SMART E-VEHICLE WIRELESS CHARGING SYSTEM USING RFID AND IOT

AIM:

Design and development of Smart E-vehicle wireless charging system using RFID and IOT.

PURPOSE:

Count of Electrical vehicles increased day by day and EV infrastructure needs to expand simultaneously. Otherwise it effects on EV echo system. At present every charging station required manual presence to charge Electrical vehicle. We suggest RFID based wireless charging station and it doesn't required any manual presence. Based on RFID authorization battery will charge and charge duration time will update to IOT server. Based on duration amount will be deducted from RFID card. The proposed project title is smart e-vehicle wireless charging system using RFID and IOT.

DESCRIPTION:

RFID (EM-18) and IOT module (ESP8266) interfaced with Arduino serial port. Relay connected with Arduino digital port and it controls power to battery. IR sensor connected to Arduino digital input.

WORKING:

Wireless power transfer has two sections. One is transmitter which transmits power through coil in the form of electromagnetic waves. Other part is receiver which receives electromagnetic waves and converts into power. Vehicle has receiver part along with battery. Each vehicle has RFID card and card will be scanned when vehicle comes near to transmitter. When RFID detects valid card then it sends signal to relay to switch ON wireless power transmitter to charge battery. Based on time duration of charging, amount will be deducted from RFID card and information will updated to IOT server through WIFI module (ESP8266). When vehicle leaves from wireless charger arduino detects vehicle presence through IR sensor and switch OFF relay to disconnect battery charging.

TECHNICAL SPECIFICATIONS:

HARDWARE:

Microcontroller	:	Arduino Uno
Crystal	:	16 MHz
LCD	:	16x2 LCD display
Copper coil	:	25 gauge
MOSFET	:	IRFZ44
RFID	:	EM-18
IOT module	:	ESP8266
IR sensor	:	5V DC
Relay	:	12V DC
Battery	:	12V DC
Power Source	:	12V 1 amp DC battery, Transformer

SOFTWARE:

Arduino IDE

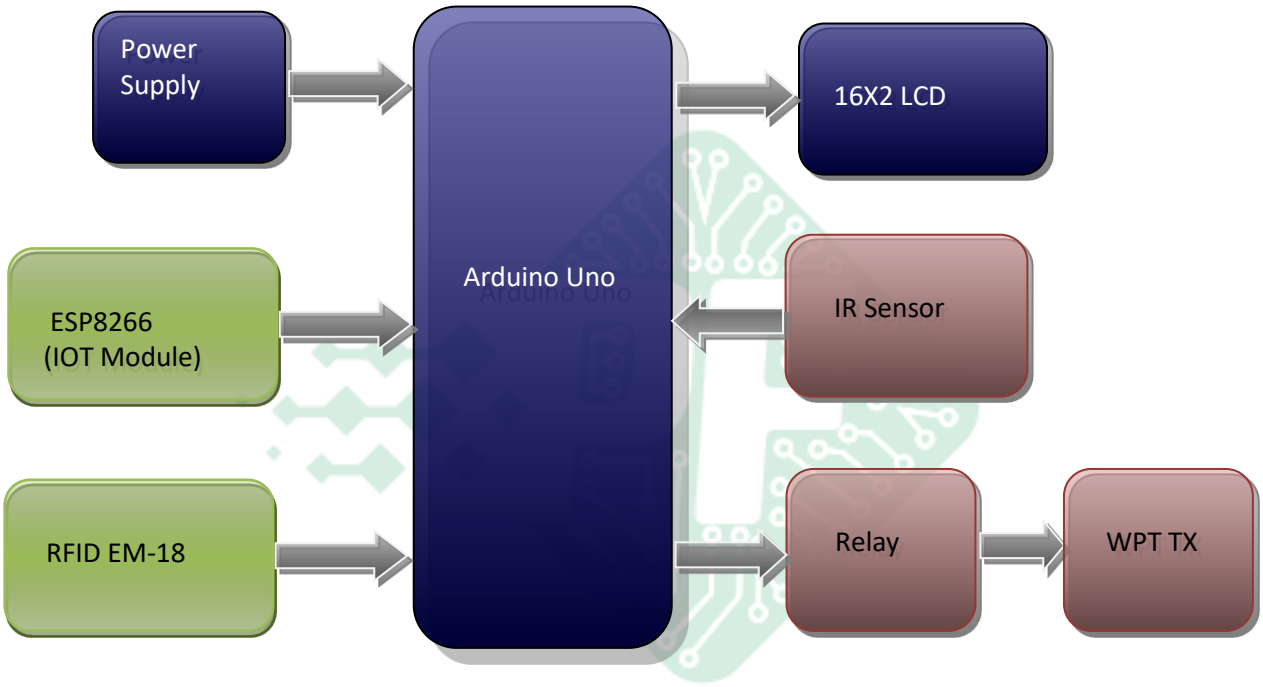
Proteus based circuit diagram

APPLICATIONS:

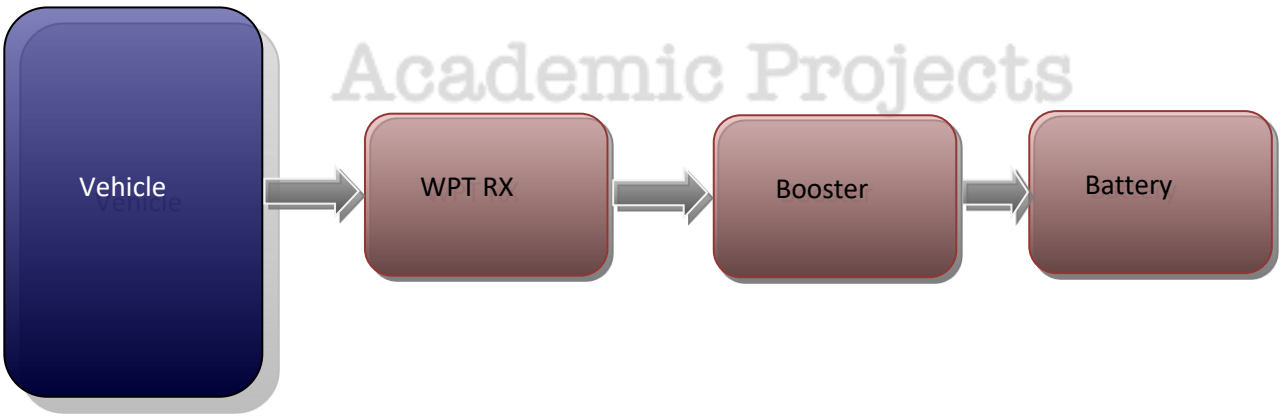
- Wireless chargers for battery
- RFID based wireless chargers
- EV charging stations
- Wireless power transfer
- Wireless mobile charger

BLOCK DIAGRAM:

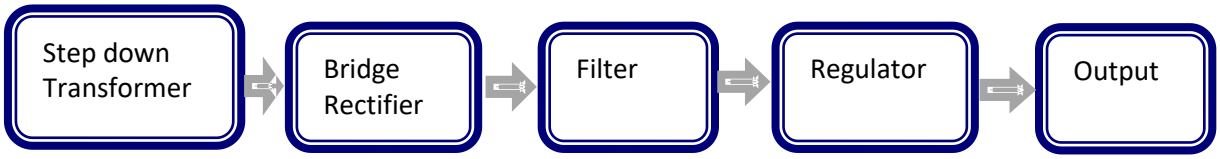
Transmitter:



Receiver:



POWER SUPPLY BLOCKDIAGRAM:



INTERFACES COVERD:

In this project we have covered Wireless power transfer module design, RFID and IOT module interface.