# SMART PHONE BATTERY ALARM AND ITS HEALTH CONDITION

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**ABSTRACT:**

In previous few decades usage of mobile phones increased significantly, which are raised  expectations and requirements on mobile phones. In communication as well as in computing aspects mobile phone plays an important role, it also increases dependency of human on mobile phones. Innovative features such as Wireless charging, paper tab, stronger screens, contextual intelligence, Dual record and other type of digital features., were appears in the smart phones are the problems which should be still addressed. In smart phone power consumption is very high due to some technology and background running of applications. The system which we are proposing will prevent the devices from being overcharged. In today's world it is very hard to check the battery status. In this system we have unique features which notifies the mobile phones user whether the device is fully charged or not. This alarm has three different type of settings. If the user is in a meeting he/she will get notified with some ringtones, vibrations or with light blink alert. Install the app in mobile phone and launch the application.  If the device is fully charged it will automatically alert the user with a sound that the device is fully charged.  This application shows current  battery level and maximum battery level. This application is  mainly designed for users to protect smart phones from overcharging and reducing  the usage time.  According to battery University, leaving the smart phone plugged in when it is fully charged , like the user might overnight is bad for the battery in long run, it may drain the battery level.

**KEYWORDS:** Smart Phone, Battery Alarm, Battery Health Condition

## I.    INTRODUCTION

The Android operating system is often featured with connectivity of transfer of Bluetooth, Wi-Fi and other facilities. Android. These features will drain the device battery. Some other factors that affect battery are constantly updating widgets on the home screen, Near Field Communication even if, NFC not in use it remains ON. Smart phone runs multiple process simultaneously. The application that we install will take some storage space and runs background process. The storage space occupied will make the device to get slow is processed. These types of process run as a service on the android device is not visible to the user. This leads to unnecessary RAM usage thus, it reduces the performance and speed of the device.  Bluetooth and Wi-Fi are other draining agents. Wi-Fi should turn OFF, if it is not connected to any network. The device continuously checks for Wi-Fi network if it is turned ON. This process drains the battery. Mobile phone becomes important in our day to day life. In previous days people didn't use online due to high cost. But in today's world is not possible.  Mobile phones are easily affordable and the price we have to pay is negligible compared to the benefits we derive. The most advantage of mobile is 'mobility'. It makes work pretty easy as the user can communicate each other at any time. This application consists of battery temperature, battery status and battery condition whether is good or bad. Mobile phones can no way can compete with Landlines. The world has been simplified and shrunk into global village. They are in light weight and portable. They are easily connected to internet and carry other various other features. A mobile is equivalent to all the digital equipment. Battery alarm consists of User, Battery information, Customization and alarm. User can install the app register, login and load setting.  Battery information involves temperature, health, technology and power in the application. Customization consists of battery level, vibrate and sound profile. Alarm process consists of clock settings to make an alarm.

## II.    LITERATURE SURVEY

***Shun Kurikara, Shoki Fukuda, Shinatro Hamanaka (2016)***, pointed out One of the most important features in smart phone is consumption of power is one of the most important issues. Android Operating System, is one of the most popular smart phones. It has a function in which application can be invoked in off state without the operation of the user. Some applications may work frequently on a screen-off state which consumes battery. In this paper they proposed application which identifies the most drain battery in Off state in android. They introduced an estimating for power consumption for each and every application and it shows that cannot be always estimate consumption correctly. After that, they proposed a method for the identifying application which consumes lot of battery. By monitoring settings and invoking alarm that is a common method for executing an application in screen-off state. The method identifying battery draining application are correct than the standard method of android OS .[1]

***Alma Probstl, Philipp Kindt, Emmanuel Regnath and Samrajit Chakraborty (2015)*** this paper pointed out that Smart$^2$ is an advanced smart phone in which the charger that mitigates battery's capacity fading, which until now has usually been ignored. Many user charge their mobile overnight state off charge (SOC) with high average is subjected to a battery. Before the phone is unplugged the charging to be done is very short due to this aging is reduced. In previous years indicators are used to set alarm. Similarly, they lowered the maximum target SOC. By enabling those main challenges were firstly to find a solution that doesn't negatively influence the usability and secondly to quantify the achieved savings in terms of aging mitigation. Towards that, they proposed a novel charging scheme which have been implemented in the smartphone's firmware. Furthermore, they proposed a modified battery charging device that can be used with almost all existing smart phone models. By using their proposed techniques, the average battery life cycle can be nearly doubled from 3.7 to 6.6 years. [3]

