

LINE FOLLOWER ROBOT

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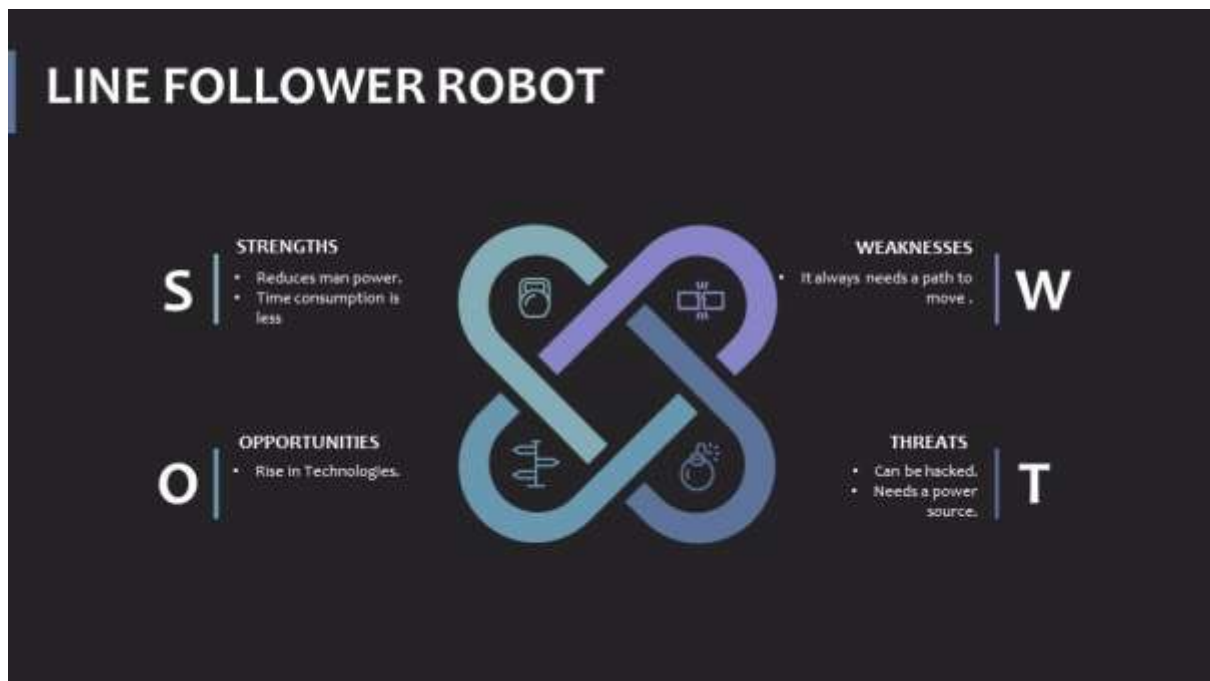
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INTRODUCTION

A line follower robot is a robot which follows a certain path controlled by a feed back mechanism.

SWOT ANALYSIS



REQUIREMENTS

- High Level Requirements.
- Low Level Requirements.

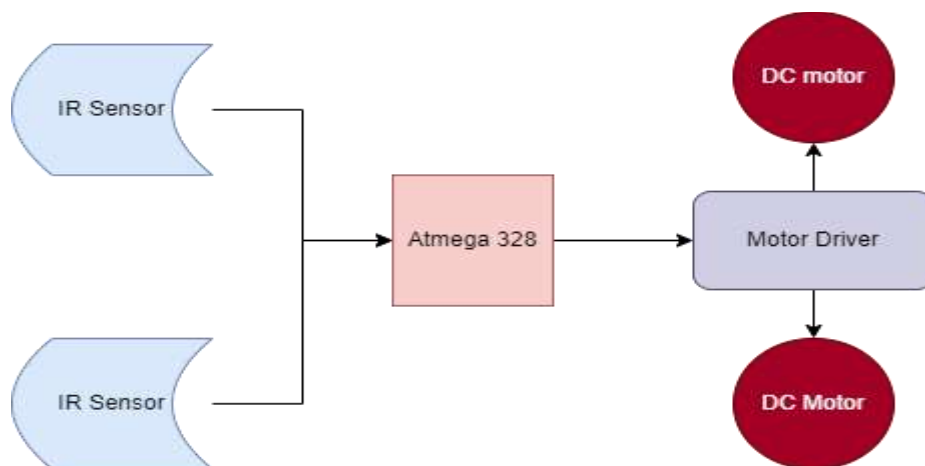
High Level Requirements:

High Level Requirements	Description
HLR1	There shall be Sensor to sense path.
HLR2	Microcontroller shall control our Embedded system.
HLR3	There shall be a Motor driver to control Motor.
HLR4	There shall be a actuator.

