ADAPTIVE VEHICLE HEADLIGHT MANAGEMENT SYSTEM

EMBEDDED SYSTEM PROJECT

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WHY WE SELECTED THIS PROJECT ?

Adaptive headlight system is one of the most useful system for Automobile.

The system is designed to adjust the beam for front coming vehicles, the adaptive headlights are automatically switched, thereby eliminating the need for the driver to switch on the headlights.

The highest fatal traffic accident rate occurs on curved roads at nighttime. In most cases, the late recognition of objects in the traffic zone plays a key role. These facts point to the importance of the role of automotive forward-lighting systems. In order to provide enhanced nighttime safety measures, this work aims to design and build a headlights by adapting a conventional static headlamp with a very close eye on cost and reliability.

PROGRAM MODULES

1. Potentiometer operated steering-

The potentiometer is an electrical device comprising a resistor with a sliding third contact, often termed a wiper, which allows the voltage to be varied depending upon where the slider is positioned along the length of the resistor.

Interfacing stepup motor with 8051:

```
#include<reg51.h>
#include<stdio.h>

void delay(int);

void main()
{
  do
  {
```

```
    P2=0x01; //0001
    delay(1000);
    P2=0x02; //0010
    delay(1000);
    P2=0x04; //0100
    delay(1000);
    P2=0x08; //1000
    delay(1000);
  }
while(1);
}

void delay(int k)
{
  int i,j;
  for(i=0;i<k;i++)
  {
    for(j=0;j<100;j++)
    {}
  }
}
```

2. Ldr sensor-

LDR's are light dependent devices whose resistance is decreased when light falls on them and that is increased in the dark. When a **light dependent resistor** is kept in dark, its resistance is very high. This resistance is called as dark resistance. It can be as high as 1012 Ω and if the device is allowed to absorb light its resistance will be decreased drastically. If a constant voltage is applied to it and intensity of light is increased the current starts increasing.

Lighting switch: The most obvious application for an LDR is to automatically spurred by the great disparity between daytime and nighttime traffic fatalities

Interfacing ldr with 8051:

```
#include<reg51.h>           // header file
void delay(int time)        // function to generate delay
     {
      int i,j;
      for(i=0;i<=time;i++)  // i will run from 0 to user defined value
      for(j=0;j<=1275;j++); // j will run from 0 to 1275 "time" times
     }
sbit sensor=P3^0;
sbit led=P3^1;
                          /*if sensor transmits high pulse*/
```

```
void main()           // main function
  {
    led=0;               // setting led initially off
    sensor=0;        // putting sensor pin to 0 so that we can read high
pulse
     while(1)            // while(1)used to provide continuous loop
        {
         if(sensor==1)   // if sensor provides high input
           {
            led=1;       // light will be on
            delay(200)   // light will remain on for this specified delay
            led=0; // light will off and again on when sensor will be 1
           }
        }
   }
```

3. Relay circuit

Relay circuit is main part of the model which is use to automatic change from high beam to low beam of head lamp.

Interfacing relay circuit with 8051

```
#include<reg51.h>

sbit relay_pin = P2^0;

void Delay_ms(int);

void main()
{
  do
  {
    relay_pin = 0; //Relay ON
    Delay_ms(1000);
    relay_pin = 1; //Relay OFF
    Delay_ms(1000);
  }while(1);
}

void Delay_ms(int k)
{
  int j;
  int i;
  for(i=0;i<k;i++)
  {
```

```
   for(j=0;j<100;j++)
   {
   }
  }
}
```

4. IR sensor

The output of the infrared sensor circuit is connected to PIC microcontroller pins and the microcontroller will take it as digital input either 0 or 1. According to the o/p of the infrared sensor module, the microcontroller will react by glowing LED

```
sbit LED_pin = P2^0; //Defining LED PIN
sbit sensor_pin = P0^0; //Defining output of sensor  PIN

void Delay(int); //Function prototype declaration

void main (void)
{
  sensor_pin = 0; // if sensor is low
  LED_pin=0; //LED off

  while(1) //infinite loop
  {
    if(sensor_pin == 1 ) //If sensor is high
    {
      LED_pin = 1; //LED ON
    }
    else
    {
      LED_pin = 0; //LED OFF
    }
  }
}

void Delay(int k)
{
  int j;
  int i;
  for(i=0;i<k;i++)
  {

for(j=0;j<100;j++)
   {
   }
  }
}
```

BLOCK DIAGRAM-