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## FABRICATION OF GESTURE CONTROLLED GUIDED VEHICLE

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### ABSTRACT

The complexity of device handling has been increasing due to amalgamation of sensors, motors and actuators with wired system. Wired system which also limits the range of operation of device. Thus by using less number of sensors channel and a wireless controlling system we make the interaction between machine and human straight forward and effortless and also increase the range of operation of device by introducing gesture system. This paper is about a gesture controlled guided vehicle which uses wireless communication in technologies. This helps physically disabled people and also used for various other purpose of transporting different things by using gesture system. The proposed system consists of transmitting system and receiving system. Transmitting system consisting of Accelerometer, Arduino-UNO and Encoder IC HT12E. Receiving system consisting of motor driver L293D, decoder IC HT12E. The transmitting system is implanted on the mitten (gloves) to wear on hand while the receiving system is implanted on the guided vehicle which makes the wireless communication and connection between the transmitter module and receiver module.

**Keywords:** Arduino-Uno, Accelerometer, Motor Driver, Rf Transmitter, Receiving Module.

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### I. INTRODUCTION

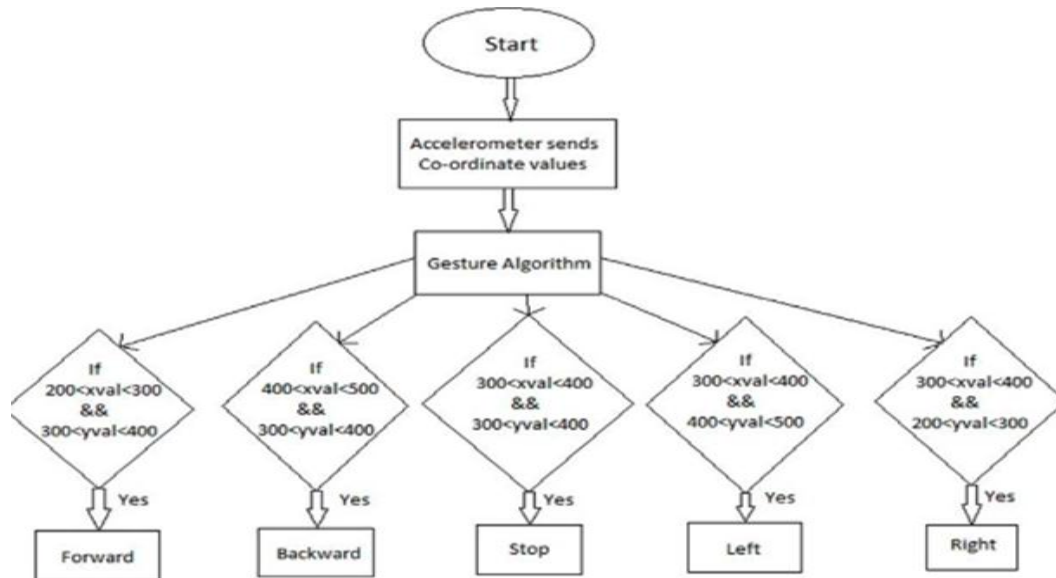
Now-a-days as technologies becomes so advanced everyone wants to command things with their gestures or by putting minimal effort. People wants to be beneficiary by putting less labour and controls thing wirelessly with more range of operation need this gesture controlled system. By gesture here means the movement created by or indications created by hand gestures to handle device. It seems very difficult to control things by hand but it is very easy as a pie. This all is done by motorised mechanical and electronic machinery including receiving and transmitting system. The transmitting system is planted on the mitten (gloves) from where it transmits or sends signals and these signals received by the receiving system which is planted on the vehicle body and/or device which you want to regulate. These signals exchanging wirelessly and very efficiently with no delay in the signal transmit and received. The proposed structured is worked on master and slaves model in which the controller having mitten gloves is master and controlling the guided vehicle as slave.

#### ELEMENT USED:-

- Mitten (Gloves)
- Transmitting Module
- Receiving Module
- Arduino-UNO
- Motor Driver
- Power Unit(Cell or Batteries)
- Battery operated motors
- Vehicle Body(Chassis )
- Caster Wheels
- Connecting Jumper LEDES
- PCB Plates