Low Level Requirements:

Low Level Requirements	Description
LLR1	Ir sensor shall sense the path and directs the robot to move in the correct path.
LLR2	Atmega 328 shall receive signal from IR sensor and controls motor driver .
LLR3	Motor driver shall control the motors to move either left,right or forward.
LLR4	Dc motor shall act as a actuator.

BLOCK DIAGRAM



The above block diagram is of Line Follower Robot.

COMPONENT DESCRIPTION

IR SENSOR:

- Electronic Device.
- Emits light to Sense objects.
- Senses Radiation which are invisible to eyes.
- Emitter is IR Led.
- Detector is IR Photo diode.

Atmega 328 Microcontroller:

- **ATmega328** is an 8-bit, 28-Pin AVR Microcontroller.
- Follows RISC Architecture.
- Flash-type program memory of 32KB.
- 2-16 bit timers.

Motor Driver:

- Capable of running two motors .
- Direction of two motors can be controlled independently.

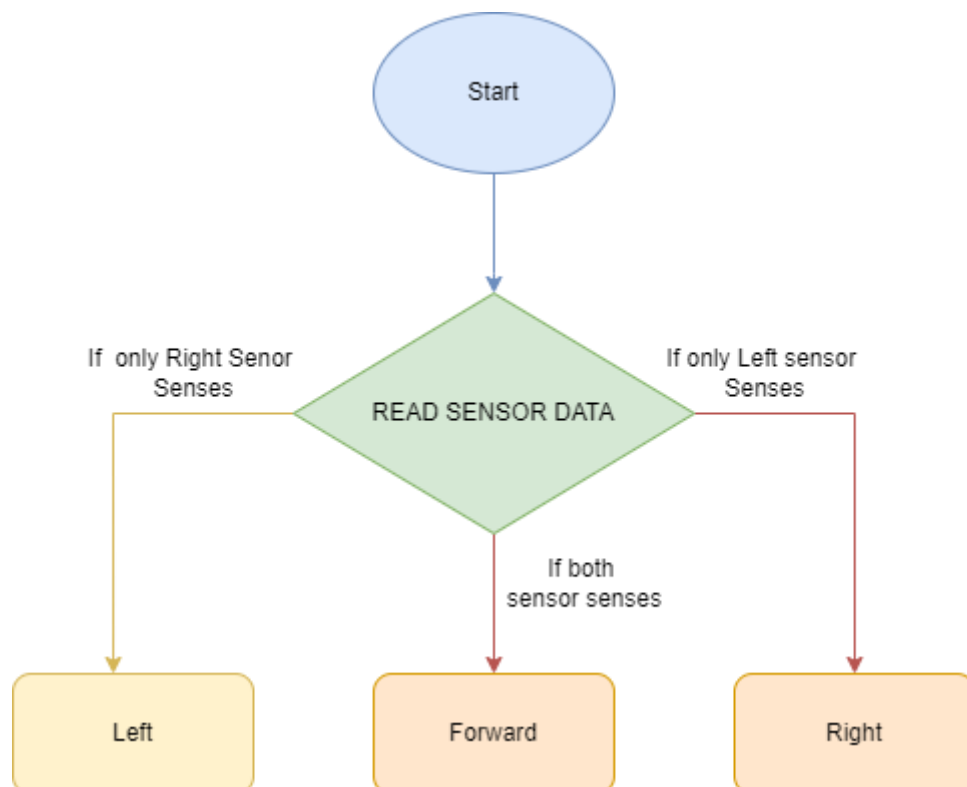
DC Motor:

- These are small motors .
- Needs low current.
- Acts as a actuator.

