CLOUD BASED HOME SECURITY

[1]Anjali Chachra
[1] Computer Science, KJ Somaiya college of engineering
Email:[1]chachraanjali@yahoo.co.in

**Abstract— This report deals with the design and implementation of a Home Security system through mobile devices, that take advantage of mobile technology to provide essential security to our homes that does not require specific hardware or skilled technicians. We have proposed to remotely monitor security surveillance system through cloud computing using any Internet enabled device. As an interruption is detected, an SMS alert will be given to the user and the user can view the video and image of the intruded room through Email or SMS and can secure his house by giving an alert to the vicinal. The user can monitor the intrusion from anywhere, on any internet enabled device. If the intrusion is true , the user is provided with the options to quietly alert proximates, play alarm sounds and post to the police. Thus, theft can be prevented. The implementation shows three use scenarios: (a) functioning and controlling video cameras for remote monitoring through mobile devices or sound sensors; (b) streaming live video from device and sending captured image to user's mobile devices; (c) recording and saving videos as well as images on a cloud computing platform for future playback. Furthermore, our application is not only limited to smart phones but also can be used by feature phones through their browsers.
Keywords- Cloud Computing platform, Home Security System, Remote Monitoring and Security Surveillance System.**

I. INTRODUCTION

With the increasing necessity of individual and resource security, residential monitoring services and applications have engaged much attention from both pedantic and industry. Blending with cloud computing technology is a trend in the development of Smart Home monitoring services. Cloud computing acts as a reliable, elastic, and secure data storage centre with low-profile facilities to provide data sharing and creates infinite possibility of applications in real life. However, there are still a lot of technical issues waiting for urgent answers:

1. Remote access and control.
Owing to the wired medium, monitoring service was limited in local network and spaces. So users were not able to access camera from a distance.

2. Mechanization and Intelligence.
Extra manual management is required to be deployed which is very difficult for Conventional monitoring systems. For example closed-circuit television. Surveillance systems must have necessary communication bandwidth to each camera and couldn't be constructed automatically. Besides, there is no system for camera to regularly work or impart data back, which is unsuitable and may lose data if lack of physical storage operation in time. In our solution, Media information captured by camera would be uploaded/stream to cloud computing platform, and user with mobile device is capable to download/stream media resource anywhere

with network connection.

Aim of our project is provide remote monitoring on the go, Two-way talk..

The remainder of this paper is organized as follows: In section II, we have provided the background knowledge and problems faced by current home security system and improvements made in proposed system. In section III, we have discussed about system architecture and implementation details. In section IV, we have concluded our work.
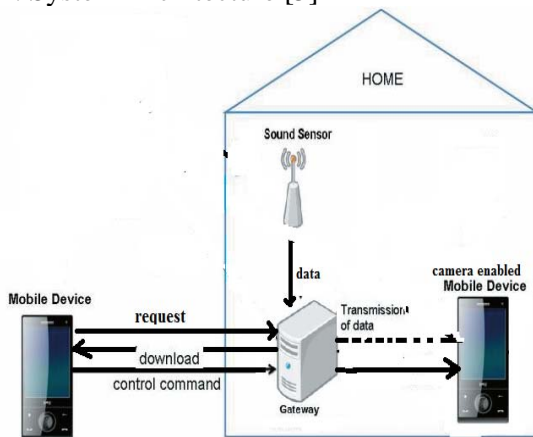
II. BACKGROUND

A. System Architecture [5]

Fig 1

Whether you feel the need to be aware of invader at home, pay attention on the baby in the other room or just want to see what your pets are doing when you're not around, this app can help. This app can display live video feeds and provide you screenshots of what you're viewing at any given time.It only requires camera enables mobile device placed at home which will capture streams and transmit to user's mobile device.It supports night vision functionality. It is recommended because it not only enables you to see clearly what's happening in dark rooms at night, but also makes it easier to see what's going on in dimly lit rooms on cloudy days.

