ARDUINO BASED SMARTPHONE CHARGING CONTROLLER

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Abstract

This is a timer based mobile charger and controlling the home appliance using Bluetooth and android application. The main aim and target of our project is to switch "on" and "off" the appliance in our home or office or wherever we are so that we can monitor the status of the device using android applications. An exchanging of data over a short distance with a wireless technology defines Bluetooth and it is also or can also be used for building PANs. This can also be connected to several device, which helps in overcoming the issues, troubles and problems of synchronization. The OS is based on a kernel which is currently developed by Google and it is also based on direct manipulation and user interface. Television, Cars and wrists use Android as a main source. The OS significantly uses inputs that correspond to real-world actions. Although mainly designed for touchscreen input, it can also be used in game consoles, digital cameras and other electronic devices.

keywords- Bluetooth, Arduino UNO, Rotary Encoder, LCD Display, Socket, Charging adapter, Power supply, Knob.

I. INTRODUCTION

Android Operating System is one of the most popular as well as a leading preferred system in cellular gadgets and devices. The affordability of such cellular devices increases day by day due to their size and portability installation of Android GUI must be done in a smart phone. The operator has and should be in contact with the screen of the mobile phone to control the home applications, or else the right set of desired actions cannot be carried out to get the desired output. This project also possesses the capability to control any sort of electrical appliances that can be accessed through mobile phone by providing a remote access using Bluetooth. Bluetooth is a wireless technology of radio transmissions providing a necessary technology to create controllability and convenience in short distance. Home automation is nothing, but a degree of computerization or is automatically controlled to certain electrical and electronic applications in a building. People with busy schedules, individuals with physical limitations represent a very attractive market for such networking. Our main concept in this simple, yet brilliant project is to set the time limit for which you wish to charge the mobile phones. Once it reaches the level, it automatically turns off from the power supply, thus saving the battery of the gadget.

II. LITERATURE REVIEW

This system helps to monitor and control the process at any time from anywhere, utilizing the features of IoT of the system where it reduces the power wastage. It proposes a system that implements Message Queuing Telemetry Transport and TCP in ESP8266 Wi-Fi module to control appliances and interface them with proximity and PIR sensors. In this paper, they have described the architecture and implementation of home automation systems. This system utilizes the electronic boards to reduce the development cost. Apart from the development cost, the automation smartness system can be justified and customized by the user even at runtime. The complete system uses existing communication with the help of MQTT protocol and TCP protocol. This function helps to understand how ESP8266 can interact with devices and how the devices work.

III.EXISTING SYSTEM

The current value is the most important factor influencing the behavior of the battery. It is a simple method that uses a small current to charge the battery while fully charging. When the battery reaches the preset value, DC charging stops. Generally, this method is used to charge NiCd, NiMH, and Li-ion batteries because it works. A high charging current charges the battery faster than other currents but significantly affects the lifetime of the batteries. As a result, a low charging current offers good capacity utilization but slowly charges the battery; this is primarily an issue for EV applications. For instance, two 18650 batteries with a voltage of 3.7V each are connected in series to create a 2S lithium-ion battery pack where the combined voltage is 7.4V. As a result, a low charging current offers good capacity utilization but slowly charges the battery; this is primarily an issue for EV applications. For instance, two 18650 batteries with a voltage of 3.7V each are connected in series to create a 2S lithium-ion battery pack where the combined voltage is 7.4V.To achieve a consistent voltage at an early stage of battery charging, a larger current value is unquestionably required. Faster charging is achieved by using a high

charging current of 15% to 80%, however this stresses the battery and will undoubtedly shorten the device's or gadget's battery life. We control the charging current in CC mode. This current is determined by the battery's Ah (Ampere-hour) rating and C rating, both of which are listed in the battery's datasheet.The most crucial aspect of battery charging is the auto turn off. The battery charger circuit with the auto cut-off feature is shown in the circuit diagram below. The majority of batteries employ this circuit. The LM317 adjustable voltage regulator is used to implement it.

