Ahsanullah University of Science & Technology
Department of Computer Science & Engineering
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CSE 3216
Microcontroller Based System Design Lab

Project Proposal

Project Name: ***Rotating Solar Panel***

Submitted To

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Objective

As climate change is becoming a threat for both the human and nature, energies that are created by releasing greenhouse gas is not a profound way to deal with the climate change. As solar energy is basically the most pure energy because there is no greenhouse gas emission releasing therefore we can fight against the climate change using solar panel to create as much electricity we need.
Problems with solar panel that is used mostly is it's faced in one side and doesn't change its axis according to sun, that's why it can't use it's full potential and produce as much as electricity that is needed. To solve this problem, single axis solar tracker that can rotate itself according to the suns position becomes very helpful and can generate much electricity from solar energy.

Social Values

Still in 2020, electricity city is not available is most of the rural place in both our country and around the globe, mostly because of it's expensiveness. And also it's hard for rural people to afford electricity. Solar panels specially those can track sun and generate usable electricity, can be much helpful for rural places because these are not only cheap but also easy to use and setup.
Not only in the rooftop of rural houses, solar panel can be used in radio and TV station, schools and clinics which can drastically change the whole atmosphere of the a certain area, and if the panel can move along with the position of the sun we can generate much electricity.

Required Components

These following parts and tools are required for building this project

- Arduino Uno
- Motor Driver
- Gear Motor
- 6V Solar Panel
- LDR Sensor

- TP4056 Battery Charger
- 9V Battery
- LIPO Battery
- LCD Display
- DHT11 Humidity-Temperature Sensor
- DC-DC Boost Module (0.9V to 5V)
- Double Connection on/off Switch
- Wire
- breadboard
- Battery Holder

Design

The proposed block diagram is given below.

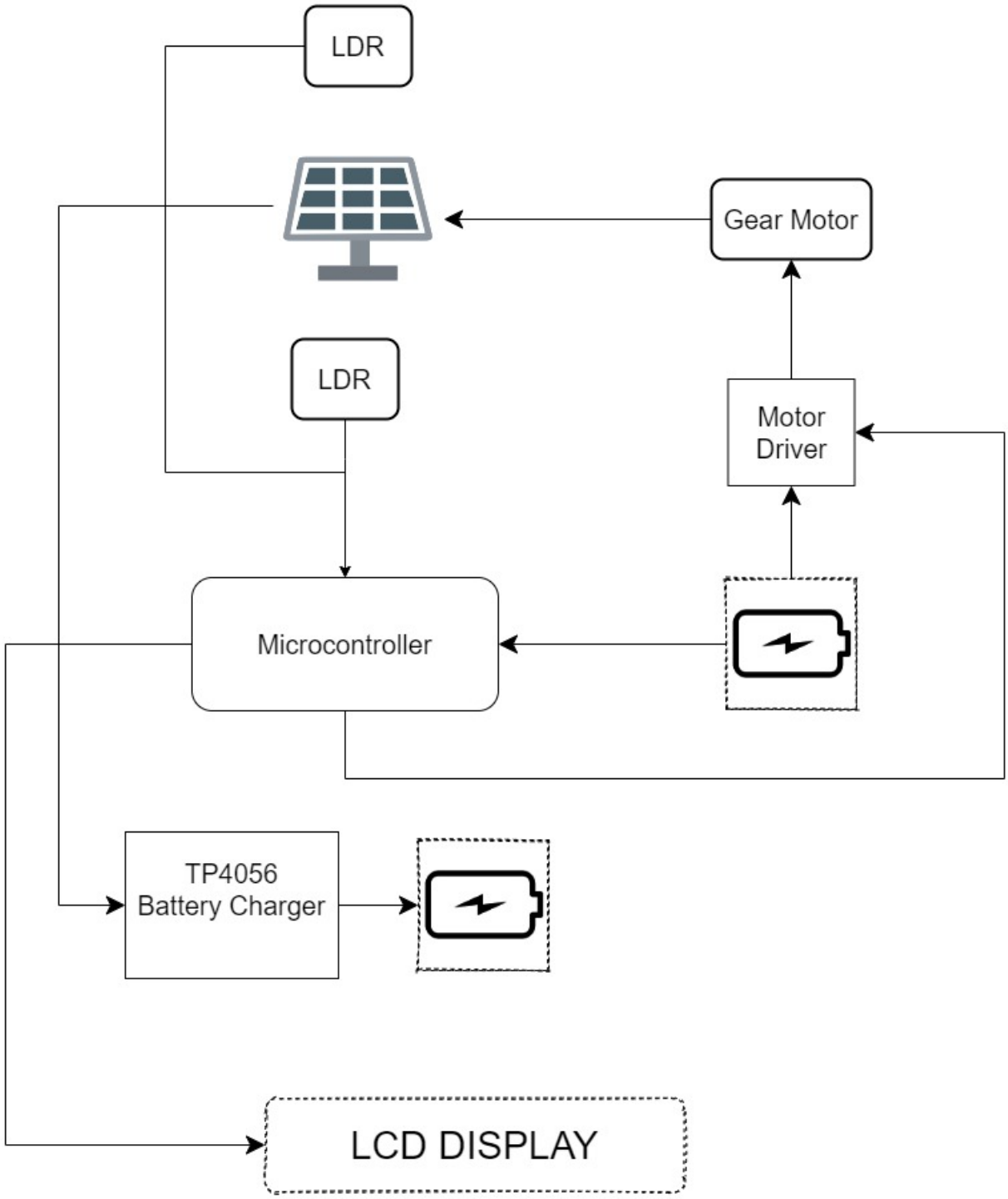

Figure 1: Diagram for Rotating Solar Panel

Working Procedure

Two Light Dependent Resistors (LDR) will be connected with the both side of a solar panel. And when light falls on the panel LDR will change its register's value according to the light intensity. The value will passed on Micro controller (Arduino UNO) and it'll generate a signal and pass to the Motor driver. This signal will tell the gear motor driver in which way to rotate: clock-wise or anti-clockwise and along with the motor the solar panel will rotate towards the light.

Now the energy generated by solar panel will be passed through the TP4056 Battery Charger which will be connected to the LIPO Battery. Thus we will convert the clean solar energy to the Electric energy.
Along with this system, we will use DHT11 humidity-temperature sensor with Arduino UNO and collect the temperature and humidity around us show it to the LCD Display panel which is also connect to the micro-controller.

Estimated budget

Equipment	**Quantity**	**Budget(Tk)**
Arduino Uno	1	400
Motor Driver	1	150
Gear motor	1	85
6V Solar Panel	1	600
Light Dependent Resistor	2	10
TP4056 battery charger	1	50
9V Battery	1	275
LIPO Battery	1	1200
LCD Display	1	260
DHT11 Sensor	1	150
DC-DC Boost Module (0.9V to 5V)	1	60
Double Connection on/off Switch	3	30
Wire	As Required	40
Bread Board	1	70
Battery Holder	1	50
Total		**3430**

Conclusion

Electricity has now become an essential in our day to day life. From charging mobile phone to running super computers electricity is a must and solar energy, also known as clean energy is the only way to get sufficient electricity without producing any greenhouse gas. And rotating single axis solar panel can use it's full potential to generate much more electricity that can lights up a certain area where people could not afford to pay the expense of the regular electricity.To change the world and push the boundary forward Solar Energy is our only hope.