Project Code: BA1-09

Using Mobile Phone Sensors for Wireless Home Security Systems

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Executive Summary

The purpose of this Final Year Project is to investigate the possibility of having a Smartphone as a next generation security tool. More in detail the project goal is to examine if the iPhone SDK 3.0 opens up new possibilities to security applications utilizing all sensors on the iPhone. A practical part about the concept is realized by implementing two applications which programmed on the SDK 3.0. The applications are real life projects which will be released in the App Store after the project is completed.

Introduction

Different advanced sensing devices includes accelerometer, GPS and camera are able to provide many applications in home security. A real-time and compact detection algorithm can identify if a person or home is safe or not. For example, the camera will act as a vision sensor to detect burglar and generate alert actions, such as sending an Email or triggering a siren. In this case, you can rest comfortably at night and know if your valuables are secure. As for the security of the elderly and Alzheimer sufferers, the alarm in the phone will be generated once the person is leaving from the pre-defined local region, by the detection of GPS sensor.

Objectives

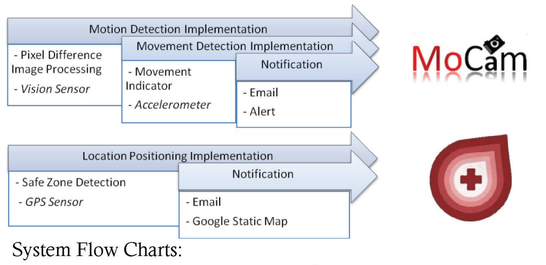
In this project, the following goals are going to be achieved:

1. Design an attractive layout and innovative interface of the system
2. Recording, alerting and motion detection
3. Recording, alerting and tracking location
4. Develop low power and energy consuming algorithms.

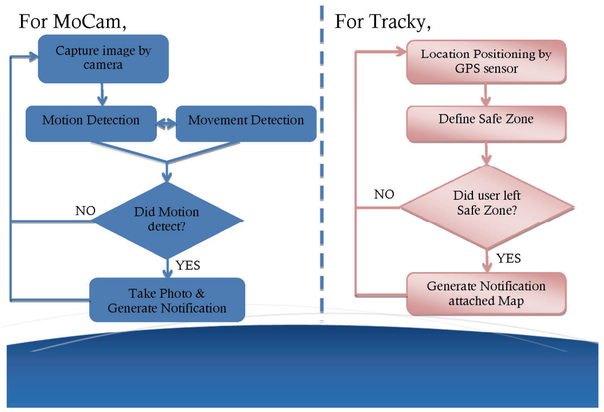
Methodology

In this project, two applications were developed:

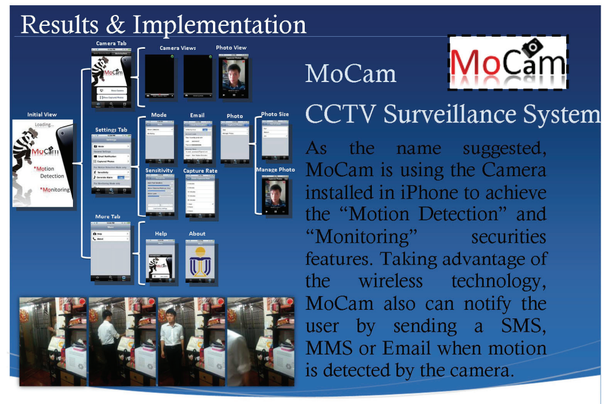
- "MoCam" - acts as a CCTV Surveillance System with motion detection feature
- "Tracky" - acts as a location tracking and alarming system.



System Flow Charts:



Results & Implementation



Tracky

Location tracking system

Tracky enables the user to get the current location and define the Safe Zone. The user can set the Safe Zone by zooming in and zooming out of the map. The area within the Tracky logo would be set as the Safe Zone. The user position is reported in a defined frequency. Email notification is generated if the user leaves the Safe Zone.