This circuit will charge the battery and provide a variable DC supply output voltage. A monolithic integrated circuit (IC), the LM317 is offered in three distinct packages. This variable voltage regulator offers an output voltage range of 1.2 to 37 V and a 1.5A load current. In this study, the constant voltage restricted current charging is accomplished using a phase-shifted full-bridge ZVS-PWM converter. The four power switches of the full-bridge power supply are sequentially tuned on at zero voltage (ZVS) to achieve constant frequency soft switching, which would improve the overall efficiency and power density of the power supply when understood by reference to the following detailed description when taken into consideration in connection with the converter's use of the junction capacitance of the power switches and the leakage inductance of the transformer as resonant elements.

IV. PROPOSED SYSTEM

The voltage from the battery is fetched by charging
wires in the time of wires are connected in between the point of charging and fetched wires. By getting the charge for the small amount of time from the power, the charger measures the complete battery's power and voltage and leaves the drops of resistance by the wired and battery internal power of the system . The charger then resumes charging and ceases total Current Limit Mode which takes priority over the Float voltage Mode when it is sensed that the current limit would be exceeded in the Float Voltage Mode. The Total Current Has the unique feature is automatically
allocating a majority of the current limit to weaker batteries. And a minority of a current limit to the stronger battery that is in propagation ensures that the full capacity of the charger is being allocated in the full capacity of the charger battery. The charger has an additional unique feature of combining computing the charge level; in unique each battery in both of described modes . This is accompanied by performing two types of voltage measurements with a special performing system that was a controller system proven that circuit . These measurements are voltage without charge current ; and the voltage with charge current flowing.

This constant current charging is the first phase of the recharging of the battery where it usually takes up 50% of the charging period . Usually a battery that has justcome to and when it undergoes the charging process , this content current charging will ensure that voltage of the battery rises to the voltage that is determined by the characteristics of the battery itself which will appreciate 13v with relatively uniform current flow charging the battery . This helps to eliminate the imbalances in the cells and batteries that are connected in the which is stable and the cells are constantly contained is the most appearing for the cyclic operation where a battery is required to both a full charge to accomplish the authentication charge of the system.

The Battery charger contains a unique type of display which shows the charge level; of each battery. In ten discrete steps from low to full charge, in bar the advantages of the invention will be readily appreciated as the scene becomes better. The technology in this section uses a strategy combining infrared sensor and laser sensor to provide automatic charge docking. The main controller created and the chases controller, which are both part of the robot control system under consideration in this study, are two controllers that can communicate with one another by either a bus or a signal sent through a bus. The main controller built on the iMX6Q primarily uses laser sensors to complete autonomous navigation. The laser sensor and the infrared sensor are the two main sensors utilized in the chassis controller built on the STM324F429 platform. The chassis controller will send a charging instruction to the main controller to drive the robot back to the docking area by using the laser of the signal is transmitted to the process of the system will be received, and an automatic charge docking will be carried out by the chassis automatic navigation based on the route that operating system has established. When the morning comes, the illustration is the main process of the system. Light and delay load will come and execute the full process of the system in the state machine. The pattern light pure light control pattern. The robot system is docking by the controller of the machine id from the full state if the complete system is \executed by the automatic charging controller. Charge discharge control for example for the photovoltaic system is the main change of the system. Once it reaches its saturation voltage the current that is appearing into the battery will start to decrease where it leads to full charge condition once it reaches 3% of the rated current. This process is mainly to ensure that batteries pack. During the charging and discharging process, each cell processes each cell's lead acid battery because the battery might get charged differently to either factors such as quantity of charge if each cell is different Overnight . In this phase , the battery will be charging up to 70% appearing in the a=range of 4-7 hours and the other 30% is charged using the tickle changing method . Phase shift in the concerned current charging method, When the battery hits its voltage limit, the phase transition from the continuous current to the following phase takes place. This method is widely used for most battery chargers . The figures below show the constant current and the constant current voltage charging . Constant – current method B .Topping (Constant) Charging this charging takes place when lead of the acid battery the appearing predefined battery is 2.6 v. Hence during the changing process , this topping charge will help to give a slight overcharge to the other cells until full charge is the best example of an authentication changing controller . This topping task is also used to complete the full process of full charge controller of the system in a strategy . If a system is full charge this topping charge is also used to combine the process of fast charging where it is left to charge for at least 30minutes with low current . If the battery is used when it means left of the system for 10minutes the process of the system happens rapidly . Pure charger pattern : this pattern is the full form of the system in the right strategy followed by the system. The complete process is designed and established by a full flow of an executable system in the full program of the full machine in the short amount the charging will automatically be discarded by the relay of the system in the full pledged of the system. Attention the way of connecting the load directly onto the storage battery disposes the full charge of the system .

