Home Security Using Cloud Service

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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 proximate, 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; (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.*

1. INTRODUCTION

Currently the devices are standalone and require the users to be physically present to operate the devices with no interaction possible between two different devices. The system is also limited by its computational resources and storage capacity. For this project, I have developed a cloud based client server architecture to address these limitations and also to provide security and sharing functionalities along with remote diagnostics. This project has a device level framework to communicate with and exchange information with a cloud server.It will help you watch over your business, home, and other important locations. Our reliable cloud-based infrastructure ensures that you are are notified whenever something in your environment needs your attention. Whether you feel the need to keep an eye out for intruders at home, keep tabs on the baby in the other room or just want to see what your pets are doing when you're not around, cloud security cameras can help.These cameras offer more flexibility than do regular webcams because they typically use a Web portal, rather than a laptop or personal computer, as the monitoring and control hub, allowing you to check in from anywhere -- including your smartphone. But keep your expectations in check. While you can use the cameras to get the gist of what's going on at home, the quality of video can be downright

awful when streamed over your home Wi-Fi, through the public Internet and over the cellular data network to your smartphone. Most home security companies require a technician to come and install security systems. Not only are you inviting a stranger into your house, but this could cost hundreds to thousands of dollars. It is especially expensive if your home isn't pre-wired or you go with an elaborate system.You do not need to install any additional software. Simply open a browser, log into your account — and watch live video feeds and surveillance archives, configure notifications and manage your cameras' access. You just need to connect your cameras to the cloud, and you'll be able to access them from anywhere.

2. SYSTEM ARCHITECTURE

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.
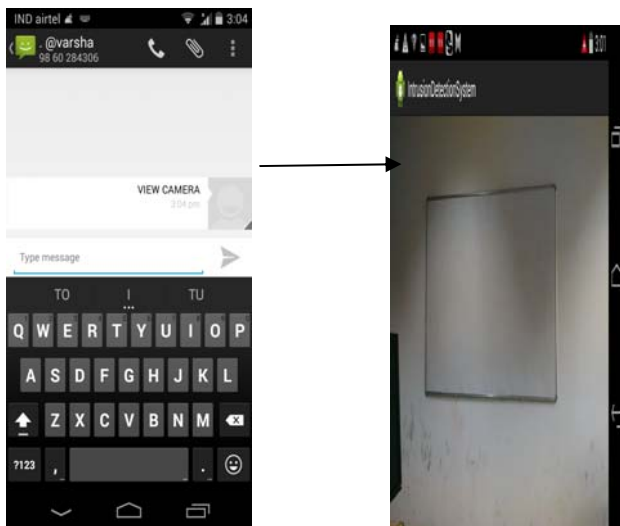
3. HOME SECURITY
3.1 Remote-Control based Monitoring
In remote monitoring, the camera is manually controlled. In case user detects that camera at home is turned off he can turn it on remotely by sending alert to phone placed at home This approach provides a convenience for user away from home to operate 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.
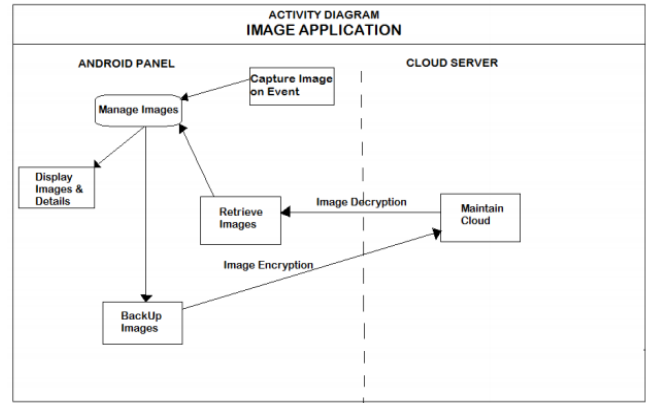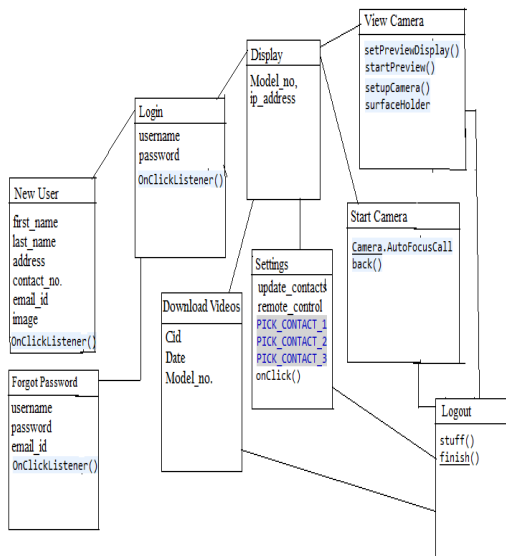
A remote-control based monitoring use scenario
Use case 1 shows how remote user utilizes mobile devices to control and acquire monitoring media resource, as shown in Fig 6. Possible messages flows are:

