DESIGN OF RECOGNITION ROBOT WITH VIDEO TRANSMITTER

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ABSTRACT

At appliance - comptroller in general still use the special room for watching area of around, and required some fruit of video and one video for every chamber to can watch every occurrence of place of the room. In consequence proposed the application of this for assisting in watcher, because we can implement this video and can watch with long distance. Because this device apply video available for implemented with long distance apply control transmitter as signal consignor and controller receiver as signal receiver, and processing data here apply microprocessor which allotment to be able to crank and programming language here as controller at PC apply two languages Visual Basic for arranging or controller of movement of motor at device video watcher and linguistic assembly as controller at microprocessor in transmitter and receiver. Takenly of this step can facilitate the us in controlling place wanted without having to install the video of each; every room although place there is still cannot be reached with the video attached. With the application of this earn more profit that is minim of amount of videos and can facilitate we see place which have no reached if the videoes just attached by was wall.

KEYWORDS

Transmitter, Receiver, Motor DC, Microcontroller

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INTRODUCTION

The development of the world of robotics is currently very fast. This can be proven...
by the many technologies in the field of robotics that are intentionally made to help human work (Nieman, Muhaimin, & Kamal, 2018). One of them is designing and building a surveillance robot with a video transmitter, using the AT89S52 microcontroller as a control unit and a keyboard as a controller, and using a parallel port for data transmission (Ahlina, 2015). The nature of human curiosity makes him continue to develop his knowledge, studying the surrounding environment, plants, and animals. However, when this curiosity collides with one condition, namely when it is impossible for humans to approach the object they want to study, it implies a thought of making a surveillance device that can be controlled remotely, namely a Rescue Robot with Video Transmitter (Lubis, 2017).

At appliance - comptroller in general still use the special room for watching area of around, and required some fruit of video and one video for every chamber to can watch every occurrence of place of the room. In consequence proposed the application of this for assisting in watcher, because we can implement this video and can watch with long distance (Mardhiyah, 2011). Because this device apply video available for implemented with long distance apply control transmitter as signal consignor and controller receiver as signal receiver, and processing data here apply microprocessor which allotment to be able to crank and programming language here as controller at PC apply two languages Visual Basic for arranging or controller of movement of motor at device video watcher and linguistic assembly as controller at microprocessor in transmitter and receiver.

Takenly of this step can facilitate the us in controlling place wanted without having to install the video of each; every room although place there is still cannot be reached with the video attached. With the application of this earn more profit that is minim of amount of videos and can facilitate we see place which have no reached if the videoes just attached by was wall.

Figure 1 Block Diagram of the whole circuit

The design of this Monitoring Robot with Video Transmitter includes a DC Motor which is a mechanical drive obtained from large voltage changes such as in basic magnetic operation (NUGROHO, 2018), where the polarity of the current flowing through the coiled wire will place the north and south magnetic poles. on coiled wire (GIFARY, 2017).

Motor movement is controlled by software with Assembler programming language (Taxwim, Santoso, & Wijananto, 2004). In principle, all processing instructions for controlling the target module will be carried out by data transfer via the parallel port. From the parallel port in the form of a protocol, it will be translated to the transmitter and sent to the receiver circuit to drive the motor (Pradhifta, 2009).

The block diagram above describes in general the system that works on a surveillance robot with a video transmitter (Sontonojaya, 2018). Control of the surveillance robot with this video transmitter is from computer software where the input obtained from the keyboard will change the value on the parallel port and the value will be output on the parallel port according to the command given (Karim et al., 2005). This value will be
processed by the transmitter control circuit which will determine the number of pulses per second, the pulses will be sent by the external TX circuit to the external RX (Hutauruk & Gulo, n.d.). The pulses received by the external RX circuit are read by the RX controller and then how many pulses per second will be calculated to determine the steps taken in the movement of the motor (Sampurna, Pitowarno, & Arini, 2011).

The video capture contained in the robot will take pictures and the image is sent and received by a receiver that is connected to the internal TV tuner (PCI) and displayed on the monitor/cpu screen, as information on the location of the robot and our desire to move the robot further (Mulyantono, 2014).

RESEARCH METHODS

The overall working principle of the design of a surveillance robot with a video transmitter is as follows:

The first input is the keyboard or mouse on the software in the PC, which will determine the parallel port value which will be read by the microcontroller at the control transmitter, which then forms a pulse and is transmitted by the TX Block. The signal is received by the RX Block and calculated by the microcontroller on the RX Control and determined by the motor drive step. The motor movement also determines the direction of the Video Capture or camera that will receive the image and transmit it and be received by the internal TV Tunner and displayed on the PC.