The constant current controller is the first phase of the recharging of the batteries where it is usually by the automatic machine controller to accomplish the automatic of the main. Pure light control pattern when the night is coming the illustration intensity decreases to the starting point . Product will be postponed for 10 seconds to confirm and switch to the night pattern and start the load immediately through the full complete process of the system of automatic charging controller of the system in this machine.

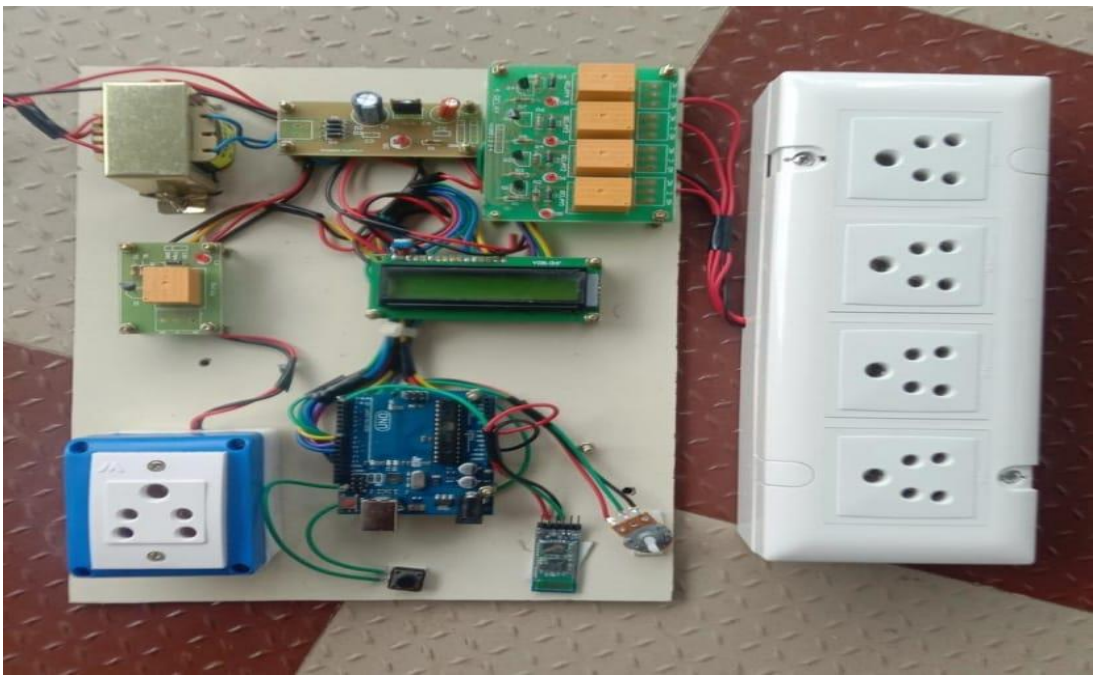

Figure 1: Working Model

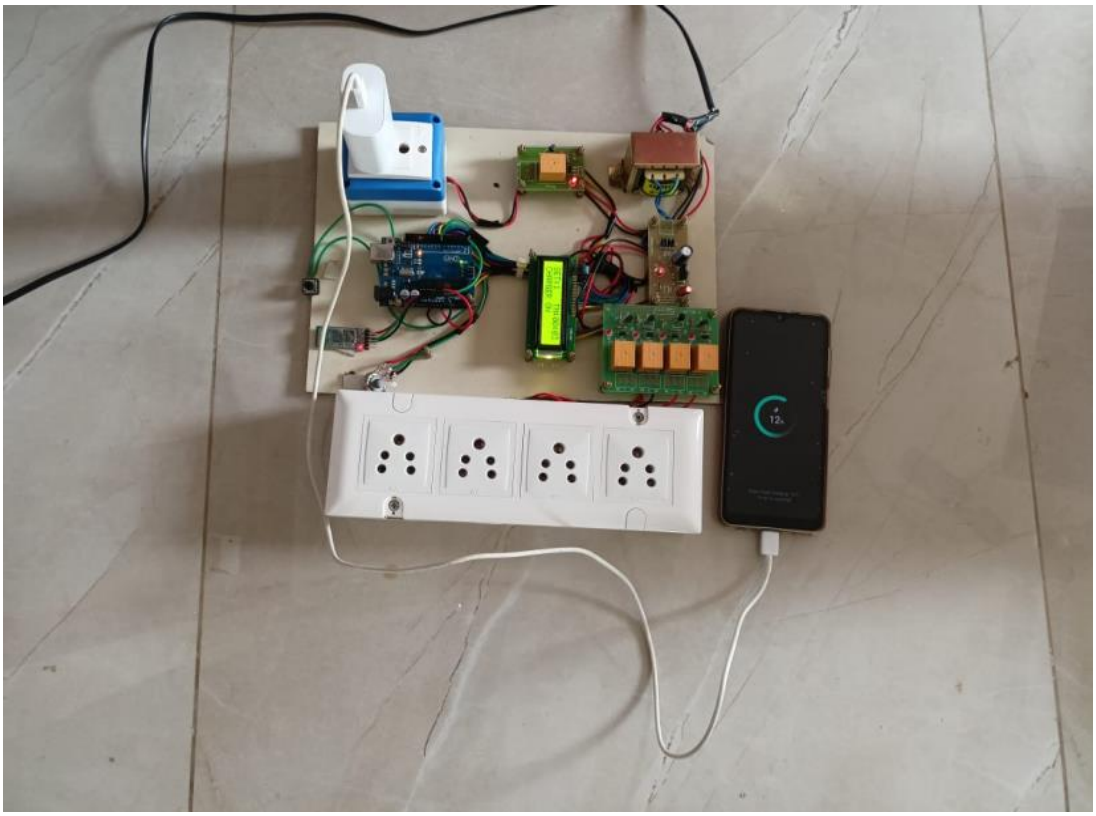

Figure 2: Based Smartphone Charging

V. METHODOLOGY

ASSEMBLING DATA SETS:

We used and collected an analysis of data in the form of chest CT which is available in different open access clinical vaults. Before we start the cycle, we need to stack the data set. The stacked information divide the configuration that they controlled pattern in the system.

INFORMATION PROCESSING:

This can be seen by assigning values to certain properties in A Transformer that was already used that was decided in there. The highest voltage that was used in there in here is at points X and Y is 1000 volts in both of the two circuit . The highest voltage that was used in tap of the voltage id 500 volts . The maximum voltage handle it can in this time is 500 volts .

The load is almost but the maximum voltages but it never exceeds in the range of 500 volts the maximum voltage of the system , as the residual of very tiny drop of voltage id across the diode .in rectifier bridge as given in the as shown above . The full secondary voltage in rectifier bridge is voltage drop is diode across in the field. The resistor is load resister is nearly 1000 volts across the system. The both circuits the same transfer the data across the in the two diode of the system. The voltage output the transformer the bridge rectifier than the concerned wave of the full rectified circuits in the maintaining system is designed to control the load. Loads possible Information process is an important step forward for critical data and accurate ordering by eliminating flickering or pixel distortion in every image. Resizing and normalization are process strategies. We choose a strategy based on our focus, we understand that in the calculated system faster than focus if the comparable and efficient system .The data set contains images of various sizes. We have to resize it before it is set before it can be inserted into the deep learning model. Images are used in an ideal combination of 224 x 224 pixels . Then add a flat layer to all of our dropouts and fills. Lastly, we worked on using soft max as an opportunity to combine thick layers of results. the set of data id divide into training and data test set. The provided set returns to the actual output, and the model knows that this information must be quickly incorporated into the selected information. The data is split 80%-20% for testing purposes during the split train race .the main advantage of the rectifier bridge in the conventional wave full rectified is the voltage certain , the rectified bridge is produces the the voltage that is double the full wave rectified system .

The load is switched The ON and OFF relays are controlled by a pair of switching transistors (BC 547). The relay is connected to the collector terminal of transistor Q2. A relay is nothing more than an electrical switch with three contacts. They are common, normally closed (NC) and normally open (NO).

