ABSTRACT

The idea of autonomous robot to accomplish a mission, good knowledge about its position is highly important. It might not be usable if the robot does not have good knowledge of the position as it will fail to navigate properly. This thesis aimed to design and build a positioning robot that can be stand of the shape while command it remotely.

The electronic circuit design for this robot was split into three parts, main board, remote control board and shape board. The robot prototype was built using wooden board and mounted on two motors. A magnetic switch was fixed on the bottom part of the robot for stopping purpose when the robot reaches the shape. Two pieces of acrylic was fixed beside the wheels to allow robot stand on the shape easily. Two shapes were selected, there are round and square.

IR module was chosen as signal detection between shapes and robot. The transmitter board was controlled with PIC16F84A. Two LED transmitters used to increase the transmission signal. Each of the shape was fixed with the transmitter board to allow the TSOP1138 at main board receive the signal through infrared.

A pair of 315MHz RF module was used for remote controlling. Data transmitted was encoded by PT2262, remote control encoder and DIP switch was used to minimize the interference by similar source. PIC16F873A was used in main board to control RF module, IR receiver and motors of wheels. Push-pull four channel drivers was used for motor controlling. It is an integrated circuit which allowed commanding for forward, stop, turning left and right motions.

Lastly, the aim and objectives of this project was successfully met. The robot was able to move to desired shape when it was command wirelessly. It can control by RF controller to move to the shape and stand on it but as expected from the low cost IR module, distance between shapes and robot is short and sometimes wrong signal detected that caused the robot move to a different direction might occurred.

Keywords: IR module, RF module, L293, PT2262, Magnetic switch, Desired Shapes