When you do get alerts, they generate either one or more still images or a link to a video clip that typically lasts about 30 seconds. It let you store images in the Gateway server. For security, it require a user account name and password, and some additional details to access device. All video streams from your cameras go through the Gateway before arriving at your mobile device

or personal computer. The Gateway server acts as the mediator, imparting video feeds and storing video clips. Because the Gateway server sends out the email alerts, all you need to do is provide the email address to which you want the alerts sent and you're done. Currently, the security services offered in our server are:
(1) Real-time Monitoring.
(2) SMS notifications and user's confirmation in case of intrusion detection.
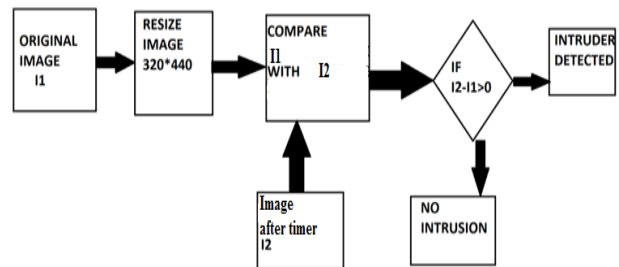
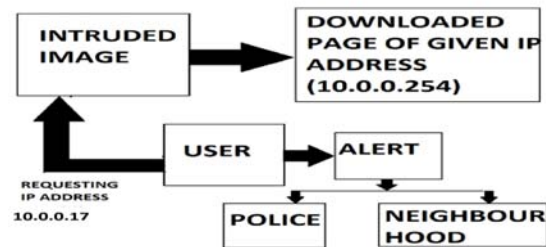B. Image detection [2], [3]

Fig 2: Image detection algorithm

Fig 3: Intrusion detection flow diagram

Fig 2. Describes how the image detection algorithms works. Initially image is captured which will be compared with image captured after some timeout. If there is difference in those images than it means something unreal has occurred. If not, than it means no intrusion. Fig 3. Shows how user, vicinal , police will be alerted.

C. Remote-Control based Monitoring

In remote monitoring, the camera is manually controlled. In case user detects that camera at home is turned off he can turn it on remotely by sending alert to phone placed at home This approach provides a convenience for user away from home to operate camera for implementing surveillance. After user login process, mobile terminal is capable to activate a residential

camera to capture images/video through sending command to gateway that controls camera directly.

Fig 4

A remote-control based monitoring use scenario Use case 1 shows how remote user utilizes mobile devices to control and acquire monitoring media resource, as shown in Fig.2.3. Possible messages flows are:

1) Alice (user of mobile device) detects that camera at home is not functioning so sends a control command (Message "VIEW CAMERA") to gateway Fig: (a).

2) Home gateway analyses the command received and activates a camera Fig: (b).

3) The camera captures images and regularly sends media data back to gateway.

4) Home gateway generates media files, and sends a response to Alice.

5) Alice sends a request to gateway server for downloading media resource.

6) Cloud server sends a response which includes media data back. Alice is capable to play and watch monitoring media resource.
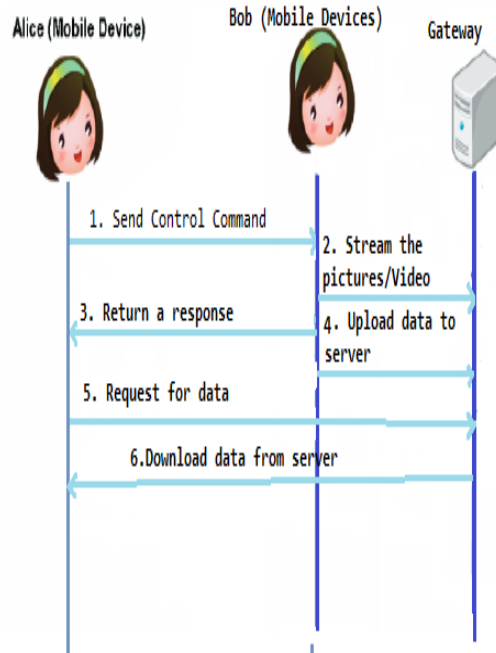

Fig 5: Remote-control based monitoring use scenario

III. SIMULATION

Prototype Implementation Tools

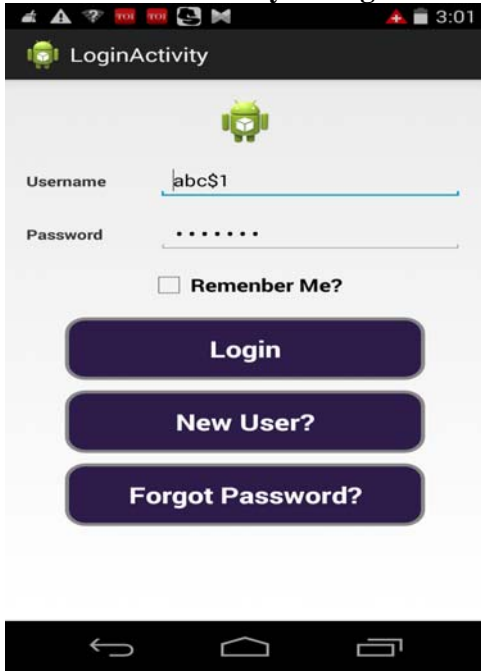| Elements	Tools
Mobile Client	Android mobile device
Gateway Server	MySQL
Media Capture Technique	Ffmpeg ,Camera android APK
Programming Language	Java

