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SURVEILLANCE CAMERA AND AUTO BACKUP CLOUD USING RASPBERRY PI

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ABSTRACT

In the technological age 4.0 It should be trying to prevent crime. For that an a office must install a surveillance camera, so that theft can be known immediately by the office owner. for simplify in supervision this system using *ipcamera*, *webcam* and using *mini computer (Raspberry Pi)* which aims to secure evidence in the form of recorded images with way Surveillance camera the capture images when there is movement, then the results of the image recording automatically uploaded to cloud computing. so with there is system, then it will be more secure evidence if the machine than the camera record has been stolen or tampered with by the perpetrators of theft.

INTRODUCTION

In the technological age 4.0 already should we prevent the occurrence of a crime. An office security for now become a very important thing because besides a big crime also the activity of the owner is very high [1] , [2]. Many attempts were made by the owner to secure the office one of them by giving a security key to the office door [3] , [4]. however things this still possibility big happen crime of theft. For this reason, needed a surveillance camera is, so that if there are suspicious actions, owners can find out soon enough [5] , [6] , [7].

By installing a surveillance camera device only still not enough secure the urban environment. Because the thief now has followed the development of surveillance camera devices, where the machine or surveillance camera being a target rather than a thief. While the results of the camera record can be used as evidence criminality act at the trial as stated in the law (ITE).

Based on the explanation then information and documents the electronics can be istinguished but inseparable. Besides that electronic information is data or a set of data while electronic documents is a place or container from that electronic information [8].

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For example a picture with format .jpg, then the contents of the photo is electronic information, while the file .jpg is an electronic document.
Therefore the writer made a surveillance camera system with used *Raspberry Pi* connected to the camera *webcam* and *ipcamera* to be able to capture images when there is movement of objects in a room [9]. Then the results of the image recording with *raspberry pi* connected to the internet will di *upload* to *Google Drive* automatically [10] , so that it can be monitored remotely and this can be more se cure evidence recording image when there is theft and destruction of surveil lance camera devices.

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METHOD

In making this surveillance camera Ada beberapa tahapan yang dilakukan before later the results obtained from the manufacture of the system. The stages as in the image 1

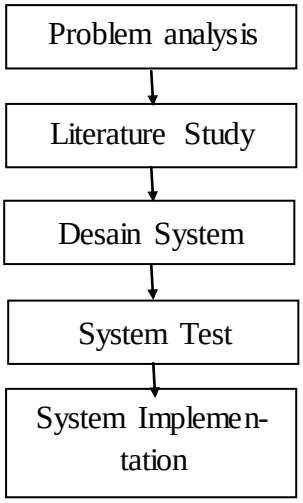

Image 1. Stages of Analysis

Based on the analysis stages above, the steps can be explained as follows:

1. Problem Analysis
   In analyzing research problems carried out several ways and methods, among them are descriptive methods. In this method the data will be collected, compiled, grouped, analyzed, so get some picture clear about the research problem.
2. Literature Study
   Aim to find out the method and the basics of science designing a surveillance camera system used raspberry pi, web kamera dan ip kamera, switch hub, router outdoor.
3. Desain Sistem
   Is a stage in designing a surveillance camera system

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4. System Test
   Aim to test from the surveillance camera system designed is it ready to use or not
5. System Implementation
   Is the last stage of design surveillance camera system that is, the system is ready to use

RESULT AND DISCUSSION

To be able to run this surveillance camera system needed raspberry pi, web kamera dan ip kamera, switch hub, router outdoor *TP-LINK* with type TL-WA7210N for internet connection. As in the image 2:

