DT211 Project Proposal Form 2014/2015

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Project Title
Remote Video Surveillance Application

Summary (approx 200 words)
The purpose of this project is to develop an application for Android devices that will allow a live stream video surveillance from two cameras located on a local Ubuntu server (raspberry pi). The project is aimed at users who may be away from home for any given period of time. The motion sensor and sound notifications will ensure peace of mind of the users home's security wherever they are.

When the motion sensor detects movement, it notifies the server which will contact the client (via network connection) and notify the user (via app) that motion was detected. The user may choose to answer the notification and live stream the call, or they can reject the notification which notifies the server to record a 10 – 15 second video. The video will be saved (SD card/External drive) and uploaded via the users dropbox account.
I plan to store all users in an online database which will contain their email, user name, password, dropbox account (choice), and their IP and port numbers.

Background (and References)
After researching online, I found a project which contained a similar system to mine, The [1] Hubble Motorola Connect Wi-Fi Outdoor home video camera is a cloud-based home monitoring camera that turns any compatible smartphone, tablet, or computer into a fully functional home video monitoring system. The only thing is the system can be very costly.

I plan on creating a more affordable simplistic system which gives the same result.
How my system will differ is that the user can add a dropbox account which allows the user to view back videos of any notifications they have missed. The user may also have the option to record a live stream video. The videos will be temporarily stored until it's uploaded to dropbox. It will be then be deleted to save space.
Another difference will be the cost. Although my system may have one or two fewer features, it will still return the same result and it can save users a fortune when considering such a system.

[1]
 http://www.motorolahome.com/hubble
https://play.google.com/store/apps/details?id=com.blinkhd&hl=en

Proposed Approach

The system will contain multiple technology components with a number of different programming languages.

I plan on installing Ubuntu on my raspberry pi and developing the application on my windows os using eclipse/Android studio. I will set up a client (mobile device) and server (raspberry pi) connection using RTSP along with the *Gstreamer* framework. I will be also setting up an online database using SQL on webhost to hold the users and their information.

Once the application is created, the user will be able to login or register their details. Once logged in, the application should display live feedback of the camera views. The views will be made clickable so that the user can interact with the cameras and he/she should also be able to swipe to each camera view for ease of use. The motion sensor should activate the server to send a notification to the client. The user can choose to answer the notification which will give an instant view of the camera streams, or they can reject the notification which will notify the server to record a video clip and save it to the external/SD card. The file will be uploaded to drop box and the remaining file on the SD will be deleted from the storage using a script. While streaming, the user can interact with the camera and move it to certain angles using the app. The user will have a chance to record a video clip that they might want to take a later look at. This will have the same storage process via dropbox. The user may wish to edit/delete his account in the settings menu.

I also would like to look at the possible use of a custom shell on the server for security purposes.

Deliverables

I hope to deliver a fully functional remote surveillance system that is connected to a local network. The application should be available on any mobile device and allow the user to interact with this system, record videos and it should be able to upload files to dropbox.

Technical Requirements

Understanding of mysql – webhost.
Understanding of the client-server model and sockets in java.(Gstreamer)
Understanding of java programming language.
Understanding of the Linux shell + custom shell.
Understanding of streaming process and required protocols.
Understanding of the Eclipse IDE program.
Raspberry Pi Model B.

Project Reviews – Please include reviews of two of LAST years projects from your programme.

Project 1
Title:

Student:

Description (brief):

What is complex in this project

What technical architecture was used

Explain key strengths and weaknesses of this project, as you see it.

Project 2
Title:

Student:

Description (brief):

What is complex in this project:

What technical architecture was used

Explain key strengths and weaknesses of this project, as you see it.

Proposal Sign off:	
Lecturer Comments	
Student Signature	**Date**
Lecturer Signature	**Date**