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.

3.2   System Design

3.2 Wowza Streaming Engine
Switching to Wowza allowed us to significantly increase our number of webcasts. We don't have to worry about the number of connections or viewers. We're confident the infrastructure will support the load. Wowza Streaming Engine is robust, customizable media server software that powers reliable streaming of high-quality video and audio to any device, anywhere. Whether you deploy it in the cloud or on premises, Wowza Streaming Engine software offers powerful components to tailor your streaming workflows with confidence. Deployment Options
On Premises Run Wowza Streaming Engine on one or more computers at your physical location, on your hardware, across your internet connection.Cloud Deploying Wowza® software in the cloud means streaming your content from high-performance virtual machines hosted remotely.Works with virtually all cloud hosting services, including Amazon EC2, Google Compute Engine and others

3.3 Virtual Private Server Configuration
About GoDaddy
GoDaddy is a publicly traded Internet domain registrar and Web hosting company. As of 2014, GoDaddy was said to have had more than 59 million domain names under management, making it the world's largest ICANN-accredited registrar. It serves more than 12 million customers and employs more than 4,000 people.The company is known for its celebrity spokespeople, Super Bowl ads and as being an online provider for small businesses. In addition to a post season college football bowl game, it sponsors NASCAR. It has been involved in several controversies related to security and privacy.In addition to domain registration and hosting,

GoDaddy also sells e-business related software and services. Domains by Proxy (DBP) is an Internet company owned by GoDaddy founder Bob Parsons. It offers domain privacy services through partner domain registrars such as GoDaddy and Wild West Domains.Subscribers list Domains by Proxy as their administrative and technical contacts in the Internet's WHOIS database, thereby delegating responsibility for managing unsolicited contacts from third parties and keeping the domains owners personal information safe from the public eye. However, a registrant's personal information can be released in some cases, such as a legal subpoena or cease and desist legal process, or for other reasons as deemed appropriate by DBP per its Domain Name Proxy Agreement. Over 9,850,000 domain names currently use the Domains by Proxy service..

3.4 Fast Forward Motion Pictures Expert Group(FFMPEG)

Ffmpeg is the leading multimedia framework,able to decode, encode, transcode, mux, demux stream, filter and play pretty much anything that humans and machines have created. It supports the most obscure ancient formats up to the cutting edge. No matter if they were designed by some standards committee, the community or a corporation.

It contains libavcodec, libavutil, libavformat, libavfilter, libavdevice, libswscale and libswresample which can be used by applications. As well as ffmpeg, ffserver, ffplay and ffprobe which can be used by end users for transcoding, streaming and playing.

The FFmpeg project tries to provide the best technically possible solution for developers of applications and end users alike. To achieve this we combine the best free software options available. We slightly favor our own code to keep the dependencies on other libs low and to maximize code sharing between parts of FFmpeg. Wherever the question of "best" cannot be answered we support both options so the end user can choose.

