



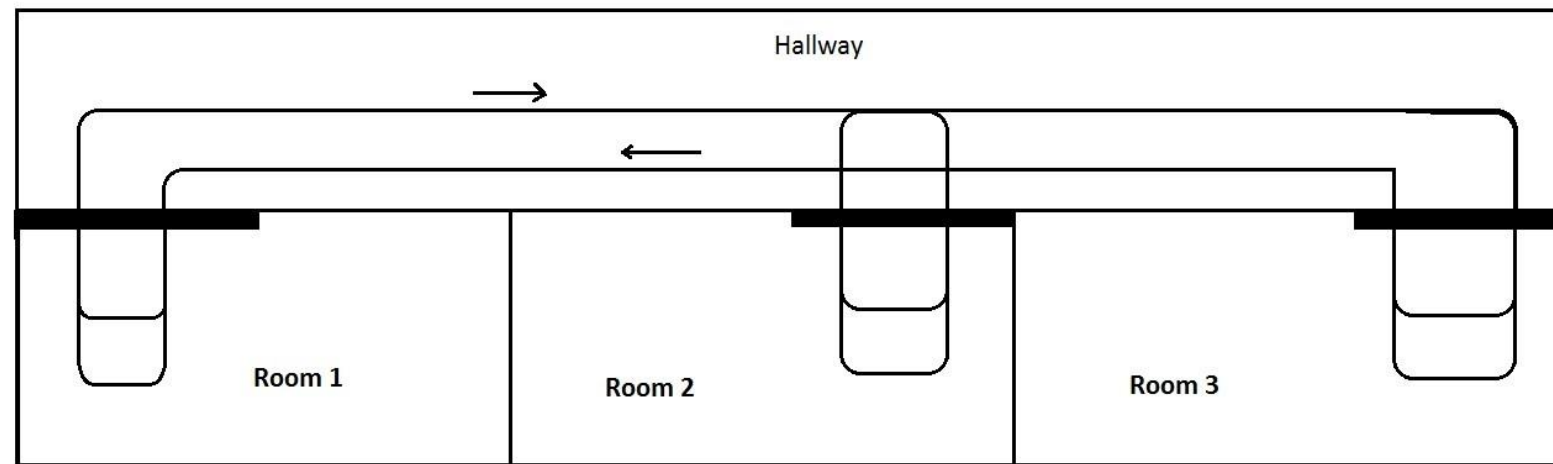
ECE 511

OFFICE BOT

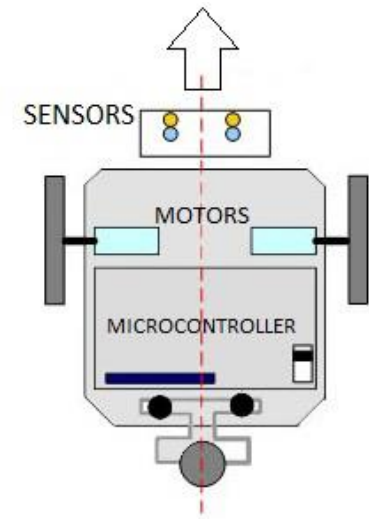
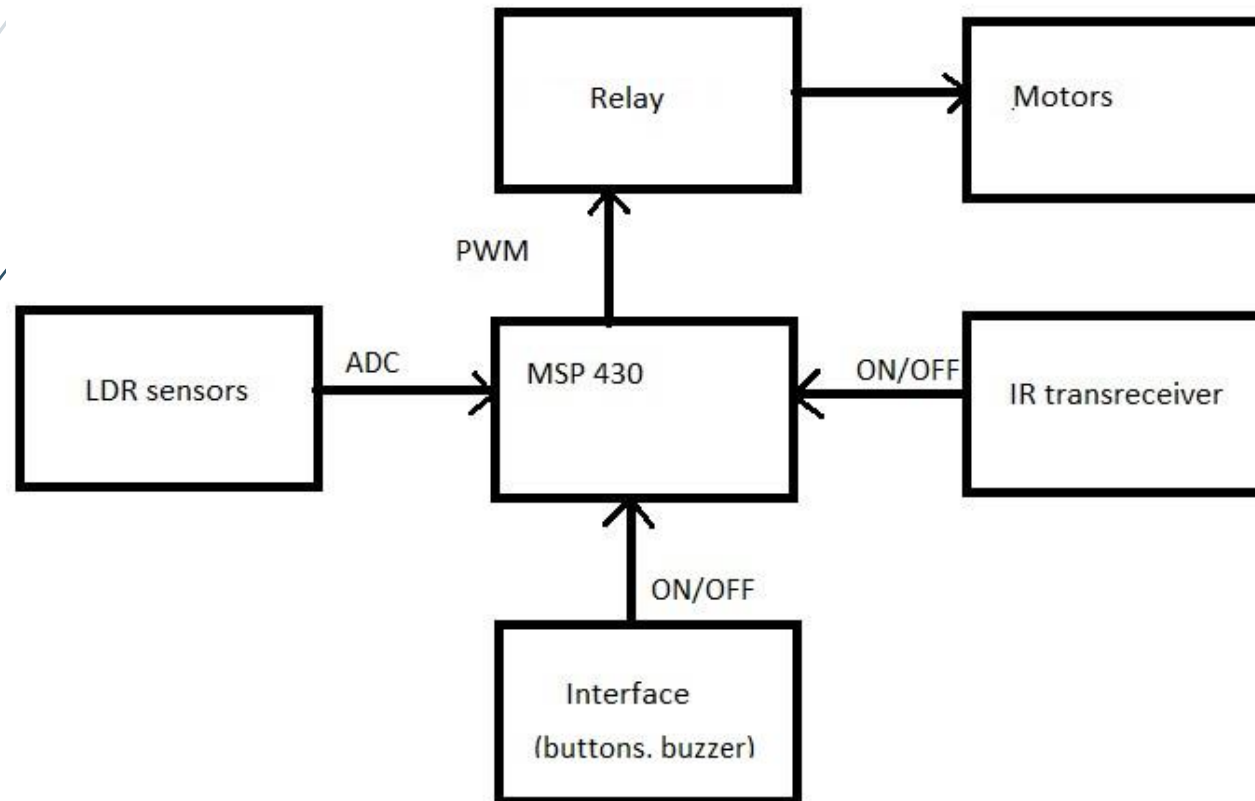
- ▶ AKRITI AGARWAL
- ▶ DEEPAK KARNIK
- ▶ HRUSHIKESH KULKARNI

Overview

- ▶ Line-follower based robot
- ▶ Used to send intra-office memos and small packages within a workplace
- ▶ Small construction

