

A Novel Method for User Authentication on Cloud Computing Using Face Recognition System

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Abstract - Face Recognition is a vital role in the field of computer Science and Engineering. Face recognition presents a challenging problem in the field of image processing and computer vision, and as such has received a great deal of attention over the last few years because of its many applications in various domains. A lot of algorithms and techniques have been proposed for solving authenticated a person and face recognition system. Social Networking has become today's lifestyle and anyone can easily receive information about everyone in the world. It is very useful if a personal identity can be obtained from the any device and also connected to social networking. Cloud computing is a new technology in the IT industry. In that, identifying authorized user is a major problem. The user wanting to access the data or services needs to be registered and before every access to data or services; his/her identity must be authenticated for authorization. There are several authentication techniques including traditional and biometrics but it has some drawbacks. In this paper, we have proposed new face recognition system (FRS) which overcome all drawbacks of traditional and other biometric authentication techniques and enables only authorized users to access data or services from cloud server.

Keywords: Cloud security, Face Recognition System, Authorized Person.

I. INTRODUCTION

Cloud computing is a comprehensive solution that delivers IT as a service. It is an Internet-based computing solution where shared resources or data are provided like electricity distributed on the electrical grid. Computers in the cloud are configured to work together and the various applications use the collective computing power as if they are running on a single system. Services are classified into 3 types: Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS). Cloud computing is deployed as 3 models such as Public, Private, and Hybrid clouds [3]. Data storage in cloud offers so many benefits to users: It provides Un limited data storage space for storing user's data. Users can access the data from the cloud provider via internet anywhere or anyplace in the world not on a single machine. We do not buy any storage device for storing our data and have no responsibility for local machines to maintain data[2]. There are different issues and challenges with each cloud computing technology. In this paper a solution to the security problem. To identify the authorized person to provide give cloud services in the cloud environment. That is biometrics is used as an authentication wherein the password is human organs or physiological characteristics. There are several biometrics techniques as stated below, Voice

Recognition – As the name suggests voice recognition involves authentication with respect to vocal data. Voice recognition is used to authenticate user's identity based on patterns of voice pitch and speech style. But a user's voice can be easily recorded and may use by unauthorized user. Also voice of a user may change due to sickness, so making identification is difficult. Signature Recognition – Signature recognition is used to authenticate user's identity based on the traits of their unique signature. People may not always sign in a consistent manner so verifying an authorized user is difficult. Retinal Recognition – Retinal recognition is for identifying people by the pattern of blood vessels on the retina. But this technique is very intrusive and expensive. Iris Recognition – Iris recognition is a method of identifying people based on unique patterns within the ring-shaped region surrounding the pupil of the eye. As like retina this technique is also intrusive and expensive. Fingerprint Recognition – Fingerprint recognition refers to the automated method of verifying a match between two human fingerprints. The dryness of fingers, soiled fingers can affect the system and it can show error.

Hand Geometry Recognition – Hand Geometry biometrics is based on the geometric shape of the hand. It includes the size of the palm, length and width of the fingers etc. But this technique has some drawbacks like not ideal for children as with increasing age there hand geometry tend to change, constant use of jewellery will result into change in hand geometry, not valid for persons suffering from arthritis, since they are not able to put the hand on the scanner properly. Palm recognition – Palm recognition is based on ridges, principal lines and wrinkles on the surface of the palm. This technique is very expensive and not appropriate for children as there lines of palm change once they are fully grown up. The human face plays an important role in our social interaction. Facial recognition is one of the preferred methods of biometrics because it is a neutral, non-intrusive, easy-to-use, which requires minimal physical contact as compared with other biometrics systems.[1]. Face recognition is based on both the shape and location of the eyes, eyebrows, nose, lips, and chin or on the overall analysis of the face image that represent a face as a number of recognized faces [12]. Face image can be captured from a distance without touching the person being identified, and the identification does not require interacting with the person.[9] Face Recognition System (FRS) enables only authorized users to access data from cloud server.

II. LITERATURE SURVEY

Cloud computing becomes more popular technology. For authenticate authorized user in cloud computing using face recognition system, we have survey some existing

authentication schemes. At first, in cloud computing traditional username and textual password is used. But these are very easy to hack. Some systems have proposed graphical and 3D password but it requires more space and time consuming process. One of the authentication techniques suggested by Ganesh Gujar, Shubhangi Sapkal, and Mahesh Korade called STEP-2 user authentication. In this, when user login through username and password then STEP-2 system generates token from hash table and sends to the registered email id. User must enter that token value as password within session time. So only if login is successful then user can access cloud services. But, token based systems are expensive and it is not guarantee that email will deliver on time due to the network failure and if session time is expired that token also get expired. Vishal Paranjape and Vimmi Pandey have proposed, authentication based on sending the password through SMS. But, it doesn't guarantee to deliver the SMS on time due to many reasons like network problem, cell problem etc. Some authors proposed to use SSL authentication protocol (SAP) for authentication but it low efficient.[9]The review of all above mentioned authentication techniques, in this paper we have proposed Face Recognition System (FRS) which is based on biometrics characteristics of user for proper authentication in cloud computing environment.