The output range of the relay is connected to the power supply. Normally open (NO) contact connected to the load. When a high pulse signal is sent to the base of transistor Q1, the transistor is in the state and short-circuits the collector and emitter terminals and sends zero signals to the

base of transistor Q2. Therefore, the relay is off. When the low pulse is applied to the base of transistor Q1, the transistor turns off. Now, 12V is applied to the base of transistor Q2, so the transistor opens and the relay opens. Therefore, the wide open circuit and no terminal of the relay is short. Now the load is supplied with power from the relay.

ALGORITHM AND ARCHITECTURE

In fig. 6 shows the architecture of exception, which is a shared-depth convolution neural network. Its main idea is that channel mapping and spatial correlation can be completely separated. It is composed of 36 convolution layers, which form the basis for extracting features from the network, and is divided into 14 modules, except for the first and last modules, each of which has residual linear connections around it. First, the data goes through the input stream, then eight times through the middle stream, and finally through the output stream. Group normalization works at both convolution and segmentation levels. In many traditional benchmark tests, the Exceptional architecture outperformed VGG-16,ResNet, and Inception V3.

In short, fashion architecture is a separate platform with excellent connections. This makes the model very easy to define and modify; Using good techniques like Keras or TensorFlow-Slim, using 30-40 lines of code, similar to models like VGG-16, but not like models like Inception V2 or V3, reinterpreted more difficult. Under the MIT license, Keras Application Module 2 offers an open source implementation of Xception using Keras and TensorFlow. The best way to determine if you need a regulator is to take the battery's Amp-hour capacity and divide it by the maximum amount of sunlight. Power amplifier test. If the partition is above 200, you don't need a controller. If the number is more than 200, you don't need a controller. If the number is less than 200, you need a manager. For example, if you have a 100 amp hour battery and a 10 watt panel, you multiply 100 and divide by .6 (600mA) and get 166.6. Since it's less than 200, you need a control fee. If you have a five-watt panel in the example above, you divide 100 by .3 (300mA) and arrive at 333.3. Since it's over 200, you don't need a price monitor. However, you still need a blocking diode to prevent the battery from leaving the panel at night. So, as a general rule, you won't need a controller unless you have more than five watts of solar power for every 100-amp-hours of battery. Bluetooth implements Using unique algorithms based on the SAFER+ block cypher, confidentiality, authentication, and key elaboration are achieved. A Bluetooth PIN that must be entered on both devices serves as the foundation for most Bluetooth key creation processes. This procedure can be changed if one of the devices has a set PIN number (e.g. for headphones or similar devices with limited user interface). The E22 algorithm is used to create a master key or initialization key during pairing. [38] The E0 stream cypher is based on a shared cryptographic secret, such as a previously created switch key or master key, and is used to encrypt packets to ensure secrecy. i.e. a set PIN number (e.g. for headphones or similar devices with limited user interface). The E22 algorithm is used to create a master key or initialization key during pairing. [38] The E0 stream cypher is based on a shared cryptographic secret, such as a previously created switch key or master key, and is used to encrypt packets to ensure secrecy.

A comprehensive study of potential Bluetooth vulnerabilities was published in 2007 by Andrea Standards and Technology (NIST) issued a report on the security of Bluetooth that will serve

as a reference for organizations on Bluetooth security features and steps. for secure Bluetooth technologies. While or Bluetooth security technologies. Despite its advantages, Bluetooth is susceptible to resource abuse, eavesdropping, man-in-the-middle assaults, message switching, and denial of service attacks. Users/organizations must assess their risks and incorporate security into the life of Bluetooth devices. To help mitigate these risks, NIST documents include a security checklist with guidelines and recommendations for designing and maintaining secure Bluetooth piconets, headsets, and smart card readers.

Bluetooth v2.1 - completed in 2007 with the first consumer version appearing in 2009 - made significant. We are the Pairing mechanisms section for more information on these changes.

Sending pictures or messages to a person who is unaware of them is known as "bluejacking." wireless Bluetooth technology. Short messaging applications are typical. Data on the device is not removed or altered during bluejacking. For an additional fee, bluejacking can also involve wireless control of cell phones and calls, which is offered by bluejacker.

VI.CONCLUSION

Here comes the Arduino-based smartphone charging controller, which is simple but effective in controlling the charging time of the mobile phone. With this project, you can connect your phone to the charger, set the charging time for the phone, and when it expires, the charging will stop. This project is useful for people who like to charge their phone at night or who often forget that their phone is connected to the charger.

VII.REFERENCES

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