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# HUMAN FOLLOWING ROBOT

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**ABSTRACT:** In this modern age, due to the abundant applications in everyday life and manufacturing, Human Following Robots have been researched and actively developed over a long time. Different techniques such as robot control algorithms, human target detection, and obstacle avoidance are necessary for the human robot to function. Several human following robotic procedures have been used like the use of ultrasonic sensors, infrared sensors, laser range sensor, voice recognition sensor camera charging-coupled devices (CCD) and so on. These technologies can detect the particular location between the robot and the human. In this paper, we follow an approach for detecting the location of a human using an ultrasonic & infrared camera, which is the fundamental technique in the robot's human follow-up. In our project, the robot is equipped with an ultrasonic sensor which captures and detects an individual's distance from it and infrared sensor to detect the presence of any obstacle.

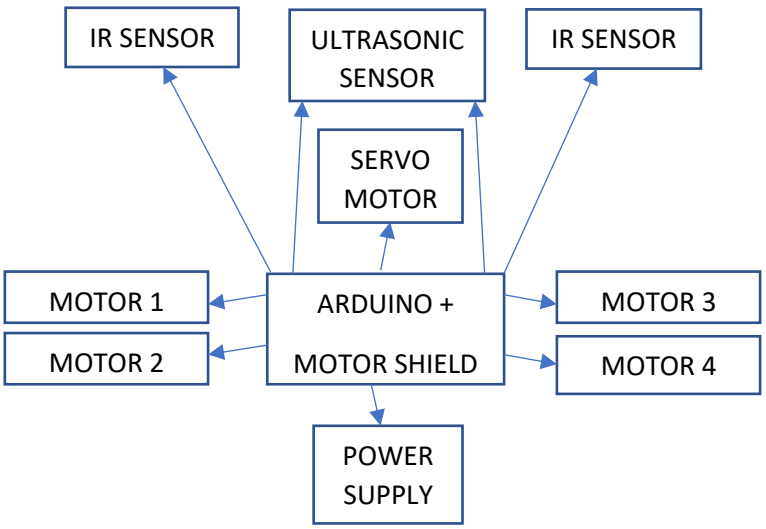
## INTRODUCTION

In recent years, robotics has attracted considerable attention as they can assist human beings to perform many daily jobs such as carrying luggage in supermarket or railway station, tour guiding in museums or at unknown places. One of the fundamental tasks for robots is to detect and localize the human target under observation. In robotics, various sensing systems for human motion localization are based on acoustic sensors, ultrasonic sensors, and optical image sensors. However, for acoustic and ultrasonic sensors, the applicability is limited due to lack of ability to distinguish human target from other objects. For optical image sensors, on one hand, they require sophisticated computer vision algorithms for feature extraction, on the other hand, they are highly sensitive to the illumination and background changes. Thus, the optical image sensors have the limitations in human motion localization with mobile robots as well.

## LITERATURE SURVEY

In the below-mentioned project, the user(human) was given a tag which emits radiation which was received by the multiple sensors on the robot and using the triangulation method, the phase and magnitude will be determined and hence the location of the emitter(tag). The techniques used to calculate the relative positions of the emitter and receiver use PIR and RF localization systems. Combining the PIR and antenna data requires a lot of time, and the use of triangulation method may produce inaccurate results. [2]

## BLOCK DIAGRAM



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## EXPLANATION

In this project of ours, we have developed a robot which follows the human which is in its detecting range. The major components used are Arduino Uno, L293D Motor Driver Shield, DC Motors, Servo motor, Ultrasonic and IR sensors along with batteries for power supply. Here, the L293D motor driver shield contains two number of L293D motor driver chips that can individually control the movement of two DC motors. Hence, this shield can individually control four motors. This is coupled with servo motor at the face of the robot to have circular motion for the functioning of other sensors on the robot which helps to locate and determine the presence and the distance at which the human is located. The IR sensor placed at the head of the robot helps to determine the presence of any object in front of it by emitting infrared radiations and detecting its reflection. And the ultrasonic sensor is used to determine the distance between the robot and the human which helps it to determine if it has to move forward or backward. After the completion of building the robot, we transfer the program responsible for the response of the robot for various inputs from the system into the Arduino. On supply of power to the machine, we can see the working of our Human Following Robot for different conditions.

## CONCLUSION

In this paper, we have tried to put in all the efforts that went in making this project successful. Understanding all the individual components was very important to having the clarity of 'changes in what, would make what kind of difference' to the overall outcome. After the completion of making of this robot we tested it to check if it had the correct response for different situations if presented. The sensors and motors were in sync and the movement was up to our expectations.

## FUTURE SCOPE

The application of this machine can be widely ranged from small scale like shifting items at the house area to large scale like moving heavy weighing items at factories or construction sites.

The same can be constructed at a larger level using high-capacity motors and sensors along with powerful batteries or eco-friendly solar panels powered batteries for longer use.

Another useful way to use this robot can be to keep track of infants or old age people when they are outdoors. This can be achieved by setting up cameras or GPS on the robot so that their location and surroundings can be seen from anywhere and can be worry-free about their safety.

## REFERENCES

1. Guodong FENG, Yuebin YANG, Xuemei GUO and Guoli WANG
"A Compressed Infrared Motion Sensing System for Human-Following Robots" at 11th IEEE International Conference on Control & Automation (ICCA), June 18-20, 2014. Taichung, Taiwan
2. November 2018: "HUMAN FOLLOWING ROBOT" by
Prof. M.H. Thigale, Rhishikesh Patil, Pranav Nerlekar and Omkar Palkar.
3. MD Jahidul Islam, Jungseok Hong, Junaed Sattar "Person Following By Autonomous Robots"

 