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Raspberry PI Based Security System

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ABSTRACT:

Object tracking is a complex problem within the area of image processing. In this paper a thorough review of object tracking process which includes selection of object representation, object features and method for object detection. A security system which can detect any intruder in our home and send a email along with a alert message to our mobile using GSM technology is designed. The main aim of this paper is to design a security system which uses Raspberry pi and GSM technology and which if flexible and affordable for home security. Along with Raspberry pi and GSM technology a surveillance camera which captures the image of the intruder comparing the previous pixels on the presence of a intruder are used.

Keywords: Home security, Raspberry Pi, GSM technology, E-Mail alert.

1.INTRODUCTION:

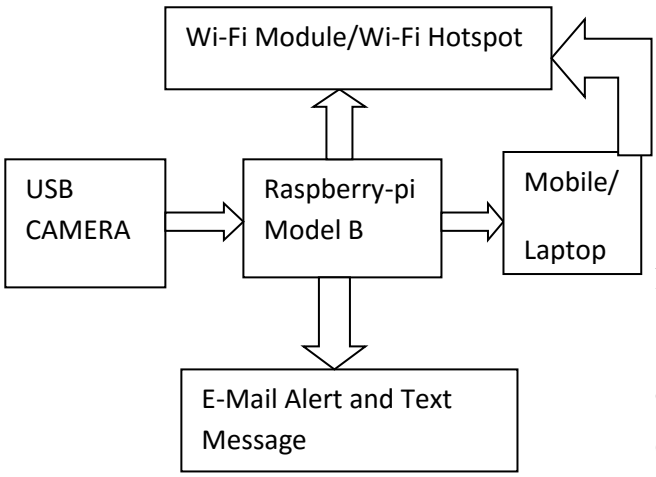
Now-a-days security and safety are becoming more important and crucial in our day to day lives. So a security system which will effectively manage this issue is designed. Whenever the user is away from his place there maybe visitors who are known or unknown to the person. If any unknown person tries to enter into the house, the PIR sensor will detects the presence of human appearance which will notify the user using message through GSM and image captured by camera through email using internet. Then user can know whether any intruder is trying to enter the house and can immediately inform that to police.

Generally a laptop or a computer are used for the remote controlling and monitoring of a house using internet requires which are large in size and heavy to carry around all the day. So a mobile phone with operating system on it are used for remote controlling and monitoring the house.

2. METHODOLOGY:

The process that how a image is captured and sent to the mail can be be understood by knowing the basics of camera analyzing. An image is a combination of a number of pixels and each pixel corresponds to a specific code. All these pixels together form an image. Pixels of the compared continuously and if there occurs any change in the pixels

be understood by knowing the basics of camera analyzing. An image is a combination of a number of pixels and each pixel corresponds to a specific code. All these pixels together form an image. Pixels are compared continuously and if there occurs any change in the pixels image will be captured and an e-mail along with an alert message will be sent to the user.



3.IMPLEMENTATION OF THE ALGORITHM

This algorithm detects any moving object by comparing the change in pixels and sends the image of object detected as an e-mail along with an alert message to the mobile phone. This works on the difference between frames concept. Every frame in the video is returned as an rgb image on which we can do image processing.

The first stage of this process is to acquire the camera information connected to the laptop. Then the area is monitored using this camera. When the video acquisition starts, the video is made into frames. The entire program is written in python and is dumped into the Raspberry-pi using a micro sd card. The USB camera is connected to the Raspberry-pi kit. Median filtering is used to remove unwanted noise in the image. Here the pixel value is converted into median of 3X3 sampling window while keeping the value of the border pixel values unchanged.

Point tracking, Kernel tracking and Silhouette tracking are the methods which are used to detect the moving object comparing the pixels and based on the required distance the surveillance camera is inserted.

