


Fig 2.The plain Image

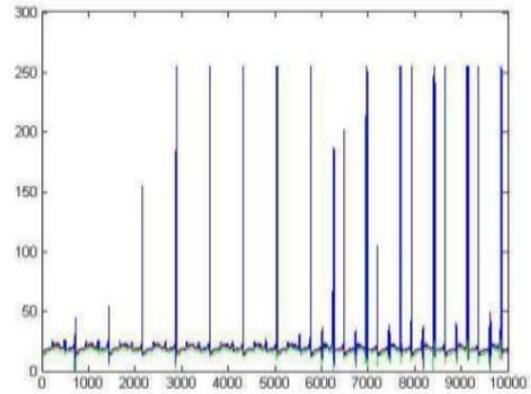


Fig 3.The RGB Graph Of Plain Image



Fig 4. The Ciphered Image

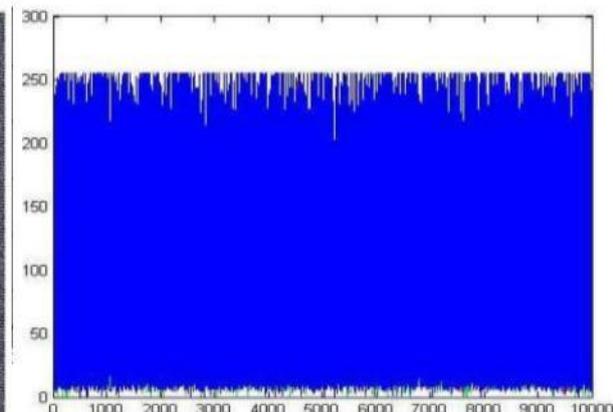


Fig 5. The RGB Graph Of Ciphered Image

The first 1000 pixel value of the plain image and the ciphered image was plotted as shown in figure 3 and 2 respectively. The entropy value and the arithmetic mean value of the pixels of the plain image and ciphered image found to be 6.9882 and 87.4561 respectively. This means that there is no pixel expansion after the encryption process. Hence the quality of the image remains the same after the decryption. The advantage of the Rijndael is that it is resistant to linear and differential cryptanalysis and it requires related key plaintexts [2][5].

#### 4.4.SSL ( Secure Socket Layer Protocol )with GRID Networks.

SSL Protocol provides the security over the Web Network. It is used for secure communication over an internet. This protocol builds communication interface based on a secure tunnel between the client and the server. Here the SSL is used in the grid network to resolve the load over the network after the authentication done by both sender and receiver.

The stage of SSL protocol are as follows:

- i. To establish the key of safety communication.

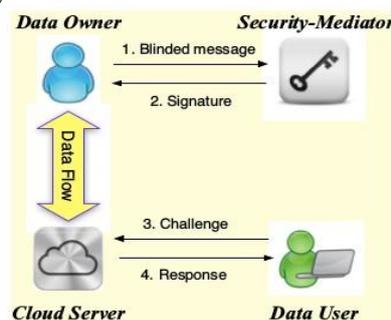
- ii. Server authentication.
- iii. Client authentication.
- iv. End stage[4]

#### 4.5. CLOUD

The model introduced is mainly consists of following four entities:-

- i. data owners
- ii. data users
- iii. the cloud server
- iv. security-mediator (SEM)

which are described in Figure 6. owners generate and upload data to the cloud for sharing. We will first look at the single owner scenario, which means each data file stored in the cloud is managed and maintained by only single owner. users are able to access data uploaded by data owners, but they are not given permission to modify data in the cloud. owners and users are sometimes collectively termed as cloud users. The cloud server provides data storage and data sharing services to owners and users. Both the cloud server and users are public entities, who are not the owner of data but need to verify data integrity when it is necessary.



The system model includes data owners, data users, the cloud server, and a security-mediator (SEM).

Fig 6. Cloud

#### V. CONCLUSION

This system is an innovative web based application that can be employed while registering on digital application form with the facility of uploading the required documents. By utilizing the user's information stored at back-end database, the developed auto filling form system improves the productivity and security of registration procedure

#### VI. ACKNOWLEDGMENT

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