WALCHAND INSTITUTE OF TECHNOLOGY, SOLAPUR

ELECTRONICS AND COMMUNICATION ENGINEERING

Year 2019-2020

Project Synopsis

1. Name of the course: Electronics And Telecommunication Engineering
2. Name of Students :

Name	Roll.No.	Signature
1. Shridevi Utge (Group Leader)	44	
2. Smita Deshpande	43	
3. Nithya Vattakoottathil	45	

3. Name of the Guide : Mr. P. Y. Kumbhar
4. Name of the Project : Smart Solar Robot
5. Whether Project is Sponsored :Yes

   Give details: Solar Electronics
6. Problem Statement :

   To design a solar powered train to save non- renewable sources of energy in order to reduce pollution and make efficient use of solar energy.

7. Scope of the Project :

   The smart solar robot can be used in railway as it requires large amount of energy to run the train. So this energy can be provided through solar energy as solar energy is renewable source of energy and it does not cause any pollution. Further, the use of sensors provides a new dimension to the robot and increases the scope of application.

8. Brief Description of the project :

   This efficient system uses a raspberry pi based circuit in order to achieve this functionality. It is a battery operated system that uses 2 batteries. One battery is used to run the vehicle movement DC motors and the other one is used to power the engine of the train. Also the system uses a solar panel to store the solar energy and this energy is used for running the train. The raspberry pi operates the vehicle movement dc motors at the same time as monitoring the ultrasonic sensors. The raspberry pi smartly operates the dc motors using the motor driver IC to achieve desired movement based upon ultrasonic inputs. The system also uses a gyro sensor in order to measure the engines rotational motion and changes in its orientation.

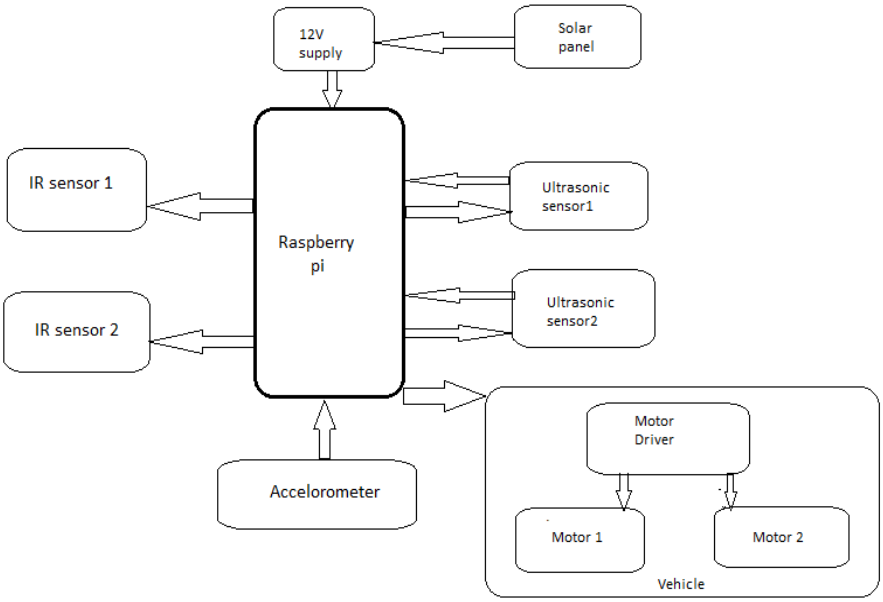

Fig.1 Block diagram of proposed model.

9. Likely H/W components required & S/W platform/ packages required :
   - Hardware components:-

Sr.no.	Component name	Specification	Quantity
1	Solar panel	12V	1
2	Raspberry pi kit	B+ model	1
3	Ultrasonic sensor		2
4	DC motors	30rpm 12V	2
5	Accelerometer/Gyro	Adxl335	1
6	Transformer	9-0-9V 1A	1
7	Resistors	10k	10
8	Capacitors	1000uf	4
9	Diodes	1N4007	6
10	IR sensors		2
11	Batteries	6V 4.5Ah	2

   - Software platform:-
     1) Raspberry pi OS
     2) Python

10. Approximate Budget of the Project : INR 8000

Mr. Kumbhar P.Y.
Project Guide

Dr. Dube R. R.
Head, E&TC Department