III. PROPOSED METHOD

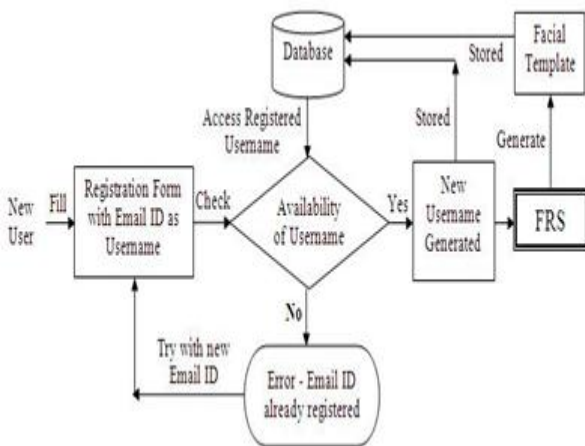


Fig. 1 New User Registration

A. New User Registration

Whenever user wants to access cloud resources, user has to register first on to the cloud server. Following are the steps to register on the cloud server.[9]

1. User has to fill the registration form which is provided by cloud provider. It contains information about the user.
2. User has to give valid Email ID as a username to the face recognition system at the time of registration.
3. Face recognition system checks the Email ID against the availability of that username (Database). Username should not repeat or match with existing user's username.
4. After checking the availability of username, the password must be created. Face image are stored in database as a password.
5. After providing valid username and storing face image as a password, the registration on cloud server is completed.

B. Registered User Login

When registered user wants to access resources on the cloud server, then registered user should login on to the cloud server. Following are the steps to login on to the cloud server.[1] User should enter valid username in his login interface which was already provided by the user at the time of registration. And for password user's face is captured by web camera. Face recognition system checks the username and password(face image) provided by the user. After matching the username and face image as a password, face recognition system provides access of cloud services to the user. If username and password(face image) does not match then face recognition system displays an error message.

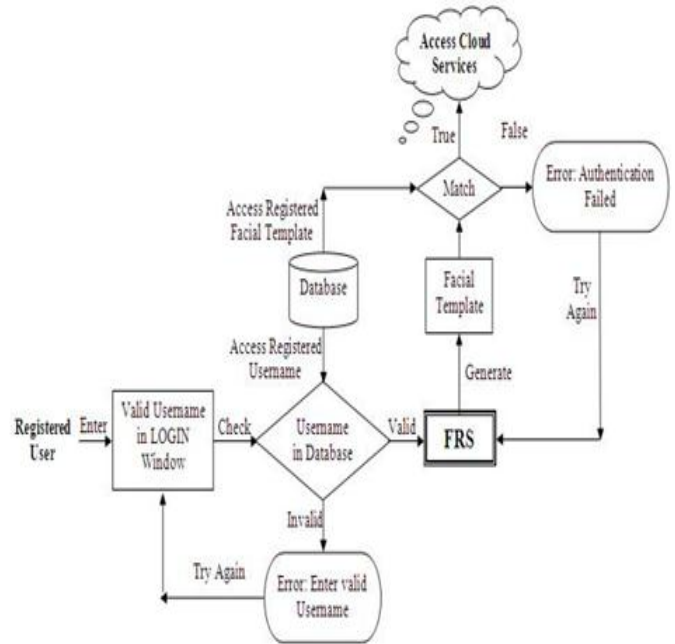


Fig.2 Registered User Login

IV. ADVANTAGES OF PROPOSED METHOD

In this proposed method, there are several advantages as stated below

1. No more Time Fraud
2. Better Security
3. Easy Integration
4. No intrusive
5. Uniqu

V. RESULTS



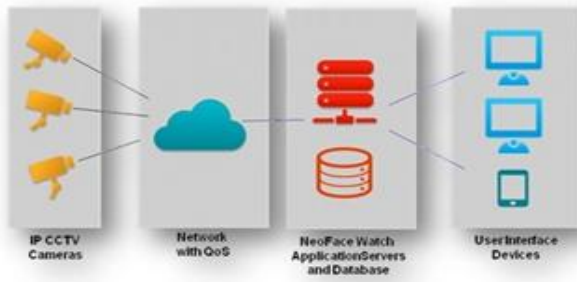


Fig.3 Result

VI. CONCLUSION

The services of cloud computing is based on the sharing method. Cloud computing provides lot of services like IaaS, SaaS, and PaaS. These services are paid services, so security is a major problem to identify authorized user in cloud computing environment. To provide cloud services only to the authorized user, secure authentication is necessary in cloud computing.[11] There are so many authentication techniques available in biometrics, like password, OTP, Voice recognition, finger recognition, palm recognition etc. but still it has some drawbacks like at times password techniques are not feasible, password can be easily stolen by hacker or if user uses complex password, user may forget that password etc.[1]. In this paper we have proposed Face Recognition System in the cloud computing. It gives good security to the cloud environment to provide service to the user or access the data or service.

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