

## Automated Guided Vehicle

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### Abstract:

The main purpose of developing this robot is for monitoring human activities. To war zone or rescue operation reduce enemy side attacks. The robot has a night vision wireless camera which can broadcast war zone videos order to avoid any damage and loss Human life. Military men are at great risk. Their lives when entering the unknown region. The robot will act as one suitable machine for defense area Reduce the loss of human life and also prevent illegal actions. It will all help to get to know the military people and the armed forces Its position before entering the territory. It can also be used in various defenses man power and operations to save examine the dangerous situation. The main advantage of this project is that we can easily control the robot using Android mobile via. Smart cell IP is a phone with web cam application mounted on a robot body for espionage. Aim even in complete darkness using Infrared light this will send the video wirelessly on the transmitter side (laptop). This type of robot can be useful for espionage intended to and from the battlefield Reduce attacks.

**Keywords — IR SENSOR, AGV, ARDIONO NANO, MOTOR DRIVE.**

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## I. INTRODUCTION

It is battery operated vehicle which is use in flexible manufacturing. It is provided unmanned transportation it is control by human along system. Day by day world going towards new technology this type of robotic system use in industry, this type of system provides chip transportation which is help full for industry financial condition. This type of AGV mostly used in industrial to move heavy material or product around a big industrial area such as, a warehouse or. Factory

An automated guided vehicle is programmable line follow vehicle. The automated guided vehicle is used in industrial application to move material around a manufacturing facility. The AGV are capable of transportation task fully automated at low expenses. AGV have to make the system automatic by following line. This is done through different method path selected mode etc. The Arduino nano system of AGV is issue the steering command and speed command. For the pre defined manufacturing environment the map is saved in the AGV memory and control by stationary control unit of warehouse.

IR sensor senses black line then sends the signal to Arduino. Output of sensor Arduino command the motor. We are use in this project two IR sensor modules namely right sensor and left sensor. When both right and left sensor senses white then robot run forward.

### IR SENSOR

### ARDIONO NANO

### MOTOR DRIVER

IR SENSOR Full form of IR sensor is an infrared (IR) sensor. it is an electronic device it is use to detects and measure infrared radiation on its surrounding area. When any victim comes near to the sensor, the infrared light from the LED reflects off of the object and is detected by the receives.

ARDIONO NANO The Adriano Nano is a small, complete, and breadboard-friendly board based on the ATmega328 (Adriano Nano 3.x). It has more or less

the same functionality of the Arduino Demilune, but in a different package. It lacks only a DC power jack, and works with a Mini-B USB cable instead of a standard one.

MOTOR DRIVER The L293D IC it is use in AGV robot to receives signals from the microprocessor and transmits the relative signal to the motors and it has two voltage pins, one of which is used to draw current for the working of the L293D and the second pin is used to apply voltage to the motors.

## I. LITERATURE REVIEW

### A. IR Sensor

An infrared (IR) sensor this sensor is a digital system which assist to measures and detects infrared radiation in its surrounding environment. When an object or any fabric comes shut to the sensor, the infrared mild from the LED displays off of the object and is detected through the receiver. The line follower is designed to comply with black strips of line. For this, a sensor which can realize the shade of the under floor is required. The IR sensors can observe the coloration of below floor based totally on reflective/non-reflective oblique incidence. The IR LEDs emit IR radiation which in an everyday country receives mirrored



*Fig.1. IR sensor*

lower back from the white floor round the black line.

The mirrored radiations are detected by using the photodiodes. But when the IR radiation falls on a black line, it receives absorbed absolutely with the aid of the black colour and for this reason there is no reflection of the IR radiation returned to the sensor module. This way, an IR sensor module detects the black strips.

The IR sensors are on hand with analog output as nicely as digital output. In this robot, the sensor module is designed the use of the IR sensors having digital output. The model number of the sensor is LTH1550-01.

#### **B. Arduino nano**

The Arduino Nano is a complete, small, and breadboard-friendly board based totally on the ATmega328 (Arduino Nano 3.x). It has extra or much less the identical performance of the Arduino Demilune, however in a distinctive package. It lacks solely a DC energy jack, and works with a Mini-B USB cable alternatively of a widespread one. Arduino NANO is one of the most famous prototyping boards. It is used often in robotic functions as it is small in dimension and packed with prosperous features. The board comes with built-in Arduino boot loader. It is an Atmega 328 primarily based controller board which has 14 GPIO pins, 6 PWM pins, 6 Analog inputs and onboard UART, SPI and TWI interfaces. In this project, 7 GPIO pins of the board are utilized to join the IR sensors and 6GPIO pins are used to interface L293D motor driver IC, two GPIO pins are used for ultrasonic sensor and two GPIO pins are used for Bluetooth module.



