SMART E-BIKE WITH SAFETY SYSTEM

A PROJECT REPORT

Submitted by

GRASAN. E	710419105016
G. L. JAI PURUSHOTHAM RAJ	710419105017
SANJAY. K	710419105032

In partial fulfillment for the award of the degree
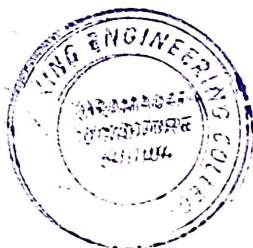
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CHRIST THE KING ENGINEERING COLLEGE

KARAMADAI-641 104

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.

ANNA UNIVERSITY: CHENNAI 600025

BONAFIDE CERTIFICATE

Certified that this project work titled **"SMART E-BIKE WITH SAFETY SYSTEM"** is the bonafide work of **GRASAN E (710419105016) G L JAI PURUSHOTHAM RAJ (710419105017), SANJAY K (710418105018)**, and who carried out the project work under my supervision

.............mJW............   ..B.T.Th.....Hali...........

Dr.M.ARUMUGA BABU, M.E., Ph.D.,   **Mrs.B.T.THARANISRISAKTHI,M.E.,**

HEAD OF THE DEPARTMENT   **SUPERVISOR**

Department of Electrical and   Department of Electrical and
Electronics Engineering   Electronics Engineering
Christ the King Engineering College,   Christ the King Engineering College,
Karamadai, Coimbatore- 641 104   Karamadai, Coimbatore- 641 104

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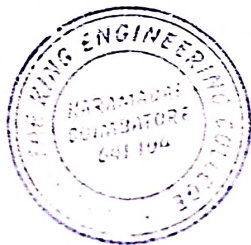
Internal Examiner   **External Examiner**

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

ABSTRACT

This project proposes the design and implementation of a smart e-bike system with the focus on safety features. This system includes three main units named Controller unit, Bike Safety Unit and Helmet Safety Unit. The controller unit incorporates a customized and compactly designed 24V speed controller to control the 24V, 250RPM BLDC Hub motor of the e-bike. This unit will be essencial for maintaining the bike's speed and ensures that the motor functions optimally. The bike's safety unit is responsible for ensuring the safety of the bike. This unit includes Neo 6M GPS module to monitor and track the vehicle. This enables to monitor the location of the vehicle in case of theft, or other emergencies. Additionally, this unit includes Overload Detection System using a HX711 sensor and a load cell with the Node MCU. Overloading an e-bike can cause various problems including reduced performances and range, over-heating, braking issues and might also lead to accidents. This overload detection system ensures the safe handling of the vehicle, by alerting the rider, to ensure the safe handling of the vehicle. The helmet safety system is responsible for ensuring the safety of the rider. This unit includes an IR sensor and Node MCU to detect, whether the rider is wearing a helmet or not. If the rider is not wearing a helmet, an indication will be displayed, remainding the rider to wear a helmet, for the safety of the rider. Additionally, this unit includes an alchol detection system using MQ3 sensor and Node MCU. This feature is essencial for ensuring that the rider is not under the influence of alchol, while riding the e-bike. This could prevent the rider from road accident

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

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