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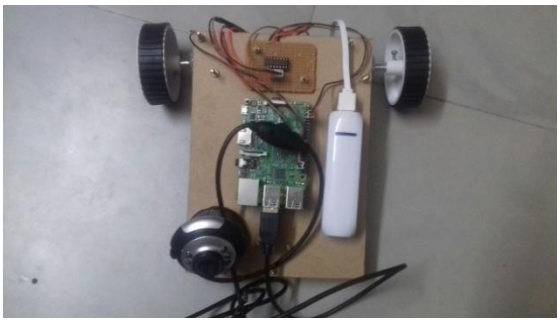
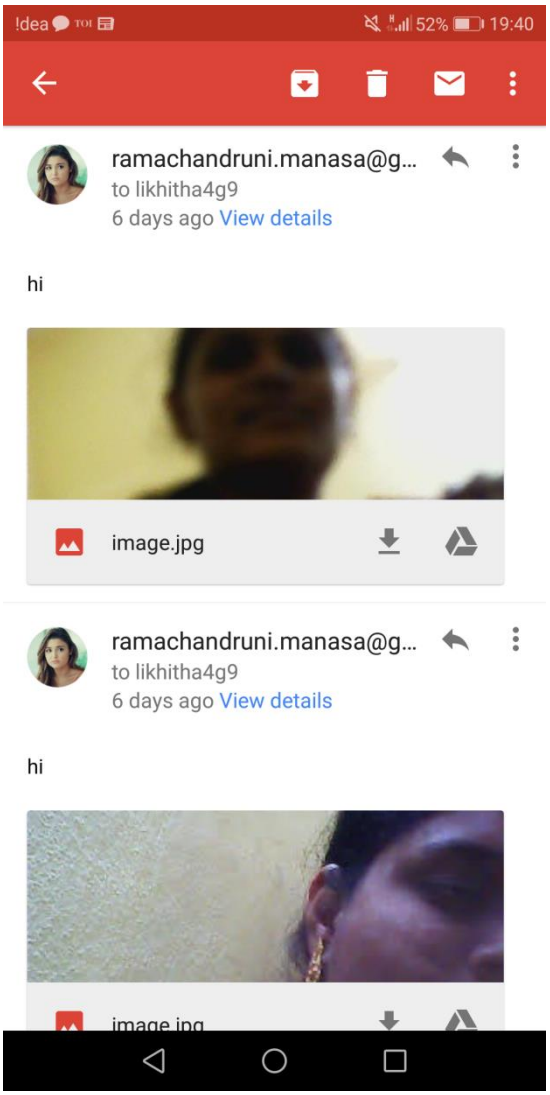
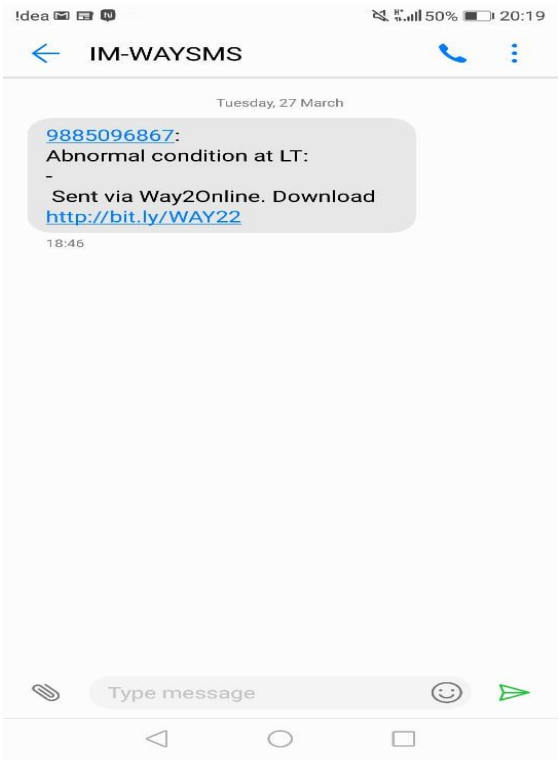
When the object is detected a snapshot of the image is taken and sent as an e-mail to the security and a message is sent to the mobile of the user using GSM technology.

4. RESULT

The camera detects the moving object based on the above algorithm and send the alert mail and message to the user.







5. CONCLUSION

This paper presents the design and implementation of an interactive smart home security system with email alert and message alert whenever it detects an intruder in our house which is of low cost and provides better security.

6. FUTURE SCOPE

1. The accuracy of object tracking could potentially increase by developing methods for a more automatic selection process of features.

2. Automatic feature selection has received attention in the area of pattern recognition, where methods for this purpose are divided into filter methods and wrapper methods. However, these have not gotten the same attention in the area of object tracking, where feature selection still is mostly done manually.

3. A suitable continuation of a work like this thesis would be to make an easy, comprehensible summary over the most common object tracking algorithms, thus making an extension to this work.

7. REFERENCES

1. A. R. Al-Ali, M. AL-Rousan,'Java – Based Home Automation System', IEEE Transactions on Consumer Electronics, Vol.50, No.2, pp. 498- 504, 2004.

2. E. M. C. Wong,'A Phone Based Remote Controller for Home and Office Automation', IEEE Transactions on Consumer Electronics, Vol.40, No.1, pp. 28-34, 1994.

3. G. M. Sultan Mahmud Rana, Abdullah Al Mamun Khan, Mohammad NazmulHoque, Abu FarzanMitul,'Design and Implementation of a GSM Based Remote Home Security and Appliances Control System', International Conference on Advances in Electrical Engineering (ICAEE), pp. 291-295, 2013.

4. N. Shriskanthan, F. Tan, A0. Karande,'Bluetooth Based Home Automation', Microprocessors and Microsystems, Published by Elsevier, Vol.26, No.6, pp.281-289, 2002.

5. L. Ophix,'802.11 Over Coax – A Hybrid Coax –Wireless Home Network using 802.11 Technology,' Consumer Communication and Networking Conference, pp.13-18, 2004.

6. H. S. Kim, C. G. Lee, 'Wireless USB Based Home Security System on the OSGi service Platform', International Conference on Consumer Electronics, pp.1-2, 2007.

7. A.N. Ansari, M. Sedky, N. Sharma, A. Tyagi,'An Internet of Things Approach for Motion Detection using Raspberry Pi', International Conference on Intelligent Computing and Internet of Things(ICIT), pp.131-134.

8. W. M. EI- Medany, M. R. EI-Sabry,'GSM Based Remote Sensing and Control System using FPGA', Proceeding of the International Conference on Computer and communication Engineering (ICCCE), 2008.

9. A. Sawant, D. Naik, V. Fernandes, V. Pereira, 'Low Cost Wireless Home Security System Using Raspberry Pi', International Journal of Pure and Applied Research in Engineering and Technology, Vol.3, No.9, pp.814-821.

10. V. Persis Priyanka, K. SudhakarReddy,'PIR based Security Home Automation System with Exclusive Video Transmission', International Journal of Scientific Engineering and Technology Research, Vol.4, No.18, pp.3316-3319,2015.