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Arduino Based Self-Parking Chair

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ABSTRACT
We believe in simplicity in day to day activities around us. This days automatic systems are being developed to make things easy and comfortable to use. We aim to create a chair that automatically parks its self in its defined location just by using android application. Basic motivation to build self-parking chair is to make conference rooms, labs and offices automated. In this Project we use different types of hardware like Bluetooth device, IR Array sensor, Motor Driver and Arduino Nano.

Keywords: Self-parking, automations, IR Array sensor, Arduino

I. INTRODUCTION

In past few years we experience technology grows rapidly. In this busy world people are tending towards automation in all routine work which turns in saving their time.

Self-parking chair is a smart chair which is one kind of parking unit. And this chair is useful in many working area like conference rooms, labs, medical areas, military purpose and even in educational places. As in Modern world everything is going automatic, we have built a system which will automatically sense the start and end point location. Based on the program written in the software, Microcontroller used sensors data and makes the components work properly. We have chosen Arduino Nano open-source Microcontroller which is easy to use.

The main aim to build this chair is to made self-parking chair which move on flat surface. We can see, in conference room chair are not arranged. Every time we need at least one human resource to arrange the chairs properly. The use of this chair is to reduce human efforts and less manpower.

II. RELATED WORK

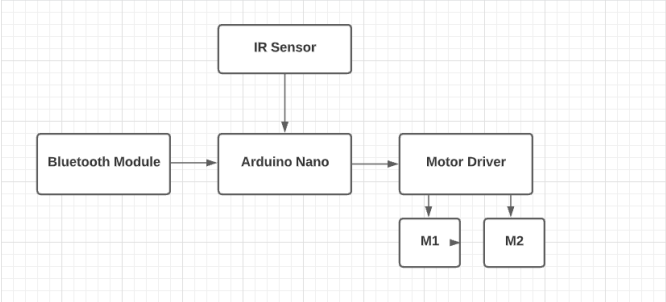
As we know placing the chairs on their proper place after use and every time, we need a human resource to keep every chair back to its place. So, this problem makes us work on this solution.

Existing intelligent system of smart chair is based on Nissan-technology which create self-align chair. This chair automatically Returns to its original position.

In this chair we are using different hardware like L298N driver to drive motor. IR sensor use to detect line follower algorithm. The main part of the system is processing unit. Here we are using Arduino processor to control the motors. This paper is focused on two simple tasks i.e., calling the chair in the room when u need it and after use sending it back to its charging position.

III. EXISTING SYSTEM

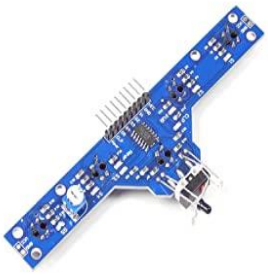
In our system we create self parking chair by which, chair comes to its position by using android application and microcontroller, when user command it and returns back to its charging position when user gives the command to return.



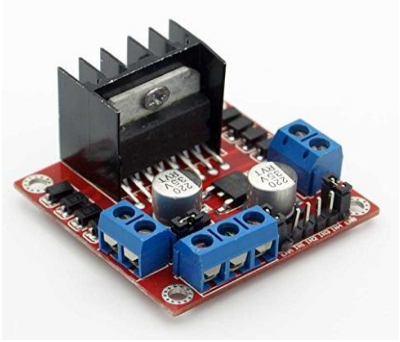
IV. Components Used

Arduino Nano: Arduino boards are widely used in robotics, embedded system, automations, Internet of things and electronics projects. Arduino Nano is a small, complete, and flexible and breadboard friendly Microcontroller board, based on Atmega328p. This microcontroller can be easily programmed in an open-source Arduino IDE using Embedded C Language. The reason behind using this Microcontroller is the presence of huge number of pre made Open-source libraries.

Ir Array sensor: It is an electronic device which emits radiation to sense the aspect of the surrounding. It has built in Infrared transmitter and receiver. We have used 5 Ir array sensors. Each Ir sensor is capable of detecting black and white line. The Array is capable of emitting sounds.

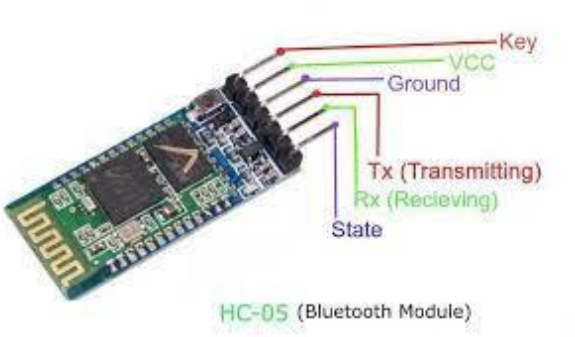


L298N Motor Driver: It is a high-power motor driver module for driving DC and stepped motors. This Module consists of an L298 motor driver IC and 78M05 5V regulator. It can control up to 4DC motors or 2 DC motors with directional and speed control.



Bluetooth Module: HC-05 is a module which is designed for wireless communication. This module can be used in a master or slave configuration. It is

used to connect android application and Arduino Microcontroller.



Jumper wires: these are normal connecting wires with connector pins on both sides which help in easy connecting of electronics component.

V. Working

As in modern world everything is going to be automatic, so we build a chair which we sense start point and end point automatically using line follower algorithm. When the user needs a chair to use, he/she will give the command to the chair through the android app installed in the user's cell phone to be in its position and after the use, user can return the chair back to its original position by giving return command through android application.

VI. OBJECTIVES OF PROPOSED

1. Main aim is to create self parking chair.
2. Save money.
3. Avoid human intervention.

VII. FUTURE SCOPE

1. As it is self parking chair it will use in many areas where automation is most important.
2. It may use in school and colleges like in the practical labs and offices and conference halls.
3. GPS can be used in the chairs to find the locations of the chair while moving on the line follower.
4. Cameras can be installed to if the chairs are used in medical places for disable persons to monitor them.

VIII. CONCLUSION

Using this system, we successfully build a self parking chair. There will be manual operation so it can reduce human resource. This is time efficient and money consuming.

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