***Muhammad Jawad Hussain and Gao Shan (2016),*** in this project they presented the design, implementation and evaluation of an RFID based cell phone anti-lost and anti-theft measure. The owner of the cell phone gives an audio-visual alert at the very instant of the lost event, and cell phone deduces the fact that it is away from its owner and executes the safety measures. That is realized by equipping the cell phone with low-power RFID Reader and tagging the owner with a passive RFID token to determine a private space around him, which spans within 2-10 feet. They prototype an RFID Reader from discrete components under 60$ which can transmit 30 dBm with -78 dBm sensitivity and can also serve as an educational tool for academic learning. Their system works on automatic timed or accelerometer base thresholds. Their interface their system with Samsung Galaxy Note2 and developed on Android User Interface. They carried out extensive indoor and outdoor experiments under static and dynamic scenarios to ascertain the Frontal and Angular ranges, energy and power consumption. Their salient contribution is a twofold probing scheme. This design costly on power budget, it was highly economical on battery energy because of short interrogation cycles. [7]

***Chun-Hao₁, Sheng-Wei Cheng₁ and Pi-Cheng Hsiu₂ (2016),*** pointed out that resident applications, which autonomously awakened mobile devices, which can gradually and imperceptibly drain device batteries. This paper have been introduced that the concept of alarm similarity into wakeup management for mobile systems connected standby. First, they defined hardware to reflect the degree of energy savings and time to reflect the impact on user experience. They then proposed a policy that aligns alarms based on their similarity to save standby energy while maintaining the quality of the user experience. Finally, they integrate their design into Android and conducted extensive experiments on a commercial smartphone running popular mobile apps. Their results demonstrates that their design can further extend the stand by time achieved with Android's native policy by up to one-third. [5]

## III.    EXISTING SYSTEM

In the existing system, there is no app for limiting phone charging. Based on the Linux OS, the Android OS, offers features, functionality and on open architecture that has become the most widely mobile and tablet OS in the world. However, Android devices even after being so widely used have many processes is not necessary. Hence, the users must   intelligently and proactively manage the energy in their batteries.   Android optimization is always a very big challenge, because the Android stack is spread across tools and other domain specific frameworks , Linux Operating System, protocols stacks, etc. This existing system aims at showcasing all such activities that are eating

into the device battery without the user having any idea about it. It represents a mechanism in the form of an application that will intelligently and efficiently manage different components that affects the battery life.

**DRAWBACKS OF EXISTING SYSTEM**

- The notification will be announced in case of low battery.

- The mobile will be switched off in case of high voltage.

- No evidence of displaying mobile battery temperature.

## IV. PROPOSED SYSTEM

The Battery Alarm app monitors the battery status of our Android mobile device and has the low battery alert and full battery alarm of our comfort. The full battery alert saves and protects our mobile battery from overcharging; therefore, it extends the battery life of our phone and saves its energy. This app also reminds us when our battery is low. With our busy days, we may not even realize we are low on battery until our phone just completely dies. This app contains many unique features. Its main purpose is no notify us when our battery is too low so that we can charge it, and if we are not near a charger, It also has a battery saving setting to hold us over until we do get near a charger. It will also tell us when our phone has finished charging and we can unplug it. If we didn't know, over charging our phone's battery can kill the battery too soon, so with an alarm notification on this app, we will know when it is fully charged and then can unplug your phone. Instead of checking constantly whether its fully charged or not, the alarm will tell you and then you can act accordingly.

## V. ADVANTAGES:

- The feature is unique to protect the phone battery.

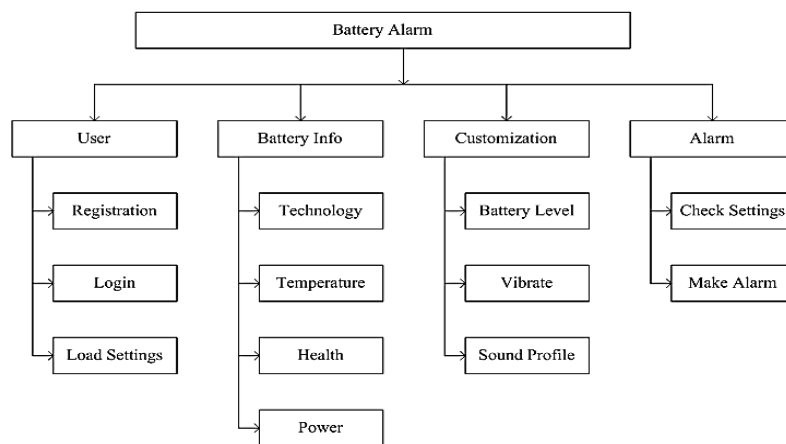- The temperature indicator will help user to limit usage of smart phones.



**Fig. 1 – Architecture Diagram**

## VI. METHODOLOGIES

### A. Android Studio:

Android is a software package and Linux based operating system such as tablet computers and smart phones. It was developed by google and later the OHA (Open Handset Alliance). Even though other languages can be used but Java is the main language which is used to write a code. The goal of android project is to create a successful real-world product that improves the mobile experience and easy to work for end users. The android versions are Lollipop, Kitkat, Jelly Bean, Ice cream Sandwich, Froyo, Ecliar, Donut etc. Android Studio offers flexible Gradle-based build system, code templates to build common app features, the layout editor support for drag and drop theme editing, built-in support for Google Cloud Platform and integrate Google Cloud Messaging, App Engine. Android Studio features are improved interface design perspective you can view the interface to working on its related components. Android Studio provides a number of user interface tools to assist you with creating

layouts, implementing style themes, and building graphic or text resources for any app. The Android build system in the toolkit to build, test, run and package in apps.