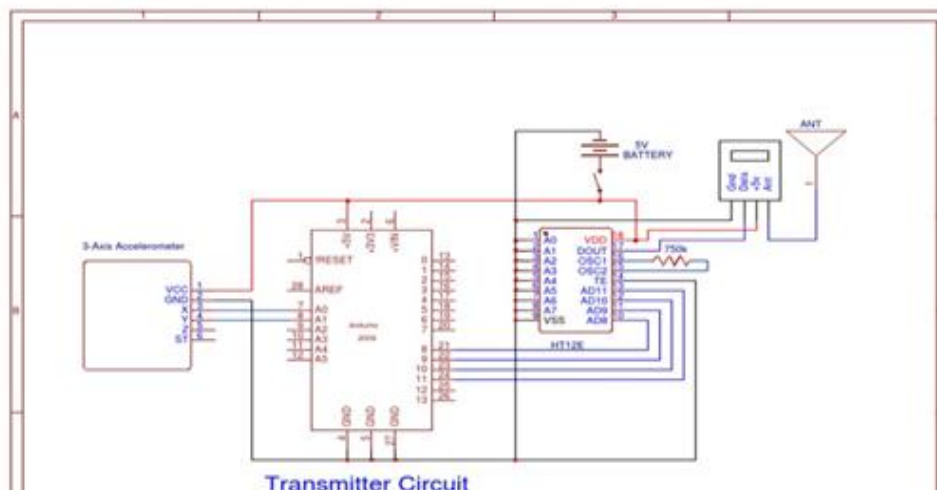
For the making of the project motor driver used is L293D, Accelerometer used is ADXL335. The making of whole system requires 2 Arduino UNO, 2 PCB Plates one Mitten (Gloves) and two power units. Program is written in Arduino-UNO whereas for identification of gestures movement by the hand is done by accelerometer. RF transmitting and receiving device is used for reducing the chaos created by the wired system and will make the whole system wirelessly connected.

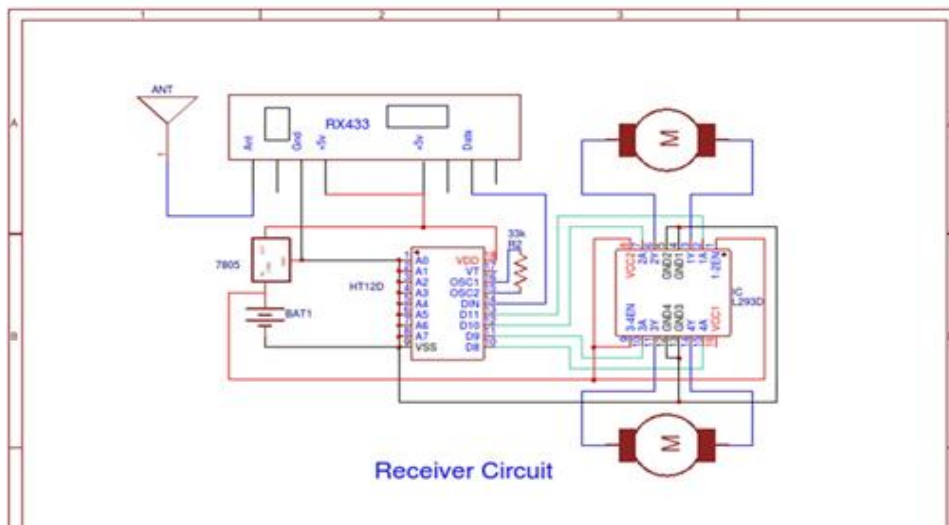
**FLOW CHART:-**



**II. WORKING**

The working of this project is basically based on the wireless communication between the receiving system and the transmitting system. The main purpose of this project is making the signal transfer without direct connecting the devices to implement the idea and reduce the tangled and chaotic condition of wired system. So this project will be bifurcated in transmitting system and receiving system. Transmitting system having Arduino-UNO (Microcontroller), a accelerometer device and the connection between Arduino-UNO, accelerometer and transmitter module. Arduino-UNO is used for the programming purpose and controlling the connected devices. By this programming we perform the particular task interpreted by this programming or logic you create to do some task. When this programming or logic is created as per the use or the purpose to solve then it is compiled and uploaded on the Arduino-UNO Board for the computation purpose and connecting the different device with it to control them through some certain values to work accordingly. This Arduino-UNO is associated with the accelerometer which in turn work when it detects the hand movement. The movement generates some value which then encoded by encoder of transmitter. The movement create some value in accordance with the accelerometer and then this value is by the help of Arduino-UNO and transmitter converted into signal. These transmitted signal then received by the receiver system where the signal is recorded and generate some value out of these signal then this value is operated on the motor driver to run the guided vehicle. Motor driver which is connected with the receiver module operates on the values generated by the receiver module to run the guided vehicle in desired path or in desired way.

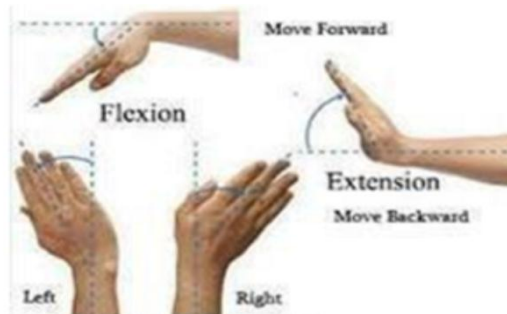




**EXECUTION OF GESTURE INDICATION:-**

There are five indication gesture we implement

1. Moving Onward Direction - When we decline the accelerometer means when we decline our hand the vehicle start working and in motion in forward direction till another indication gesture movement is implemented.
2. Moving Reverse/Rearward Direction - When we incline the accelerometer means when we incline our hand the vehicle start working and in motion in reverse direction till another indicating gesture movement is implemented.
3. Rightward Turning Indication - When we angle the accelerometer in rightward direction means when we angle other hand in rightward direction vehicle start working and in motion or turn or rotate the vehicle in rightward direction till the another indicating gesture movement is implemented. Here the vehicle is rotate in rightward direction till no further indication is implemented.
4. Leftward Turning Indication - When we angle the accelerometer in leftward direction means when we angle other hand in leftward direction vehicle start working and in motion or turn or rotate the vehicle in leftward direction till the another indicating gesture movement is implemented. Here the vehicle is rotate in leftward direction till no further indication is implemented.
5. Stopping or in rest criteria – If we keep the accelerometer in steady state means if we make the hand stiff and not incline, decline or not angle the hand in any direction then the vehicle remains in resting phase or going to be stopped if moving.



