

SMART OFFICE

IoT based Office Automation [Ramu Kaka]

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Abstract - Now a days there are some problems faced by the office employees. The problems are time management, data loss due to power cut off, complicated courier processes etc. So we come with the solution called as Ramu-kaka. It contains circuits like Automatic courier system, Automatic server control & Controlled path following robot. Automatic courier system solves the complicated courier process problem in which automatically message sent to the courier company as soon as you put courier in the courier box. In this Data loss due to power cut off problem solution is added in future scope which can be done by automatic server control in which data can be easily saved when there is low power. And the major problem of time management during hectic schedule is overcome by controlled line following robot. Along with this these, it can also be employed in hospitals, restaurants, theaters etc.

Key Words: Arduino UNO, NodeMCU, IR sensor module, Motor driver, Motors, Buzzer, Transformer, Proximity sensor, Amplifier, Speaker, Tyres.

1. INTRODUCTION

Now a days there are some problems faced by the office employees such as time management, data loss due to power cut off, complicated courier processes, time waste during hectic schedule, etc. Today's world is developing at high speed because of internet. Everyday new technology is discovered. At the same time everyone is facing many problems in these smart cities. Some of these problems are related to office employees. Therefore, as a student of electronics engineering, this project interest and expose us to the field of mechanical, design engineering, electronics devices, programming languages. On the whole, in this project, to write a program to perform major tasks by using micro controllers is the step to learn electronics engineering. So we come with the solution called as Smart office. It contains circuits like Automatic courier system, Automatic server control & Controlled path following robot. Automatic courier system solves the complicated courier process problem in which automatically message sent to the courier company as soon as you put courier in the courier box. Data loss due to power cut off problem is solved by automatic server control in which maintenance officer can shut down the server by single message through GSM module. And the major problem of time management during hectic schedule is overcome by controlled path following robot.

2. LITERATURE SURVEY

a. Previous Attempts

Previous attempt have been made to run this project successfully using several technologies like robot used in Amazon offices to take courier to different departments. Line following robot is use for several other task.

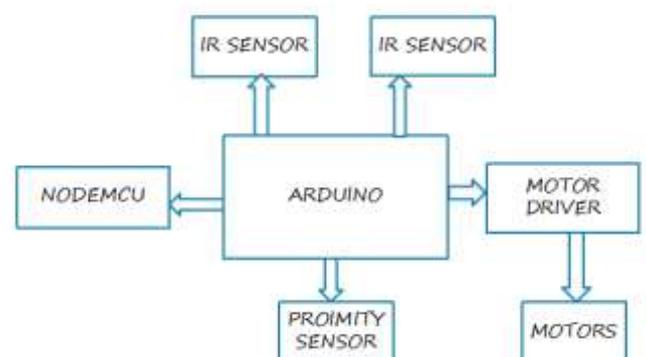
b. Current Scenerio

Now if someone want to send any file or documents from one department to another they have to get from there place and take those documents to the particular departments this use to take time during hectic schedule and resulted in time lose, maximum 2 hours of daily is wasted in this work overall.

If someone wants to send any letter or courier usually they have to leave there place go to reception and hand over to the receptionist. Then the receptionist will call courier office and the further procedure will take place. This have some or the other problem.

Now a days if main power supply goes off the server starts working on UPS and works until the UPS capacity but turn off directly instead of shutting down properly. This leads to loss of important data which is continuously getting stored in it. If we can shut this server properly lot of important data can be saved which is useful for the companies.

3. BLOCK DIAGRAM



4. WORKING PRINCIPLE

This system consist of he following components:

- NodeMCU
- Arduino UNO
- Motor Driver
- Motors
- IR Sensor
- Proximity Sensor
- 12 volts Battery
- 12 volts battery Charger

1. Microcontroller

Node MCU:



It is an open-source firmware and development kit that helps you to prototype or build IoT product. It includes firmware which runs on the ESP8266 Wi-Fi SoC from Espressif Systems, and hardware which is based on the ESP-12 module. The firmware **uses** the Lua scripting language

Arduino UNO:



The Arduino Uno is a microcontroller board based on the ATmega328. It has 20 digital input/output pins (of which 6 can be used as PWM outputs and 6 can be used as analog inputs), a 16 MHz resonator, a USB connection, a power jack, an in-circuit system programming (ICSP) header, and a reset button.

2. Motor Driver



L293D is a typical Motor driver or Motor Driver IC which allows DC motor to drive on either direction. L293D is a 16-pin IC which can control a set of two DC motors simultaneously in any direction. It means that you can control two DC motor with a single L293D IC

3. Motors



A DC motor is any of a class of rotary electrical machines that converts direct current electrical energy into mechanical energy, The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic, to periodically change the direction of current flow in part of the motor.

4. IR Sensor



An infrared (IR) sensor is an electronic device that measures and detects infrared radiation in its surrounding environment. There are two types of infrared sensors: active and passive. Active infrared sensors both emit and detect infrared radiation. Active IR sensors have two parts: a light emitting diode (LED) and a receiver. When an object comes close to the sensor, the infrared light from the LED reflects off of the object and is detected by the receiver.

