ABSTRACT

Security is one of things that concern people. The way that you can do is installing CCTV in the areas that will be monitored. But the shortcomings of this method is we need people who watch time to time so, human error factors often occurs when we implement this way.

In this Final Project, will be created a security system which does not need people who watched on the monitor screen from time to time, so to reduce human-error factors. Security system that is designed, was based image processing to detect any movement based on frame changes that occur in the webcam which will be processed on a PC then. The method that uses to detect motion is frame difference method. To distinguish objects that move human or non-human is used extensive calculations of a moving object in pixels and the aspect ratio of the object. When recognized as a human, PC will give an instruction to send an SMS automatically to GSM modem. Then, GSM modem will send an SMS as notification.

On the test results based on the different speed of human objects , the most optimum conditions obtained accuracy of 90% in condition when human object is walking slowly (0.5 m / s). At different light intensities (morning, noon, and night), the most optimum conditions obtained in the daytime by 90%. For the most optimum threshold value is 100 with different lighting (morning, noon, and night) obtain an accuracy by 73.3%. Overall, system can send an SMS automatically after detects human. In addition the system can properly detect non-human objects that achieved 100% success rate and without sending an SMS obtain percentage 100%.

Keywords : *webcam, frame difference*, *AT Command,* SMS