Table 1: Prototype Implementation Tools

Pre-Condition

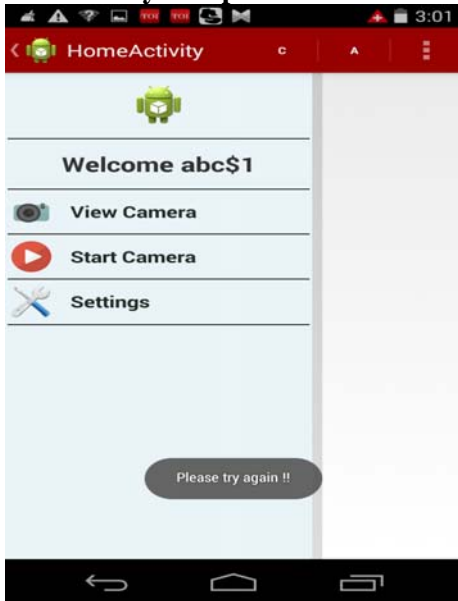We also define some pre-condition for the prototype implementation. The pre-conditions are:

1) Internet Connectivity.

2) This application must be installed in both the phones i.e. phone acting as camera and user's phone.
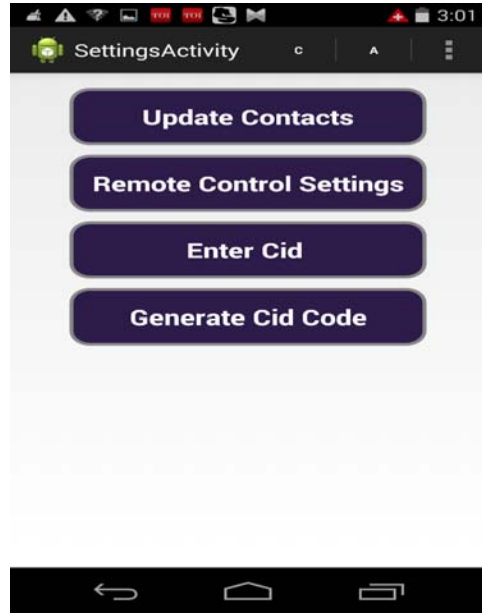
3) Phone should be unlocked.

D. User Interfaces Display

Activity 1: Login

Activity 2: Options

Activity 3: Settings

Fig 8: Modular approach

IV. CONCLUSION AND FUTURE SCOPE

Entire app will be deployed on cloud server. On improving the security surveillance system, we plan to add more social integration through social networking sites like Facebook and Google+. With the help of these online social networks, we can easily contact and inform a user's friends in case of an intrusion event and thus make burglary prevention more effective. For further work project will be deployed on cloud. The use of cloud services in home automation derives many benefits extending

from cost reduction to value added services. In the future we intend to detect smoke and fire.

REFERENCES

REFERENCES

[1] S. Fleck and W. Strasser, "Smart camera based monitoring system and its application to assisted living".

[2] D. Comaniciu, P. Meer, "Mean shift: A robust approach toward feature space analysis".

[3] P. Felzenszwalb, D. Huttenlocher,"Efficient Graph-Based Image Segmentation".

[4] M. Armbrust, A. Fox, R. Griffith, A. Joseph, R. Katz, A. Konwinski,G. Lee, D. Patterson, A. Rabkin, I. Stoica, M. Zaharia, "Above the Clouds: A Berkeley View of Cloud computing".

[5] Anindya Maiti and S. Sivanesan , "Cloud Controlled Intrusion Detection and Burglary Prevention Stratagems in Home Automation Systems".

[6] Somak R. Das, Silvia Chita , Nina Peterson, Behrooz A. Shirazi , and Medha Bhadkamkar , "Home automation and security for mobile devices".

[7] Hoang Nguyen, Bir Bhanu, Ankit Patel, and Ramiro Diaz, "VideoWeb: Design of a Wireless Camera Network for Real-time Monitoring of Activities".