*Fig.2. Arduino nano ATmega328*

#### **C. Wheels**

Wheeled robots are robots that navigate round the floor the utilization of motorized wheels to propel themselves. This sketch is easier than the usage of treads or legs and by means of the usage of the use of wheels they are less difficult to design, build, and software program for action in flat, now not-so-rugged terrain. They may also be moreover larger properly managed than distinctive

types of robots. Dangers of wheeled robots are that they cannot navigate well over limitations, alongside with rocky terrain, sharp declines, or areas with low friction. Wheeled robots are most famous some of the customer market, their differential guidance affords low charge and simplicity. Robots may additionally have any range of wheels, however three wheels are adequate for static and dynamic stability. Extra wheels can add to balance; however, greater mechanisms would possibly be required to preserve all of the wheels interior the ground, when the terrain is not usually fla



*Fig.3.Wheel*

#### **D. Battery**

A lithium-ion battery is a rechargeable battery in which lithium ions pass from the poor electrode thru an electrolyte to the superb electrode at some stage in



*Fig.4. Lithium-ion battery*

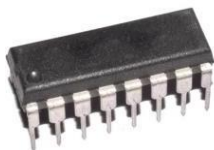
discharge, and again when charging. lithium -ion batteries use an intercalated lithium compound as the fabric at the superb electrode and normally

#### **E. Motor driver**

The L293D IC receives indicators from the microprocessor and transmits the relative sign to the motors. It has two voltage pins, one of which is used to draw contemporary for the working of the L293D and the different is used to follow voltage to the motors. The L293D is a twin H-bridge motor driver built-in circuit (IC). The Motor drivers act as cutting-edge amplifiers due to the fact they take a low-current manage sign from Arduino and furnish a higher-current and greater voltage signal. This greater cutting-edge sign is used to pressure the motors. The pin 4, 5, thirteen and

12 of the L293D IC are grounded whilst pins 1, sixteen and 9 are related to 5V DC and pin eight is immediately linked to Battery. The pins 15, 2, 7 and 10 of this motor driver IC are related to pins 5, 2, three and four of the Arduino board. The DC motor connected to proper wheel is related to pins eleven and 14 whilst motor connected to the left wheel is linked to pins three and 6 of the motor driver IC. The pins 15, 2, 7 and 10 are enter sign pins of the motor driver IC. These are related to Arduino pins. On altering digital common sense at the Arduino pins, the good judgment at the enter pins of the motor driver IC is additionally changed.

*Fig.5.Motor drive*



**F. Jonson Motor**

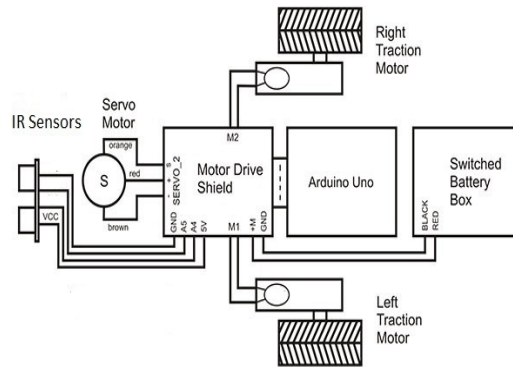
The Johnson Geared motor is well-known for its compact measurement and large torque. A torque as an awful lot as x3 as in contrast to core shaft additionally shaft has a steel bushing for put on resistance Geared motor is a simple DC motor with gear box



*Fig.6.Jonson motor*

**SYSTEM MODELLING**

**A. Block Diagram**

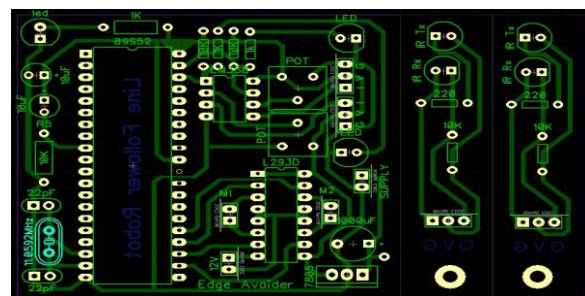


*Fig.7.Block diagram*

**B. Component Design**

**1. PCB Design**

We layout PCB on Zuken software, then we printout the format on paper. Then we print that diagram on copper clad sheet. After that we done aching technique on copper clad sheet. And then we drill that PCB and check it. In this way we design the PCB.



*Fig.8.PCB Design*

**2. Designing the Arduino programming**

We use IDE software program for programming. Integrated Development Environment (IDE) is a software program utility that affords a broad vary of software program for software program improvement software. IDE typically includes at least a supply code editor, default constructing equipment and debugger. Some IDEs, such as NetBeans and Eclipse, include the required link, interpreter, or both; others, such as Sharp Develop and Lazarus, do now not

3. Result



*Fig.9.Result*

#### **IV. CONCLUSIONS**

The Adriano nano microcontroller and embedded in future AGVs are the material handling and Transporting need, In Wearhouse or industries as many of work must be put in to get things right. Here, the importance of understanding new technology, automation navigation technology, and AGV type was covered time and hard work.

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