ME-GY:6933 ADVANCED MECHATRONICS – FINAL PROJECT

INTELLIGENT STREET LIGHTING

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In today’s world, 60% of the electricity produced is used for the street lighting due to its continuous operation during nighttime.

Significant amount of electricity is consumed due to streetlights because of continuous operation of lighting during the nighttime.

In order to reduce the electricity consumption and wastage of energy, the system that must combine the existing network with intelligence to think itself.
Lights left on during the day waste energy

Street lights are not switched off on time

Community report
By Umber Da'ea
Gulf Times reporter

Regardless of energy saving being the concern that is being expressed by the authorities and environmental organizations, I noticed this scene recently.

All the street lights on the Deira Corniche in Sharjah were switched on in the morning, at a time when the moonlight was enough to help motorists and pedestrians find their way.

It is regrettable when we see that electricity is being wasted in this manner. I visited several other places in Sharjah and found the same scenario in most of the streets.

We are trying our best to reduce consumption of electricity. Nevertheless, this type of misuse of energy resources is annoying.

I request the authorities concerned to install automatic light detecting devices at public places, so that when enough sunlight is available, the street lights will turn off automatically and when it is dark outside, the street lights will turn on.

Need for conservation
- Street lights are on during the day at a residential area (left) and near the Gold Souq (right) in Sharjah.
EFFECTS ON WILDLIFE AND ECOSYSTEMS

• Scientific evidence suggests that artificial light at night has negative and deadly effects on many creatures including amphibians, birds, mammals, insects and plants.

• Artificial streetlights disrupt this nocturnal activity, interfering with reproduction and reducing populations.

• Many insects are drawn to light, but artificial lights can create a fatal attraction.
### WHAT WE USED?

<table>
<thead>
<tr>
<th>Items</th>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Propeller Activity Board WX</td>
<td>1</td>
<td>$79.99</td>
</tr>
<tr>
<td>Raspberry Pi (Kit)</td>
<td>1</td>
<td>$79.99</td>
</tr>
<tr>
<td>LEDs</td>
<td>4</td>
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</tr>
<tr>
<td>Photo Resistors</td>
<td>2</td>
<td>N/A</td>
</tr>
<tr>
<td>Capacitor</td>
<td>2</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>$159.98</strong></td>
</tr>
</tbody>
</table>
Hardware Used for the Project
1. Raspberry Pi
2. Parallax Propeller Activity Board
3. Photoresistors
4. LEDs
#include "simpletools.h"  // Include simple tools
#define ledpin1 5
#define ledpin2 6
#define ledpin3 7
#define ledpin4 8
int main()  // Main function
{
    pause(500);
    printf("Smart Street Lightining System\n");
    while(1)
    {
        high(3);
        pause(100);
        long time = rc_time(3,1);
```c
if (time > 50000) {
    printf("It is Night Time\n");
    high(2);
    pause(100);
    long time1 = rc_time(2,1);
    printf("The RC Time is %6d\n",time1);
    if(time1 < 5000) {
        printf("Car is Present\n");
        low(ledpin4);
        high(ledpin1);
        pause(500);
        high(ledpin2);
        pause(500);
        high(ledpin3);
        pause(500);
    }
    else if(time1 > 15000) {
        printf("Car checked into another lighting pole\n");
        low(ledpin1);
        high(ledpin2);
        pause(500);
        high(ledpin3);
        pause(500);
        high(ledpin4);
        pause(500);
    }
    else if(time < 50000) {
        printf("It is daytime\n");
        pause(100);
        low(ledpin1);
        low(ledpin2);
        low(ledpin3);
        low(ledpin4);
    }
}
```
DEMO
ANY QUESTIONS???
THANK YOU!