5. Proximity Sensor



A proximity sensor is a sensor able to detect the presence of nearby objects without any physical contact. A proximity sensor often emits an electromagnetic field or a beam of electromagnetic radiation (infrared, for instance), and looks for changes in the field or return signal.

6. 12 V Battey



Commonly used in UPS or Uninterruptible power system that is usually used with computer. These batteries can also used as portable power sources to run amplifier on outdoor situation. These are also used in small vehicles and sometimes power the self-start type generators.

7. Battery Charger



It is used to charge 12V battery which is uses to drive the motor drives present in the robot.

5. WEB SERVER USING IFTTT



So for controlling purpose we use webserver. By which we can access and control bot. We are using webserver which is generated by node MCU itself. We design webserver as per our requirement. We created buttons which actually call the bot from table to table whenever we required. We also add file acknowledgement system that is whenever bot come at the

desired table we can place the file and can send the file send acknowledgement to respective person. And after that press table button whichever you want.

For the parcel to be pick up by courier authorities we make automatic courier system in which we just add a button in webserver in which will further send email to courier authorities to schedule a pickup once you placed parcel in bot .For mailing purpose we use server and IFTTT services for making applets. These applets will let make you send mail to courier authorities automatically. So then courier authorities will scheduled a pickup and courier to respective person or company.

6. APPLICATION

We visits different offices during our vacations we got different problems which mentioned above and which can be solved easily, So after taking these many problems in consideration we decided to make Ramukaka bot as solution for these many problems. But as we see as per our survey these many problems are common in different fields so, same concept can also be deployed at various applications such as in theaters, in hospitals, in colleges, in hotels. In theaters our bot will cleans the passage between seats after the show. In hospitals our bot will work as nurse or ward boy for exchanging medicines or any parcel with patient where nurse and ward boy can be infected due to patient. In Colleges our bot will work as peon for exchanging files, parcel in college's or school's staffrooms or from one class to other. In hotels our bot will use as waiter for taking and delivering orders to customers

7. SNAPSHOTS





8. ADVANTAGES AND DISADVANTAGES

● **Advantages:**

1. Complicated courier process will be solved.
2. Data loss due to power cut off will be prohibited.
3. Time consumption will be reduced.
4. Helps to increase performance of employees.

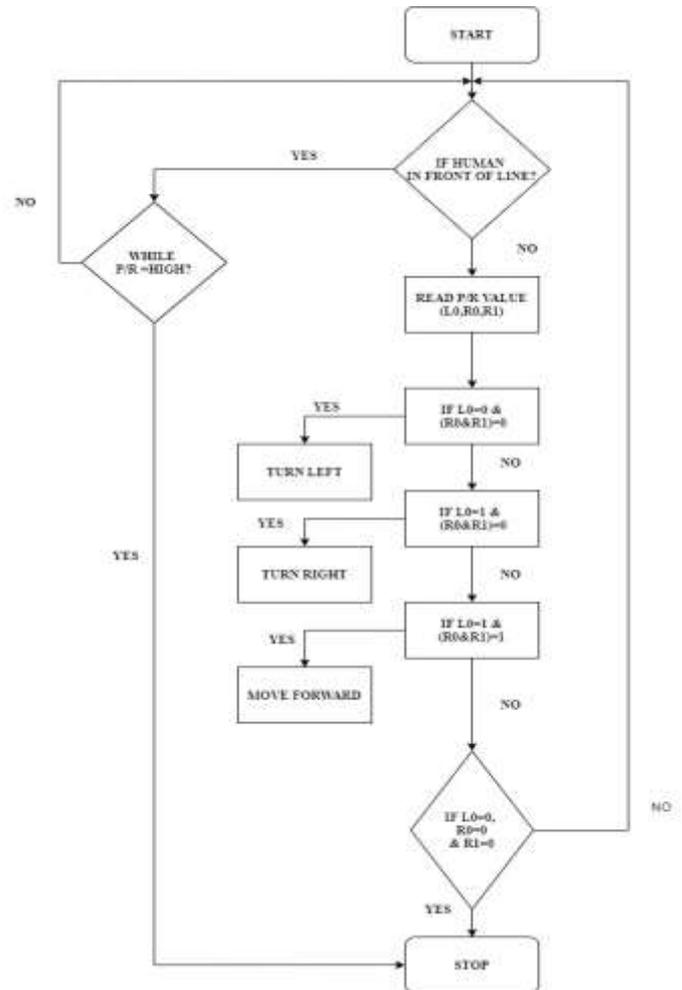
● **Disadvantages:**

1. In case of network problem GSM Module may not work.
2. Disturbance due to obstacles in line following robot.

9. FUTURESCOPE

- 1) In hospital as ward boy
- 2) In staff rooms of school or colleges for sharing files
- 3) Automatic server control can be used for electric appliance
- 4) In hotels as waiter.
- 5) In administrator offices of colleges, institution

10. FLOWCHART



11. CONCLUSION

SMART OFFICE as a project is leaned towards providing time management at affordable price, its flexibility allows it to be optimized for multinational companies. We have implemented the project using Arduino and NodeMCU this provides ultimate time management along with some significant data saving capabilities. This project helps in planning modern policing methods and accessibility to hectic schedule. We are committed to provide the best possible product and create a best and helping environment for humans.

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