

IT Carlow
4rd Year Project, 2020

Project Specification

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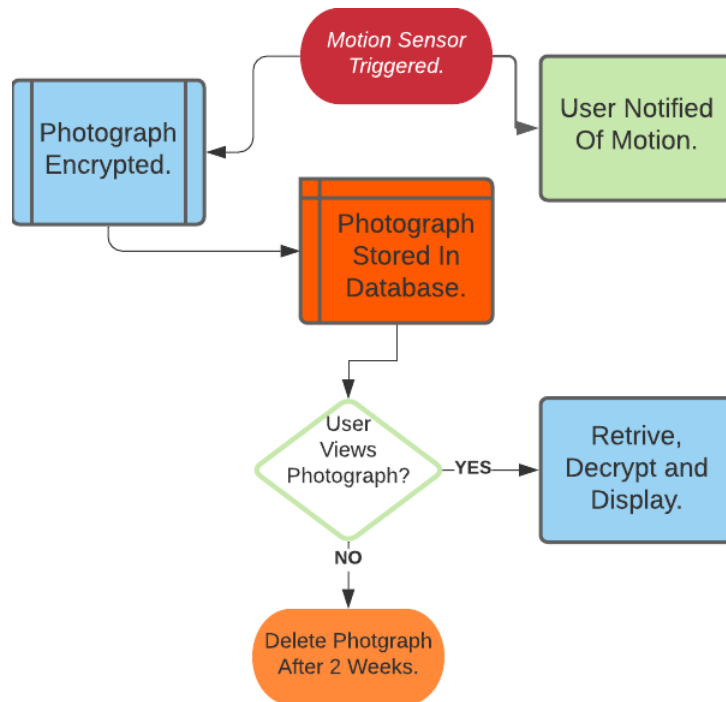
1 Introduction

Upon my research for my security project, I have decided to do a home security surveillance system. The focus point of this system will be ensuring data from the sensors integrity and the stored data's safety . My main goals and specification of the system are detailed below.

2 Main Goals

- The system will be controlled by the use of a raspberry PI.
- A CCTV camera will be triggered by a motion sensor and a photograph will be taken.
- The photograph must be sent to an off site location and stored.
- Homeowner will be alerted once motion is detected.
- When the photographic data is in transit, it must be encrypted and have tamper features that was tamper evident or be tamper proof.
- The home owner should be able to access this camera database by use of their smart phone.





3 The Raspberry PI

The raspberry PI will be used to control all security subsystems within the project. The PI will be the core of the system and is responsible for taking the Boole from the motion sensor and commanding the camera to take a photo. The photo will then be stored temporarily within the PI's storage and processed accordingly. Such processes involve the encryption of the photographic data and the packaging of the data to be sent to the off site server database.

3.1 The Encryption

The encryption protocol used must be of a high standard and certified by the U.S. National Institute of Standards and Technology. The protocol must ensure that data cannot be intercepted and then decrypted while in traffic to the database or in the event of a database breach. A method of proving integrity and authenticity must be supplied within or alongside the encryption process.

The data must stay encrypted unless an authenticated session has started with a user who is allowed to access the data.

3.2 The Camera

The camera will be able to take photographs. The camera must have a wide enough lens to allow it to have a full view of the room being monitored, The camera must be compatible with the raspberry PI and be able to take high enough quality photographs to allow one to clearly see who is in the frame.

3.3 The Motion Sensor

The motion will have a wide area of detection. This will disallow the possibility of any blind spots within a room and ensure that once there is motion in a room, the cause will be photographed.

4 The Database

The database must have the capability of being off site such as rented cloud storage or in an alternate building away from the home. It must have sufficient capacity to allow for many weeks of storage. It should also delete the oldest stored photographs once the storage is nearing full capacity.

Within the database, we must store the encrypted photographs, automatically assign each photograph a unique ID, record the Date and time at which the photo was taken, and the name of the device that the photograph was taken from.

5 User Interface

This will be a user friendly application with a secure login feature that will allow a home owner to view, edit and delete data stored within the database. The photographic data can be displayed within the app with the user allowed to filter the results to show the past day, week or to select and view a specific time frame of their choice.