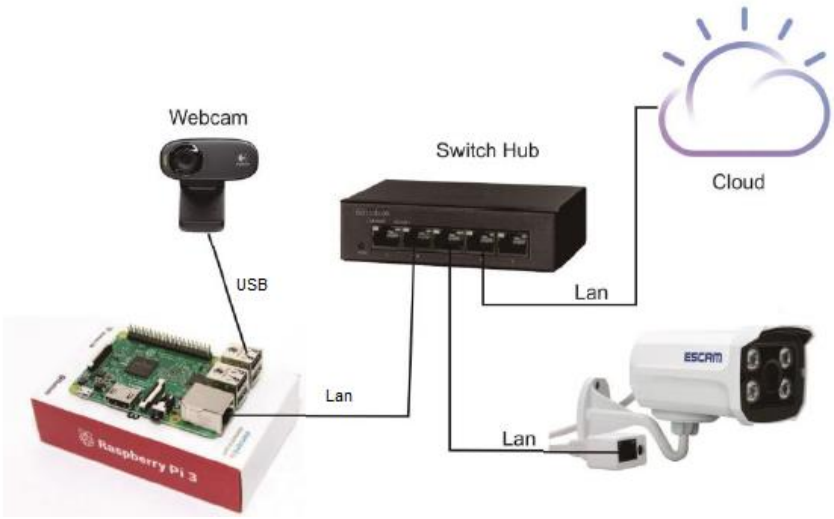

Image 2. Blog Diagram of Surveillance Camera Systems

So that the system on the raspberry pi can run perfectly, the first step that must be done is install the ubuntu lite linux operating system on the raspberry pi. It aims to run program code with minimalis device, then create program code with programming language python 2.7 to access the ip camera, camera webrecord videos in .avi, take photos with .jpg when there is movement, then the image results are uploaded into Google Drive secara otomatis, so that the admin will get a backup image record data. In addition, there is also a server flask which serves to display streaming data on the system page. All these processes can run simultaneously using the thread programming method. So that data can be entered into the database, then it takes a mysql service that is synchronized with the python programming language. So that data that has been sent from the python programming language can be displayed on the admin page and the user page. As the design in the image 3 below :

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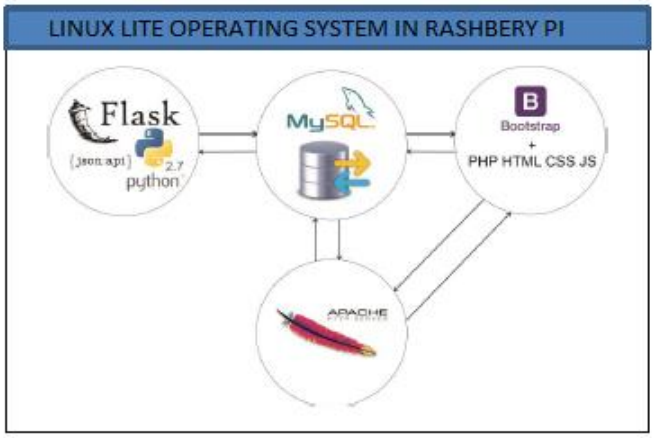

Image 3: System Schematic on the Raspberry pi

In this study using *Raspberry Pi* with open source operating system, to run a surveillance camera system that has a program code with logic. If there is movement, then the system will capture images with the format .jpg then the picture automatically di upload ke *Google Drive*. The block diagram can be seen in the image 4 :