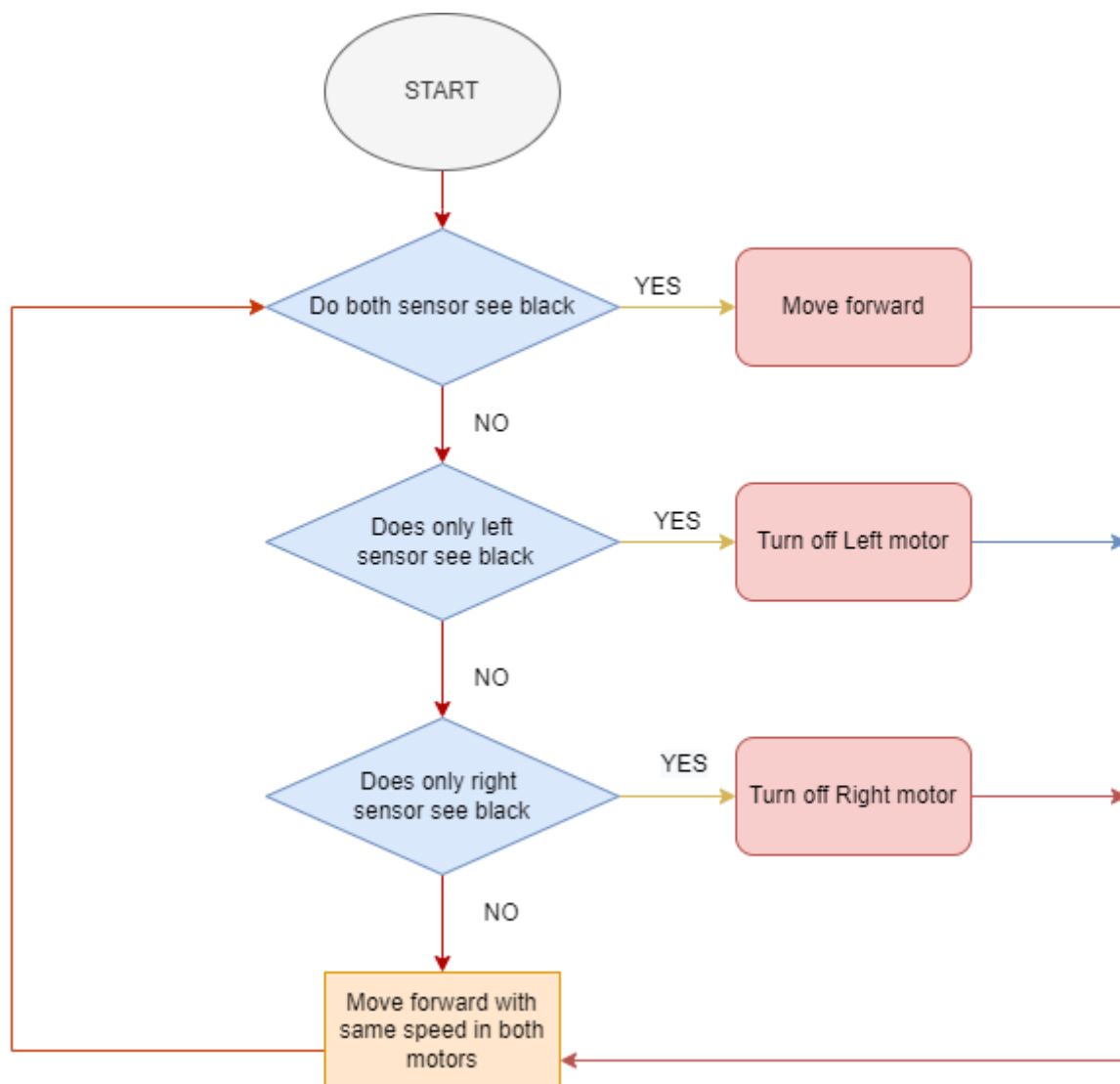
ARCHITECTURE

BEHAVIOUR DIAGRAMS:

- High level behaviour diagram:

