**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 iPhone applications.

**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:**

For MoCam,

- Capture image by camera
- Motion Detection
- Movement Detection
- Did Motion detect?
- NO
- Did user left Safe Zone?
- NO
- Take Photo & Generate notification
- YES
- Location Positioning by GPS sensor
- Define Safe Zone
- Did user left Safe Zone?
- YES
- Generate Notification alert Map
- NO

For Tracky,

- Location Positioning implementation
- Movement Detection Implementation
- Notification
- Email Alert

**Results & Implementation**

**MoCam**

CCTV Surveillance System

As the name suggested, MoCam is using the Camera installed in iPhone to achieve the “Motion Detection” and “Monitoring” securities features. Taking advantage of the wireless technology, MoCam also can notify the user by sending a SMS, MMS or Email when motion is detected by the camera.

**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.