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Research Paper

PREVENTION OF ACCIDENTS USING EMBEDDED SYSTEM

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In this modern era, development taking place in every field like science, medicine and also transport. And when we consider the transport sector, speed plays a major role. Since every human in this world racing to reach their goal. In such concern accidents occurs every day. Especially in the hilly regions, it has become frequent one. There are many factors, which make this as frequent one are mist, fog, hairpin bend etc.. Though we cannot stop accidents but we can reduce this by using our project. It is very cost efficient since we are using less number of sensors, which is accompanied by the signaling equipment. The yielded by our project is very accurate. So that we can able to prevent accidents. Working procedure of our project is as follows.

INTRODUCTION

In hilly places the driving becomes very challenging and difficult. Because in those regions roads are laid around the border region and full of curves in hair-pin bend. Drivers cannot be able to identify the vehicles coming in the opposite region since they are not visible.

WHY PREVENTION SYSTEM IS NEEDED?

In hair pin bends the roads are like a curve so only one vehicle can pass at a time. In case two vehicles of opposite direction try to pass each other, it cause collision. So an prevention system is needed to avoid such an collision. This prevention system is implemented by monitoring

of vehicles and signalling. The monitoring is done by placing a pair of IR SENSORS on each side of the road, whereas the signalling is indicated by LED or LCD display. The working of this model is explained in detail with solution description.

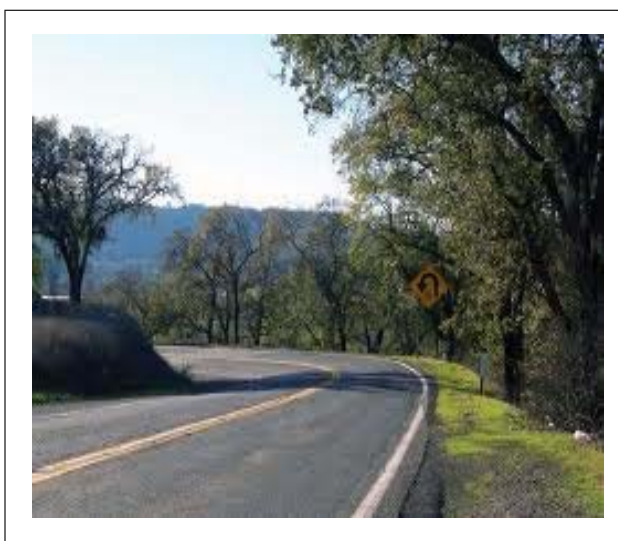
MIST FORMATION

During MIST and FOG formation nothing can be visible so driving becomes very challenging in hair pin bends an prevention system is needed to monitor and provide proper guidance.

SOLUTION TO THIS PROBLEM

As a solution to these problems we developed a project IR based embedded system in order to

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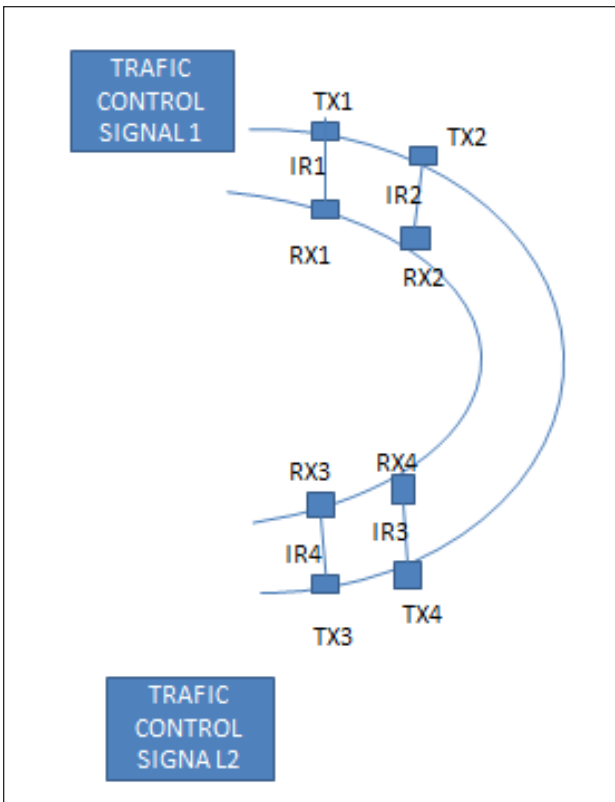




continuously monitor and detect vehicles passing through the hairpin bend. Four IR SENSORS are placed on both sides of the roads. In case any vehicle cuts the IR SENSOR (IR1&IR2) ,the signal passed through the PIC and the traffic signal 2 will glow on the opposite side of the road. So the vehicle at the opposite end must wait till the vehicle from the opposite side cuts IR3,at the same time the traffic signal 2 turned off. Now the waited vehicle make its move. The similar process repeated on the other end.

THE REASON FOR USING PAIR OF SENSORS ON EACH SIDE

Consider if we using two sensors (one at each side) in our project. It causes an disadvantage, that is ,if a vehicle cuts the IR1, the TRAFFIC CONTROL SIGNAL2 will glow on the opposite side.The same vehicle cuts the IR2 ,it makes TRAFFIC CONTROL SIGNAL1 to glow in the direction where it comes,this makes wrong signalling ,so Rest of the vehicles in opposite side may be wait for crossing But there is no vehicle.This problem is overcome by using four sensors in our project.



provide assistance to the drivers by signaling automatically and alerting them.

DESCRIPTION TO SOLUTION

The system uses PIC programming to

PROGRAM DESCRIPTION

- When the vehicle cuts the IR1 first,then the traffic control signal2 on the opposite side will be on.
- The same vehicle cuts ,the IR2 then it cuts the IR3 ,during that time the traffic control signal2 must be off.
- When the vehicle cuts IR4 first the traffic control signal 1 will be on,at the opposite side.
- The same vehicle cuts, the IR3 sensor and then it cuts IR2 , that time traffic control signal 1 should be off.

- For an exceptional case ,where the vehicle cuts both IR1 and IR4 at the same time an priority is assigned to the vehicle which is moving upwards.

PROGRAM USING PIC

CASE 1::

WHEN IT CUTS IR1&IR 2:

```
# include <pic.h>
```

```
# define IR1 RD0
```

```
# define IR2 RD1
```

```
# define IR3 RD2
```

```
# define IR4 RD3
```

```
# define LED1 RB0
```

```
# define LED2 RB1
```

```
__CONFIG(0x1F71);
```

```
void main(void)
```

```
{
```

```
for(;;)
```

```
{ int c=0,d=0,e=0,f=0;
```

```
TRISD=0xff;
```

```
TRISB=0x00;
```

```
ADCON1=0x06;
```

```
LED1=0;
```

```
LED2=0;
```

```
//CONDITION :1
```

```
if(IR1)
```

```
{
```

```
if(IR4==0)
```

```
{
```

```
for(;;)
```

```
{
```

```
if((IR2==1)||c>0)
```

```
{ if(e==0)
```

```
++c;
```

```
for(;IR3==0;)
```

```
{ if(IR1==1)
```

```
{
```

```
c++;
```

```
}
```

```
LED2=1;
```

```
e=1;
```

```
}
```

```
—c;
```

```
if(c==0)
```

```
{
```

```
LED2=0;
```

```
break;
```

```
}
```

```
}
```

```
}
```

```
}
```

```
}
```

CASE 2:

WHEN IT CUTS IR4&IR3:

```
else if(IR4)
```

```
{
```

```
if(IR1==0)
```




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