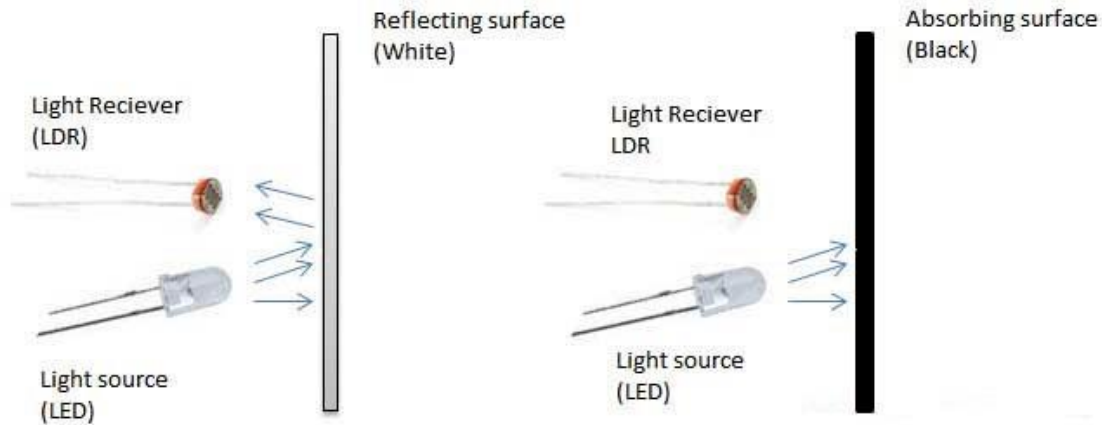


Overview

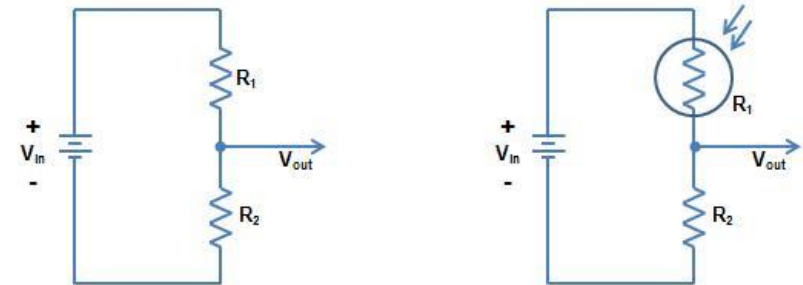


SENSORS

➤ Pair of LDR sensors



Voltage Divider Circuit

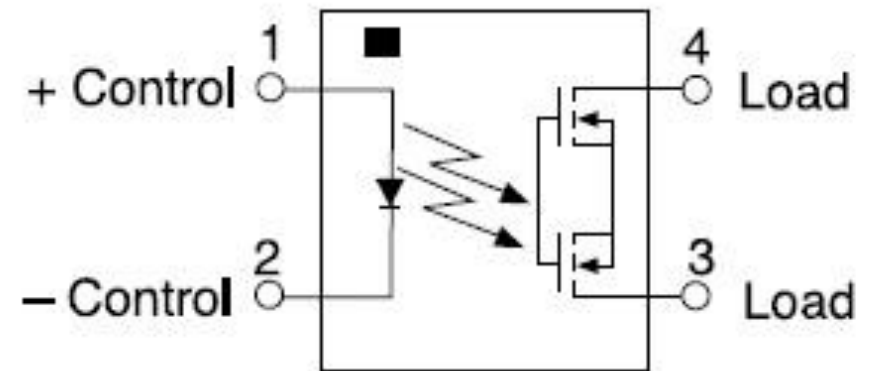


In a two resistor voltage divider circuit, voltage out is determined by the ratio of R_1 to R_2 . If a light dependant resistor (LDR) is used in place of R_1 , then voltage out will increase as more light shines on the LDR.

$$V_{out} = \frac{R_2}{R_2 + R_1} * V_{in}$$

MOTOR INTERFACE

- DC Motors interfaced with the microcontroller using a pair of solid-state relays (SSR)
- Component: G3VM-21LR10
- SPST-NO relay
- Motor controlled using PWM
- Secondary power-supply(6-9V) to be used at load



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MOTOR INTERFACE

- ▶ Line detection drives microcontroller output
- ▶ Microcontroller signal is provided to input of relay
- ▶ Relay consists of optoisolator – with control circuit on input and load circuit on output
- ▶ 1.35V enough to drive input of selected relay
- ▶ Secondary power source connected to the output of relay, with motors (load)

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IR-LED TRANSMITTER/RECEIVER & BUZZER

- Used as motion detectors
- Interfaced using IO ports of microcontroller
- One LED transmits IR light – other receives
- Normal case: receiver does not receive back transmitted light
- In case of object detected, light reflected from object received by receiver
- Interrupt to microcontroller
- Buzzer sounds

PUSH-BUTTON INTERFACE

- ▶ Push buttons
- ▶ Buttons = Number of rooms

- ▶ Used to invoke program of required sequence to reach destination





PROJECT STATUS



- ▶ Task division
 - ▶ Hrushikesh
 - ▶ LDR/IR-sensors for line detection
 - ▶ ADC interface
 - ▶ Deepak
 - ▶ Motor interface using PWM
 - ▶ Relays and electrical configuration
 - ▶ Akriti
 - ▶ IR-trans-receiver for buzzer
 - ▶ Push buttons interface

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OVERALL PROGRESS

- ▶ Finalizing components
- ▶ Challenges
 - ▶ Motor mount and chassis construction
 - ▶ ADC threshold value for decision-making