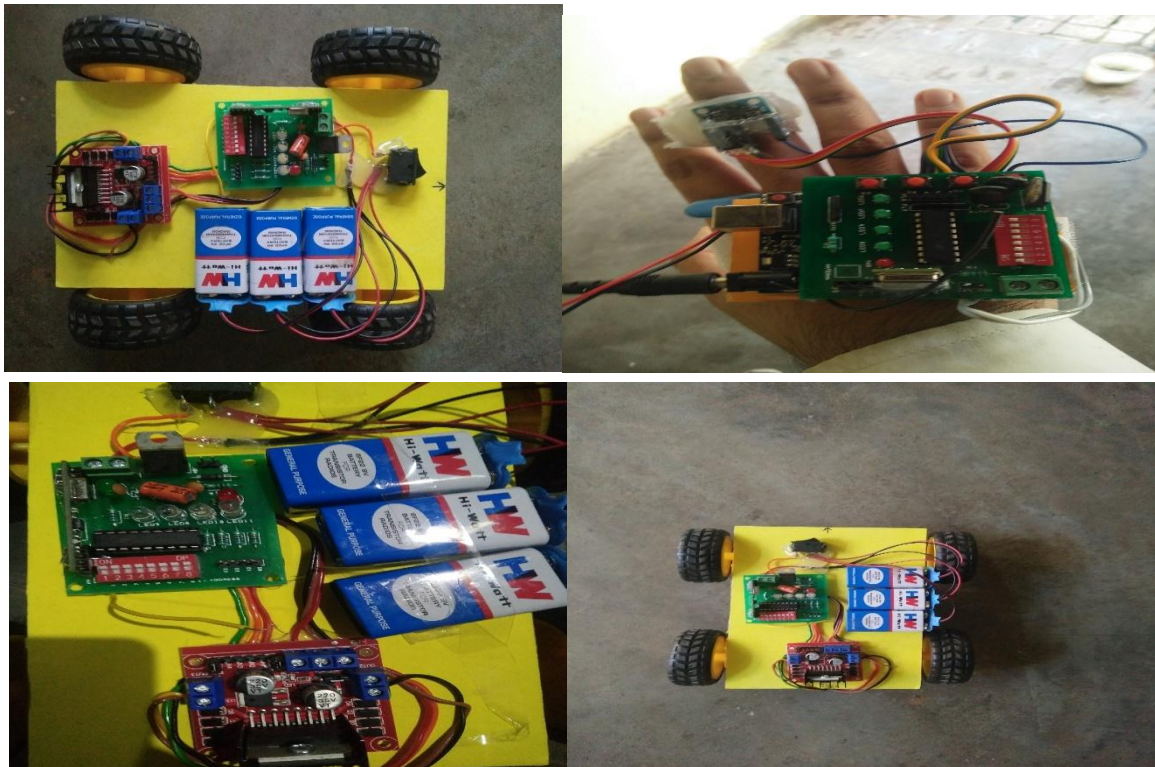
**III. APPLICATIONS**

1. Hand-gesture controlling system is very beneficial for disabled and immobile patients.
2. Hand-gesture controlled guided vehicle will be used by armed forces for various purposes.
3. Hand-gesture controlling system is helpful in various hotel management institute for staffing and delivery purpose through guided vehicle.
4. Used in industries for wireless transportation of raw material and tools.
5. Used in constructional fields for transporting nails, screws and various other tools and also other materials.

6. This will also be integrated with other mechanisms and will be used in lifting substances so as to be used in lifts and trolleys.
7. Used by physically challenged persons in various ways by integrating a gesture controlling system with other devices to perform daily activities by customizing them with this system, which makes these activities effortless and painless.

#### IV. RESULT

On connecting the various components and their proper wiring, it is found to be working as expected and moving in synchronization with the hand gestures.



#### V. CONCLUSION

The system made is very efficient with no delay and increases the range of operation. By using gestures, one can control the things he/she wants to operate wirelessly with very less effort. It helps a lot for physically challenged people with minimal effort and is also used to transport things from one place to another by simply indicating in that particular direction. So basically, it reduces the effort in transportation and saves a lot of time, which reduces the cost of operation. The result of this project is that using gestures, various things can be done easily, and this gesture controlling system can easily be integrated to other mechanisms to perform particular tasks, so this is easy to learn and operate and can also be integrated or joined to some other mechanism easily without any headache, making this proposed system of wireless communication very effective in nature.

#### VI. REFERENCES

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