### B.  MYSQL:

MySQL is an open-source relational database management system (RDBMS). Its name may be a combination of "My", the name of co-founders Michael Widenius's daughter, and "SQL", the abbreviation for Structured command Language.  MySQL is free and open-source software under the terms of the GNU General Public License, and is additionally available under a spread of proprietary licenses.

### VII.    IMPLEMENTATION:

Implementation is that stage of the project when the theoretical design is became a working system.   At this stage the main workload, the upheaval and the major impact on the existing practices shift user department. Implementation is the phase where the system gone for actual functioning.

**Registration Form:**

The form is validated and if there is any error, a prompt message is given. If all the details are correct, the person details are successfully registered.
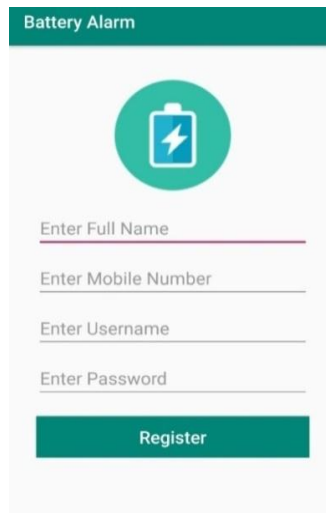


**Fig. 2 - Registration Form**

### A.  Login Form:

After completing the registration process the user can get into this app by using the login form. If the mobile number and password are correct then a person login process is successful.
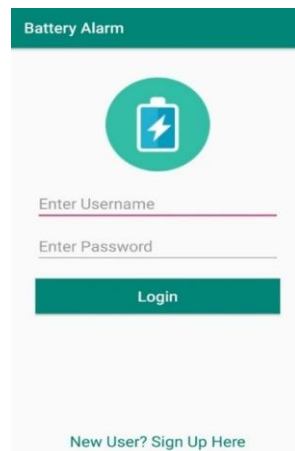


**Fig. 3 - Login Form**

### B.  Main Page:

In this page we have the first module as a current battery details.  It contains battery limit and progress bar. Progress bar is one which shows the current battery limit. The system will analyse the battery health, status, power plugged or not and the technology of the battery. This information will retrieve using the broadcast receiver. This module will enable the application on detecting the power input to the phone. The main advantage of this module is it monitors the temperature of the mobile phone.

Fig. 4 - Main Page

### C.  Settings Page:

The second module includes user battery limit, ringtone selection, vibrate mode. The application will analyse the phone current battery and user saved preference in custom settings activity. If the power excess the power limits settings, then the alarm will pop up and alert the user to remove the power cord. A temporary disable button is added to the alarm screen, so to skip the alarm setting for few minutes.
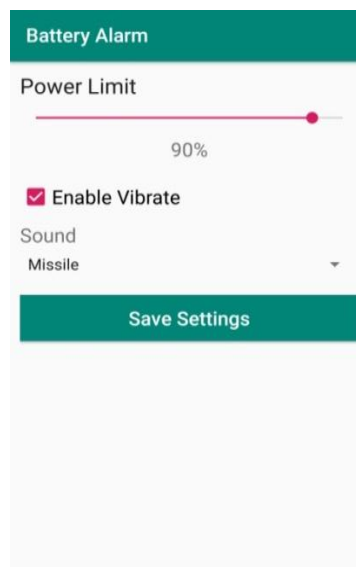
Fig. 5 - Settings Page

### D.  Music and Vibration Settings:

This option is used to select the music for the alarm purpose.   If not we can choose the vibrate option.
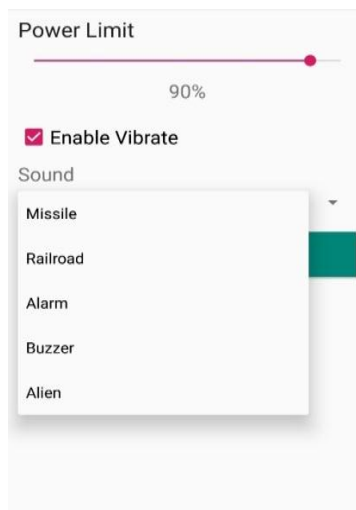
**Fig. 6 - Music and Vibration Settings**

## VIII.    CONCLUSION

Overcharging our mobile phone can damage the phone's battery. There has been many incidents in before days where the mobile phone battery exploded into pieces due to overcharging and heating. The harm caused by the battery explosion can't be ignored and thus Battery Alarm app was built to avoid any such loss. This application sounds an alarm as soon as mobile phone battery is fully charged to avoid the explosion. This Alarm prevents the device from being overcharged. In our day   to day life it is obviously difficult to   check the status of the battery. Battery Alarm is an unique app which notifies the mobile phone user when their mobile phone's battery is fully charged.

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