4. USER INTERFACE
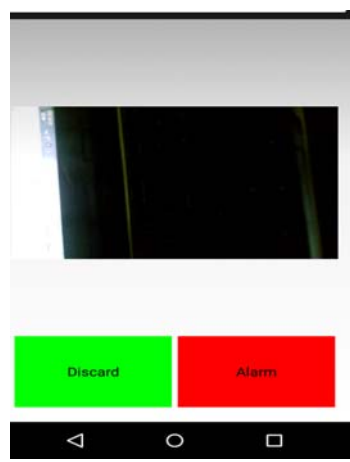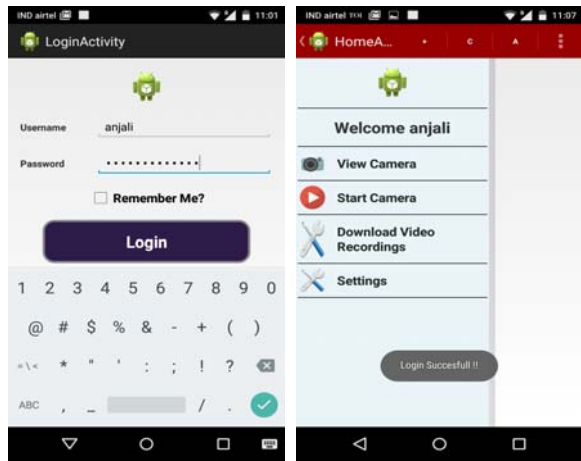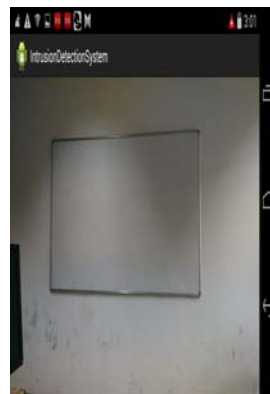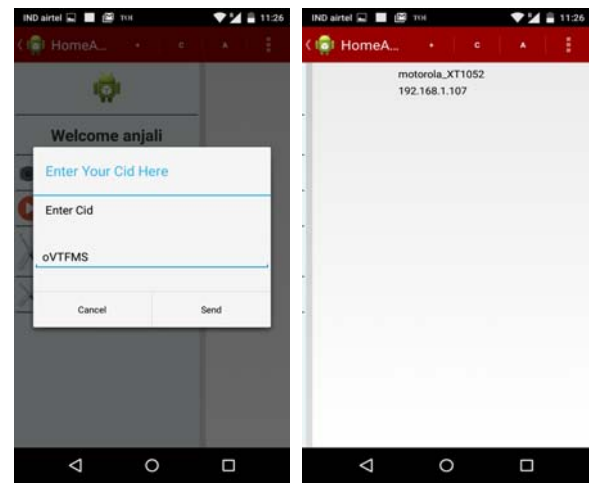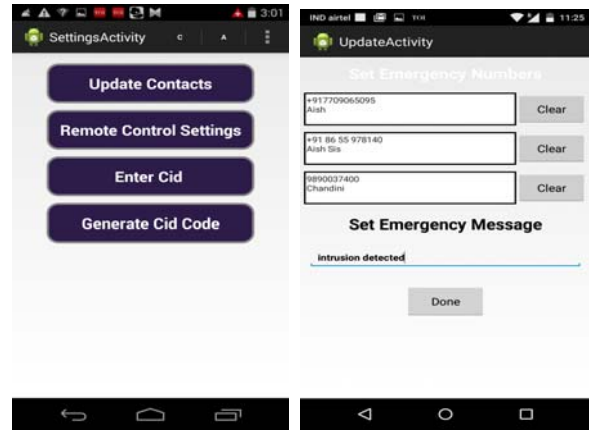
5. CONCLUSION AND FUTURE SCOPE

It works on almost all devices with a built-in Internet browser, but provides a simplified website for them. Although having fewer features, it is the best solution to quickly check what is happening in front of your surveillance cameras.Video surveillance has never been this easy to use. All you need to have to access your cameras is a computer with an Internet connection.

