MAZE SOLVING ROBOT

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ABSTRACT

The idea towards this project is to build an autonomous robot capable of finding its way through a maze using ultrasonic sensors attached to 4 sides of the robot. An encrypted infrared beacon will be placed in the maze to mark the endpoint of the maze. The infrared receiver on-board the robot had the ability to decrypt the signals given from the beacon to ensure that that it's the right beacon as well as preventing unwanted disturbance from other infrared sources.

The robot will transmit data regarding the path that it's taken to a computer using a 433 MHz encrypted radio wave module connected to the computer via USB. Data obtained from the robot will be recorded in the computer, which will then calculate the shortest path possible; to exit the maze after it detects the beacon. When the robot detects the beacon, it will then start sensing directions to the robot using a 315MHz encrypted radio wave. The computer can be used as a manual controller for the robot.

Two additional features will be added inside the maze solving robot. A 2x16 LCD screen will display the status of the robot. It will show the direction that it will be taking, as well as the detection of the beacon and also the moment when the computer taking control of the robot. A battery charger, which charges 4-pieces of size AA NIMH 2100mAh batteries using USB as a power source. It uses a trickle charging method, which will continually charge the battery at a low 5V; 500mA rate till the temperature reaches around 40C, which will be detected by 2 thermistors. The thermistors will switch the poles on a relay to prevent further charging.