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Accident Prevention on Public Transport Footboard

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Abstract – *Our project deals with concept to prevent the accidents on travelling through foot board in public transport especially on Buses, In regular days during the peak hours the maximum people travel through public transports, during that time the capacity of vehicle will exceed more than 100% by standing in foot board. This causes major accidents and ends in life loss due to lack of grip in holding the handlebar of the vehicle, breakdown of entire steps of the vehicle due to over load.*

***Key Words*: Footboard, Public transport, Accident prevention.**

1. INTRODUCTION

Now a day's the usage of public transports are more than the individual transport due to increase of hike in fuel. Widely used public transport for lower distance of travel is buses which are most commonly accessed by the peoples to reach destinations at lower ticket cost.

During the peak hours in normal days from morning 08:00 am to 10:00 am and the evening 05:00 pm to 09:00 pm the passenger ratio will be more than the rated capacity of the bus.

Normally the passenger capacity will be like 70 passengers (45 sitting passengers and 25 standing passengers) but during the peak hours the passenger ratio will be minimum 30% more than the rated passenger count because of students and working employees.

At the same time the increase in percentage of passenger ratio will be occupying the footboard to stand and travel which is the cause of road accidents.

Apart from overcrowded the current youngsters who tries to do stunts are travelling only in footboard which is also major cause of accident.

We are here to propose a system which is to prevent such accidents on travelling in footboard.

2. METHODOLOGY

We use a basic automation structure with the help of open source controller - arduino and few sensors. The program of Arduino is completely based on relay logic. The sensors are used as the input to the controller.

3. BLOCK DIAGRAM

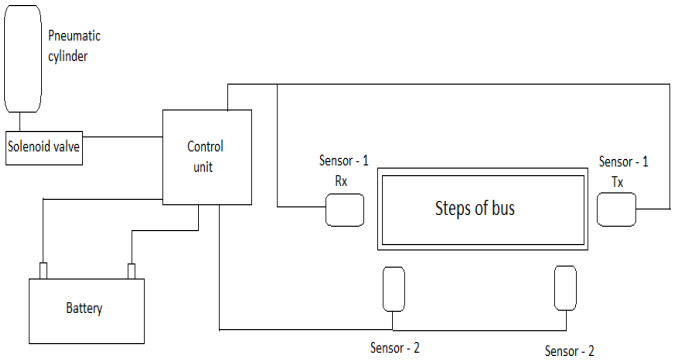

Fig -1: Block diagram

4. FLOW CHART

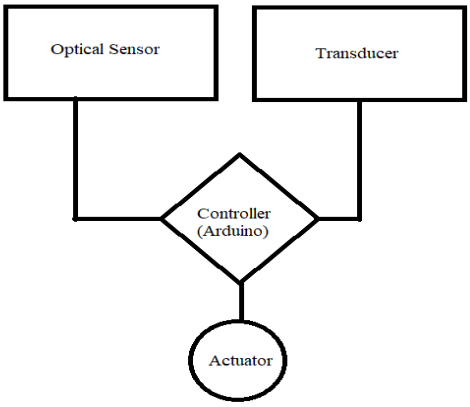

Fig -2: Flow chart

This flow chart shows the connection of sensors and the actuators to the controller.

5. WORKING PRINCIPLE

In this project we design a system to prevent the accident on travelling in the footboard. We use two types of sensors to identify the presence of person in the footboard Sensor – 1 is a type of optical sensor to sense the presence of the person in footboard Sensor – 2 is type

of transducer which is to identify the deflection in the position of footboard standing area.

These sensors are connected to a control unit which consists of a programmable logic controller open source control to read the inputs from the sensor and a solenoid vale is connected to the output of programmable logic controller. If the sensors 1 and 2 send a positive signal by detecting presence of a person in the footboard then the programmable logic controller will actuate the solenoid vale to supply the air to the double acting cylinder.