Cloud computing has been making significant inroads in the domain of application development. The fact that companies can rely on huge amounts of storage and computational ability without worrying about scalability and availability of resources has brought a lot of visibility to the cloud platform. This project has allowed me developed a framework working with the android platform and the cloud platform to leverage the benefits of both to provide a seamless integrated solution, addressing the limitations of both the platforms. For my project, I have combined the portability and optimization of mobile devices with the computational resources and storage capabilities of cloud servers bringing together a solution which can easily be expanded to provide multiple functionalities depending on the domain. Working on this project, has allowed me to work with and learn multiple development environments like Android, which is one of the fastest growing operating systems. Because the project involved communications between the client was an android application, memory usage and application stability was a primary concern. Because images and the mobile camera are used significantly, I have optimized my code efficiently to handle memory issues by detecting when the application loses focus and closing the background instances, loading classes on demand rather than at application launch, restricting access to the device by using permissions and not keeping sessions active for long. Because of a multitude of services working in parallel, testing the project to diagnose and fix issues required me to build a comprehensive test methodology.

The future work for this project will be to integrate the application with the Qolsys Home Security System, and work on developing additional features to further improve the product. 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 notify 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 detects Smoke and fire.

REFERENCES

[1] Anindya Maiti and S. Sivanesan,"Cloud Controlled Intrusion Detection and Burglary Prevention Stratagems in Home Automation Systems" in proceeding of 2012 2nd Baltic Congress on Future Internet Communications

[2] Ms. Parag K. Shelke, Ms. Sneha Sontakke, Dr. A. D. Gawande," Intrusion Detection System for Cloud Computing" in proceedings of International Journal of Scientific & Technology Research Volume 1, Issue 4, May 2012

[3] N. Armstrong, C.D. Nugent, G. Moore, and D.D. Finlay, "Developing smartphone applications for people with Alzheimer's disease," in Proceeding of 10th IEEE International Conference on Information Technology and Applications in Biomedicine (ITAB), pp. 1 - 5, Corfu,Greece, 2010.

[4] Hermann Merz, Thomas Hansemann, and Christof Hübner, Gebäudeautomation. München: Carl-Hanser-Verlag, 2010.

[5] 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", Technical Report No.UCB/EECS-2009-28, University of California at Berkley, USA, Feb.10, 2009.

[6] Feida Lin and Yen Weigou, "Operating System Battle in The Ecosystem of Smartphone Industry," Proceedings of the 2009International Symposium on Information Engineering and Electronic Commerce, pp. 617-621, 2009.

[7] Werner Kriesel, Frank Schollik, and Peter Helm, KNX/EIB fürdie Gebäudesystemtechnik in Wohn- und Zweckbau. Heidelberg:Hüthig, 2009.

[8] Karlheinz Frank, KNX/EIB Grundlagen Gebäudesystemtechnik.Berlin: Huss-Medien, 2009.

[9] S. Fleck and W. Strasser, "Smart camera based monitoring system and its application to assisted living", Proc. IEEE, vol. 96, pp.1698 2008.

[10] Pei Zheng and Ni Lionel M., "Spotlight: the rise of the smart phone," Distributed Systems Online, IEEE, 2006.

[11] D. Comaniciu, P. Meer, "Mean shift: A robust approach toward feature space analysis", IEEE Trans. on Pattern Analysis and Machine Intelligence, 2002, 24,pp. 603-619

[12] P. Felzenszwalb, D. Huttenlocher,"Efficient Graph-Based Image Segmentation", Intl Journal of Computer Vision, 2004, 59

[13] C. Christoudias, B. Georgescu, P. Meer, "Synergism in Low Level Vision", Intl Conf on Pattern Recognition, 2002, 4, pp. 40190

[14] http://www.wowza.com/uploads/wowza4/documents/Streaming Engine Solution Brief.pdf