ULTRASONIC MOTION DETECTOR WITH 180° ROTATIONAL SECURITY CAMERA

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ABSTRACT

This project is a development of security camera to increase the security system by implement the Ultrasonic Motion Detector with the security camera which alert to any movement for 180° rotational. It is a fully automated security camera that being programmed from PIC Microcontroller chip to control the Futaba S3003 servo motor. The instructions that programmed inside the chip will read the low signal from the output detector circuit and send a signal to move the servo motor according to the angular of motion position required. The servo angle is determined by the low pulse send from 3 different position of detector circuit. Once the microcontroller received the pulse, the security camera that mount by the servo motor will turn to the direction. If the motion move more than 1 minute or the motion detect more than 1 angle, the alarm and the porch light will turn ON to alert the house owner even before the intruder can access into the house. Once the alarm or the porch light turn ON, it will scare away the intruder or make them think more than twice to rob. The system is more practical for residential houses where the yard areas are wider compare to the flat house.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF THE PROJECT

Recently, most of residential area used typical security camera where the main objective is just to monitor and record all activity without any further action. The camera only records all activity either in one angle or move from 0° to 180° . A typical security camera is often used for surveillance or private areas which only need monitoring, such as banks and resident area and record all activity for further usage. The systems may operate continuously or only as required to monitor a particular event. [9]

Basically in designing the security camera system, the criteria of angle is the most important thing which the right angle will give wide and effective image coverage. The most difference things is the typical camera only captured image in one angle or move in many angle either automatically or manually but non of them alert to any motion in the environment. By implement Ultrasonic Motion Detector UMD, the system can alert to any movement in any angle and the microprocessor can triggered the alarm if the movement moves too long[13].

The purpose of this project is based on the literature review and observation made to create application or alternative approach to increase up the security system by implement the UMD with the security camera which alert to any movement for 180° rotational. The important objectives are to design a high sensitive security system that will detect and prevent any harm from stranger or theft. Maybe there is something's outside the house, on the porch, in the driveway, behind the shed, inside the garage, or basement. Whatever it is, human or beast, it is moving, once the obstacle object is detected, the security camera will focus to the motion up to range 7 meters away. If the object still moving more than 1 minute or the motion comes more than 1 angle, the porch lamp will turn ON and the alarm will triggered. The circuit contains a complete ultrasonic (40-kHz) crystal controlled transmitter and a supersensitive receiver. The device detects