ROBOT CONTROL USING DISTANCE DETECTION

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This paper presents a solution for robot control in distance detection process. Mechanical and cinematic structure is based on two servomotors with gears. For programming and control is used a Basic Stamp Application kit with microchip PIC16C57. For detecting obstacle are used infrared sensors. For left and right direction are used two proportional servo control. Distance detection is possible sending different frequencies for four zones, fifth zone will be not active. Program in PBasic transferred from PC into microcontroller allows detection of an obstacle in zone 3. Infrared means below, so Infra-red is light (or electromagnetic radiation) that has lower frequency, or longer wavelength than red light. The wavelengths for common colors depend of the infrared spectrum. The IR LED and detector work at 980 nm (nanometers) which is considered near infrared. The robot uses infrared LEDs for headlights as shown in figure 1. They emit infrared, and in some cases, the infrared reflects off objects and bounces back in the direction of the robot. The eyes of the robot are the infrared detectors. The infrared detectors send signals indicating whether or not they detect infrared reflected off an object. The brain of the robot, the Basic Stamp, makes decisions and operates the servo motors based on this sensor input. Depending on which frequency makes the reflected infrared no longer visible to the IR detector, we can infer the distance. Robot can test for distance using frequency. In present paper the object is in Zone 3, figure 2. That means that the object can be detected when 37500 and 38250 Hz is transmitted, but it cannot be detected with 39500, 40500, and 41500 Hz.

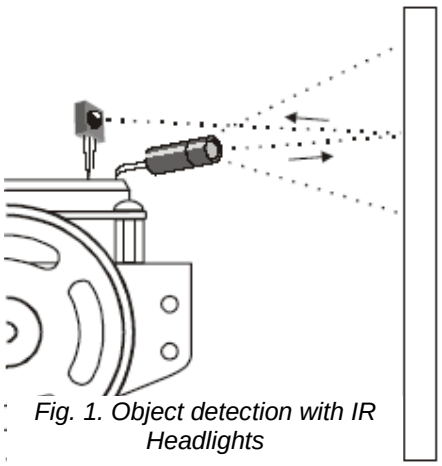

Fig. 1. Object detection with IR Headlights

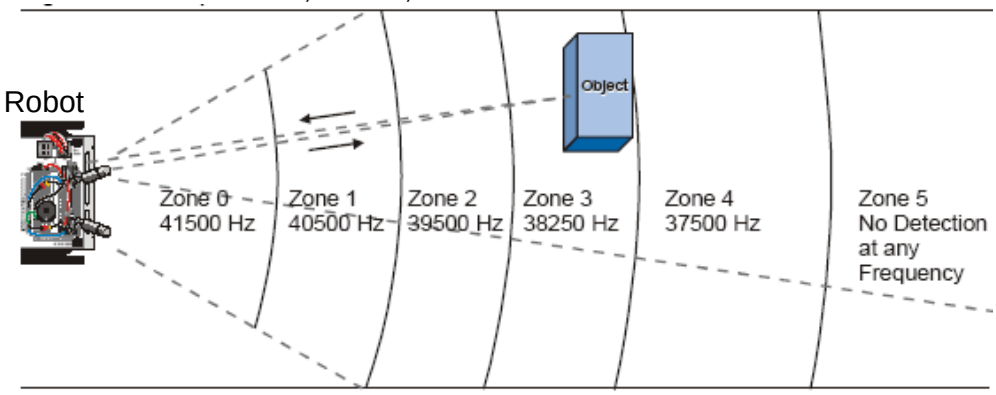

Fig. 2. Frequencies and Zones for the robot

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