Once the air is supplied the piston rod extends and moves the accelerator pedal to zero position. So the vehicle speed will be reduced and stopped and the accident is prevented.

The electric supply to the sensors and the controller are taken from the battery through voltage regulators. To actuate the double acting cylinder the supply can be taken from the air brake system of the vehicle.

6. SENSORS

6.1 IR Sensor

In this model we used an IR sensor as optical sensor and we can use PIR sensor for real time application. It helps to detect the presence of an object / person infront within the specific range.

6.2 Transducer

In our model we have used a proximity sensor to identify the deflection occurs in the foot step when a person stands on it . For real time we can use a load cell to identify the presence of the object by its weight.

7. ARDUINO

In this project we have used Arduino UNO. Arduino UNO is a low-cost, flexible, and easy-to-use programmable open-source microcontroller board that can be integrated into a variety of electronic projects.

This board can be interfaced with other Arduino boards, Arduino shields, Raspberry Pi boards and can control relays, LEDs, servos, and motors as an output.

8. ARDUINO PROGRAM

```
const int BUTTON1 = 2;
const int BUTTON2 = 4;
const int LED1 = 8;
int BUTTONstate1 = 0;
int BUTTONstate2 = 0;

void setup()
{
 pinMode(BUTTON1, INPUT);
 pinMode(BUTTON2, INPUT);
 pinMode(LED1, OUTPUT);

}

void loop()
{
 BUTTONstate1 = digitalRead(BUTTON1);
 BUTTONstate2 = digitalRead(BUTTON2);
 if (BUTTONstate1 == LOW && BUTTONstate2 ==
LOW)
 {
  digitalWrite(LED1, HIGH);
 }
 else{
  digitalWrite(LED1, LOW);
 }

}
```

8.1 Description of program

Inputs

- Pin 2 is used to connect the input Sensor – 1
- Pin 4 is used to connect the input Sensor – 2

Output

- Pin 10 is used to connect the relay module

We have used the AND logic program to have the output

Truth table of AND logic

I1	I2	O
0	0	0
0	1	0
1	0	0
1	1	1

Table -1: Truth table

9. PHOTOGRAPH OF MODEL PROJECT

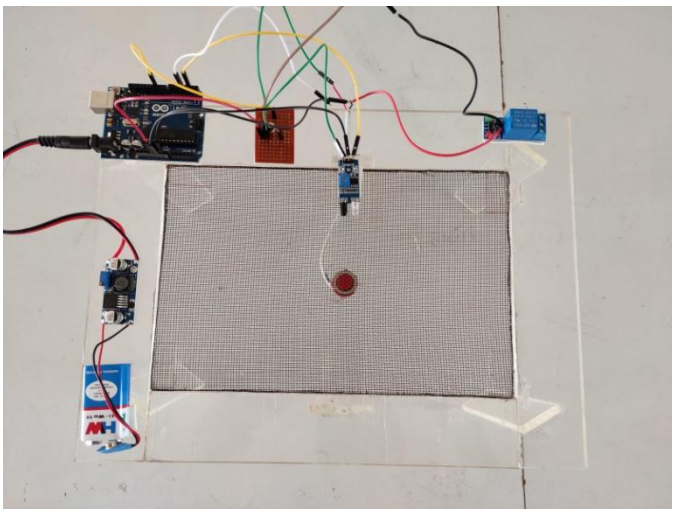

Fig -3: Our project's working model

10. CONCLUSION

This security contraption to spare you wounds since of status in footboard is certainly a promising contraption that guarantees the security of transport travelers and ensures a completely secure and cozy travel. The contraption is planned in this sort of way that the contraption may be without trouble snared up on buses and reasonable.

The framework is exceptionally proficient in anticipating the footboard voyaging in buses and the foremost vital include of the framework is that it is totally programmed and the transport team cannot do anything other than permitting the transport to halt when traveler is show on the footboard. The framework in the event that made tamper proof, at that point we are able guarantee that footboard voyaging in buses is anticipated totally.

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