Line Following Car

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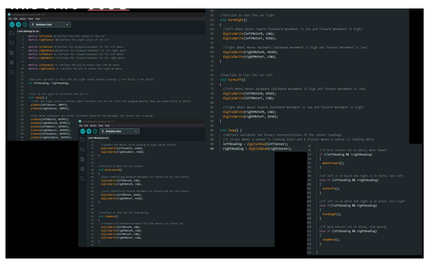
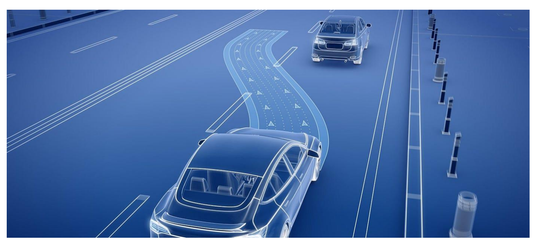
Professor Lenn

WHY A LINE FOLLOWING CAR?

The objective is to make an algorithm that successfully creates commands to follow a given path to avoid obstacles. This algorithm, in turn, will create a perfect trip for any user. (A self-driving Prototype)

Arduino Code:

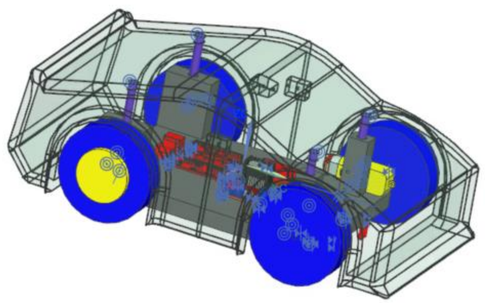


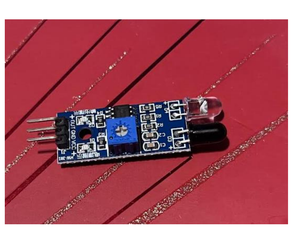


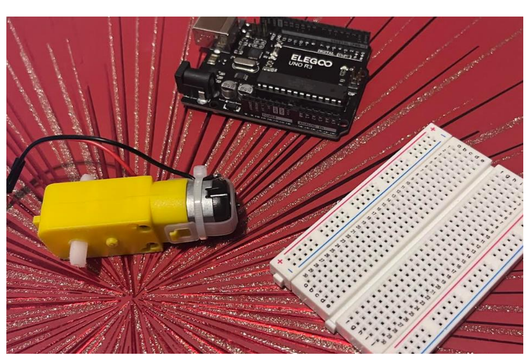
Technical Approach: Our project incorporates Arduino to create an algorithm for the path-following car to follow commands and drive on the given path. This, in turn, will create a perfect driving path for the path we've created.

Accomplishments: We've successfully created a path/line that will showcase the car's capability to perfectly drive along the path, we accomplished this by tweaking the code and sensitivity of the IR Sensors and powered it through a 9v battery.

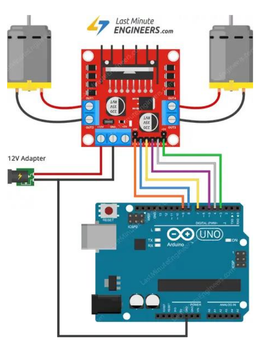
Results: The car perfectly follows the path we've created and accounts for any turns or stops made on the path.



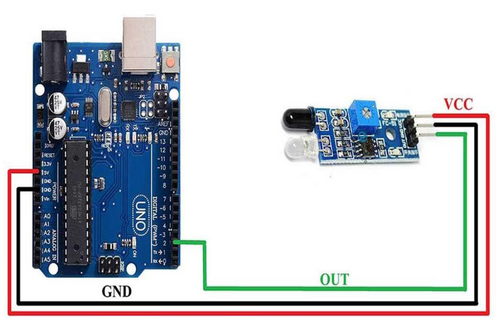




DC Motor Arduino connection:



IR sensor Arduino connection:



Group Contributions:

Name	Responsibilities
Asha Saad	Arduino Coding, Front Wheel Design, Hood Design
Hasan Saad	Circuit Construction, Rear Wheel Design, Hood Design
Sheraz Javed	Wheel Bolt Design, Assembly Construction
Alex Tsisyk	Chassis Design, Assembly Construction

Requirements:

User Needs	Design Inputs	How is this fulfilled?
Lightweight	Must weigh less than 20 pounds	We made the car simple no overweight design on the car – car is less than 2 lbs .
Reliable	Mean Time Between Failure (MTBF) must be at least 300 operating hours	We use reliable material for the car to ensure that it lasts (PLA lite).
Low-cost	Must have cost less than 75$	Again, we used a simple design to ensure price control (car is about $73).
Durable	Must have a useful life of at least 1 year	Used reliable products and mechanisms (UNO R3 kit, brass threads and screws, PLA lite).

PC NO	PART NAME	QTY
17	S8.SAAD.LINEFOLLOWINGCAR.FRONTPINS.X2	2
16	S8.SAAD.LINEFOLLOWINGCAR.BACKPINS.X2	2
15	S8.SAAD.LINEFOLLOWINGCAR.HOODFRONT.X1	1
14	S8.SAAD.LINEFOLLOWINGCAR.HOODBACK.X1	1
13	S8.T2.TSISYK.LINEFOLLOWINGCAR.BREADBOARD.X1	1

PC NO	PART NAME	QTY
12	S8.T2.TSISYK.LINEFOLLOWINGCAR.M3SCREW25.X4	4
11	S8.T2.TSISYK.LINEFOLLOWINGCAR.MOTORCONTROLLER.X1	1
10	S8.T2.TSISYK.LINEFOLLOWINGCAR.M3SCREW20.X2	2
9	S8.T2.TSISYK.LINEFOLLOWINGCAR.IRSENSOR.X2	2
8	S8.T2.TSISYK.LINEFOLLOWINGCAR.M3SCREW5.X8	8
7	S8.T2.SAAD.LINEFOLLOWINGCAR.FRONTWHEEL.X2	2
6	S8.T2.TSISYK.LINEFOLLOWINGCAR.UNOR3.X1	1
5	S8.T2.TSISYK.LINEFOLLOWINGCAR.INSTERT.X8	8
4	S8.T2.TSISYK.LINEFOLLOWINGCAR.YELLOWMOTOR.X2	2
3	S8.T2.JAVED.LINEFOLLOWINGCAR.WHEELBOLT19.X2	2
2	S8.T2.SAAD.LINEFOLLOWINGCAR.WHEEL31.X2	2
1	S8.T2.TSISYK.LINEFOLLOWINGCAR.CHASSIS.X1	1
PC NO	PART NAME	QTY