RESULTS AND DISCUSSION

A. Control Transmitter Circuit

![Figure 2 Control Transmitter Circuit](image-url)
B. Control Receiver Circuit

![Control Receiver Circuit](image)

Figure 3 Control Receiver Circuit

C. Circuit Explanation

The two pictures above explain the overall circuit used in the surveillance robot using a video transmitter, namely the transmitter and receiver controller circuit using 2 AT89S52 series microcontrollers, where the microcontroller for the receiver uses port1 for data input (P1.5, P1.6, P1.7 connected to the downloader and P1.0 connected to the Tx Box circuit) and port2 for output (P2.0, P2.1, P2.2, P2.3, P2.4, P2.5, P2.6, P2.7 which is connected to a motor driver circuit that functions to drive the motor) a motor driver circuit that uses the L893D IC, in the driver IC here the output can drive 2 motors that can perform commands according to the instructions given. In the receiver control circuit here using an optocoupler which functions as a switch. The microcontroller for the transmitter uses port1 for input (P1.0, P1.1, P1.2, P1.3, P1.4, P1.5, P1.6, P1.7 which is connected to a parallel port which functions to convert data into pulses or vibrations that can be received by the microcontroller) and port2 for output (P2.0 which is connected to the optocoupler which functions as a switch).

1. Transmitter Design

In the transmitter circuit here using an IC Block where the circuit obtained is already in one kit. And this transmitter circuit is used to transmit data in the form of pulses formed by the transmitter controller, the amount of which is determined by the value of the parallel port. This robot is commanded through computer software that has keyboard or mouse input that will assign a value to the parallel port.

2. Receiver Design

The receiver circuit here is the same as the transmitter circuit, which uses an IC Block where the input to the circuit is a pulse from the transmitter circuit. The pulses are calculated and reprocessed by the receiver control circuit, the pulses are calculated to get many pulses per second and from the many pulses per second the motor movement will be determined.

3. Parallel Port Design

Parallel communication procedures that are made must be able to receive and process data in the form of numbers. For this reason, in making this design, the interrupts used are made in the Visual Basic program. Parallel communication that will be made in this application is a type of parallel port communication, while the connection uses a standard DB25 PC connection.
4. DC Motor Design

In this application, the designed DC motor module will have control parameters, namely speed and direction of rotation. The rotational speed is controlled by the PMW (Pulse Width Modulation) method and the direction control can be done with the H-bridge driver. The four motor drivers in this system use 2 L293D ICs where one driver IC can drive 2 dc motors.

Legs 1, 9 serve as enable where in this circuit is connected to Vcc to get High / 1 condition, pin 16 is connected to Vcc 5V and also connected to pins 1, and 9, pin 8 is connected to Vcc as well but with a different value of 9V, pins 2, 7, 10, 15 are used as inputs that are connected to the microcontroller, pins 3, 6, 11, 14 are used as outputs that are connected to the motor where the motor can rotate right and left, pins 4, 5, 12, 13 connected to ground.

5. Motor Driver Circuit

Software Design

To run the software application that will be used is assembler programming. It aims to make it easier for users / users to apply the circuit created. In principle, all processing instructions to control the target module will be carried out by data transfer via parallel port. Data from the parallel port in the form of a protocol will be translated to the transmitter and sent to the receiver circuit to drive the motor that runs the motor on the car's wheels and the motor on the camera. In addition, this parallel protocol will be used to choose which target module to control.

The software used is in the form of 2 programming languages, namely Visual Basic for the software interface and Assembler for the microcontroller in the transmitter and receiver circuit.
program itself, Figure 3.2.2a here is designed to control the gear or motor forward on button 8, backward on button 2, forward and turn right on button 9, forward and turn left on button 7, back and turn right on button 3, back and turn left on button 1, and button 5 to move control from gear to camera as shown in Figure 3.2.2b is designed to control the camera so that it can move according to what we need, namely moving up on button 8, move down with button 2, turn right with button 6, turn left with button 4.

CONCLUSION

Based on the results of measurements on the DC motor has been running well in accordance with the orders or instructions given. However, the distribution of stress is not maximally evenly distributed. Based on the test results of surveillance robots with video transmitters, experiments are often carried out to run between the gear and the camera not optimally because the surface is not perfectly flat, so the output from the camera or it looks a bit vibrating. In initializing AT89S52 on Visual Basic software using Assembly language.

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