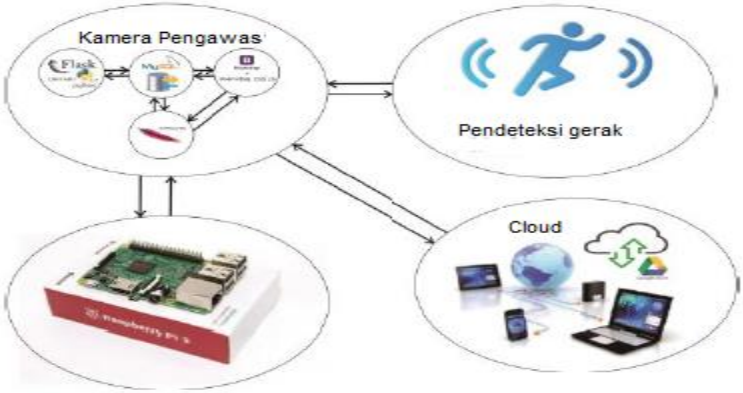

Image 4. Interconnected System Schema

Supporting elements for the system to run install the operating system inside raspberry pi in order to run the program code with minimalistic device resources, then make the program code python 2.7 to access ip camera and dan web camera. It also records video in format.avi, and to record if a movement occurs. In the program python ada juga fungsinya flask server which works so the admin can display streaming data on the system page. The whole process can go hand in hand with used programming method thread. So that data can enter the database, so needed the mysql service which is synchronous with the programming language python. Then the data has been sent from prgoraming language python can be displayed to the admin page and user page, then needed a web service is apache. After all processes and services are running all, it will be accessible by admin and user. Like the concept in the image 5 below this

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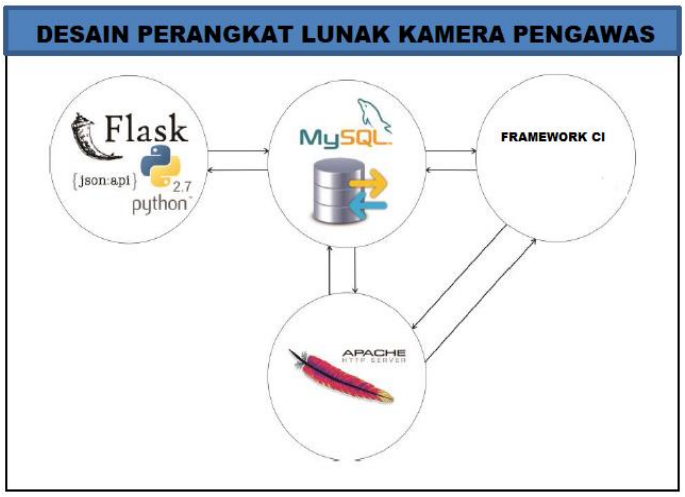

Image. 5 Software Schema

On the streaming page there is a choice of camera one or camera two which can be displayed on this page. So it can only display live viewing from one of the camerasThis is because to save *resource* from the device raspberry pi

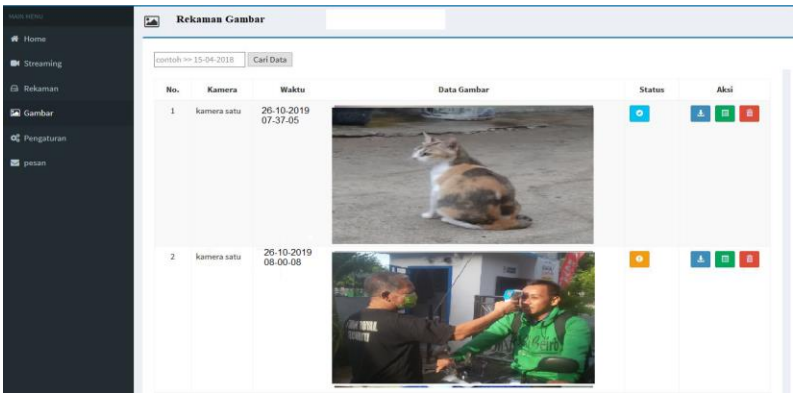

Image 6. Display of Recorded Results

On the recording page there is a status display which means image captions the sudah *backup* in G*oogle Drive*, -*upload*, or failed *upload*. On this page can also see image details, delete images one by one

CONCLUSION

This surveillance camera system can access webcam and internet protocol (*IP*) camera with used *Raspberry* as a control center. This surveillance camera system also can take pictures with the format .jpg based on the movements detected by the camera *(motion detection)*. The results of the image obtained then can send automatically to *Google Drive* During *raspberry pi* connected to the internet.

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