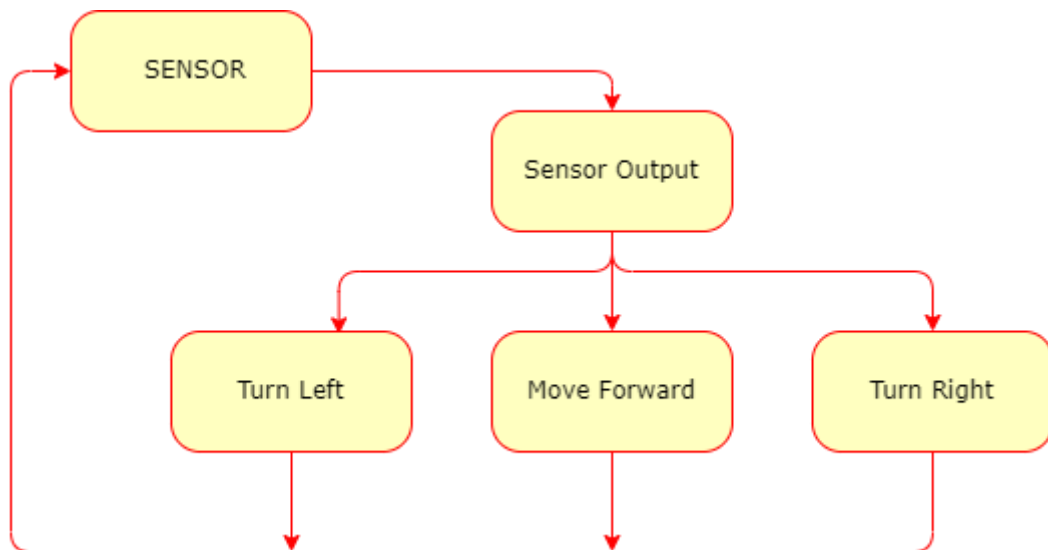


- Low level behaviour diagram:

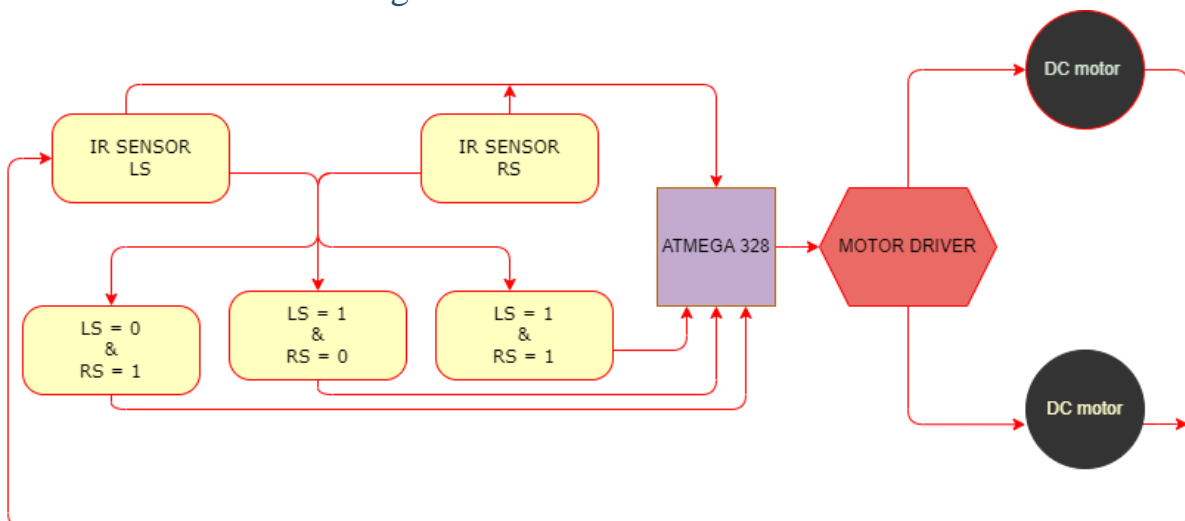


STRUCTURAL DIAGRAMS:

- High level UML diagram:



- Low level UML diagram:



APPLICATIONS

- **Industrial Applications:** These robots can be used as automated equipment carriers in industries replacing traditional conveyer belts.
- **Automobile applications:** These robots can also be used as automatic running on roads with embedded magnets.
- **Domestic applications:** These can also be used at homes for domestic purposes like floor cleaning etc.
- **Guidance applications:** These can be used in public places like shopping malls, museums etc to provide path guidance.