DESIGN AND IMPLEMENTATION OF ADAPTIVE ROOM MONITORING SYSTEM ON ROOM SITUATION CHANGE BASED ON MULTI CAMERA FOR ANDROID SMARTPHONE IN PICONET NETWORK

Name : Alfin Suryo Alam
NRP : 5108 100 155
Department : Informatics Engineering FTIf-ITS
Supervisor I : Waskitho Wibisono, S.Kom, M.Eng, Ph.D.
Supervisor II : Baskoro Adi Pratomo, S.Kom, M.Kom.

Abstract

Closed Circuit Television (CCTV) is a security device consists of camera and video recorder that mostly used in certain industry such as office, shop and housing. Camera on CCTV is used for capturing image in a room. Whereas, video recorder on CCTV is used for recording all events in a room based on image which is sent by camera. In this era of advances technology, there are a lot of Android-based smartphone that have some features equal with features on CCTV. Those same features are camera and video recorder. With the existence of those features, the writer has an idea to make a CCTV that can be built by ourself and have a great mobility. A room monitoring system using two Android-based smartphones that adaptive with room situation changing.

The problem of this room monitoring system making is how a camera can detect the change on image and how a video recorder on Android-based smartphone can record automatically shortly after there is a change on image which is captured by camera. It is used to detect whether there is an activity on a room or not. For the first problem can be solved by image change detection algorithm. That algorithm uses grayscale image processing, histogram algorithm and Euclidean Distance calculation to get the similarity value of
two images. For the second problem can be solved by using bluetooth communication as known as communication on piconet network. When two images are indicated to be different, the Android-based smartphone which is used for video recorder will get a notification message via bluetooth to start the recording.

From test result, it can be concluded that accuracy from the implementation of algorithm which is said before is very accurate about 91.7% by using the rule such as the distance between object and camera is about one metre. Beside that, there is weakness in the implementation of that algorithm. This system can work fine if only the object on the room doesn’t move quickly. Minimum of two times image capturing, the object still in the room.

**Keywords:** smartphone, Android, room monitoring system, image change detection, bluetooth.