BATTERY HEALTH MONITOR

A PROJECT REPORT

Submitted by

S ASHOK	**710419105006**
K GOKULAVASAN	**710419105013**
R YOGESH	**710419105043**

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ANNA UNIVERSITY: CHENNAI 600 025

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Dr.M.JEYAKUMAR, M.E.,Ph.D.
PRINCIPAL
CHRIST THE KING ENGINEERING COLLEGE,
Chikkarampalayam Village,
Karamadai, Mettupalayam Taluk,
Coimbatore - 641 104.

BONAFIDE CERTIFICATE

Certified that report **"BATTERY HEALTH MONITOR"** is the bonafide work of **K GOKULAVASAN (710419105013), R YOGESH (710419105043)**who carried out the project work under my supervision.

SIGNATURE

Dr. M. ARUMUGA BABU M.E, PhD.

Head of the Department

Department of EEE

Christ the King Engineering College

SIGNATURE

Mr. D. CITHARTHAN M.E.,

Assistant Professor

Department of EEE

Christ the King Engineering College

Submitted for Anna university project viva- voice examination held on : 22-05-2023

INTERNAL EXAMINER

EXTERNAL EXAMINER

CHRIST THE KING ENGINEERING COLLEGE
KARAMADAI
COIMBATORE
641 104

Dr.M.JEYAKUMAR, M.E.,Ph.D
PRINCIPAL
CHRIST THE KING ENGINEERING COLLEGE,
Chikkarampalayam Village,
Karamadai, Mettupalayam Taluk,
Coimbatore - 641 104.

ABSTRACT

Battery health monitoring is becoming increasingly important in today's worlds as more and more devices rely on rechargeable batteries for power. With the growing demand for portable devices, electric vehicles and renewable energy storage, battery reliability and longevity are critical concerns. Battery health monitors provide a means of detecting degradation in the battery's performance and predicting the remaining useful life, which is essential for ensuring safe and efficient operations. This project focusses on developing a battery health monitor using the random forest regression methods for predicting the time remaining to reach its 65-60% of capacity. The capacity and threshold of the battery are used as indicators of degradation, and the developed algorithm can accurately predict the battery's remaining useful life. Matlab platform is used for the development of the code, and App designer tool is used to create an intuitive and user-friendly interface for battery health monitor software. The app allows users to monitor the health of their batteries. The battery health monitor has various applications in the different fields. In the renewable energy sector, it can be used to optimize energy storage systems by predicting battery life and scheduling maintenance. In the automotive industry, it can be used to monitor the battery health of electric vehicles and optimize battery usage to maximize range. In the consumer electronics sector, it can be used to prolong the lifespan of rechargeable batteries and reduce the number of batteries disposed of in landfills.

Dr.M.JEYAKUMAR, M.E.,Ph.D.
PRINCIPAL
CHRIST THE KING ENGINEERING COLLEGE,
Chikkarampalayam Village,
Karamadai Mettupalayam Taluk,
Coimbatore - 641 104.

CHAPTER 5

FUTURE SCOPE and CONCLUSION

FUTURE SCOPE:

1. Integration with IoT devices: The battery health monitor can be integrated with IoT devices to remotely monitor the battery health and predict its remaining life. This can be useful in industries where a large number of batteries are being used.

2. Incorporating more features: The model can be improved by incorporating more features such as temperature, charge/discharge cycles, and usage patterns of the battery.

3. Real-time monitoring: The app can be designed to monitor the battery health in real-time, giving the user more accurate and up-to-date information.

CONCLUSION:

The battery health monitor project developed using MATLAB platform and the random forest regression method is a significant contribution to the field of battery monitoring. The project has successfully demonstrated the potential of using machine learning algorithms for predicting the remaining battery life and detecting battery degradation.