A Project Report on

IoT-Powered Smart Pendant for Women's Safety: A Next-Gen Protective Solution

submitted in partial fulfillment of the requirement for the award of the Degree of
BACHELOR OF TECHNOLOGY

in

G. PULLAIAH COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous)
(Approved by AICTE | NAAC Accreditation with 'A' Grade | Accredited by NBA (ECE, CSE & EEE) |
Permanently Affiliated to JNTUA)

By

DARJI ABDUL MOUIZE (21AT1A0540)
APPALA RISHITH (21AT1A0503)
GOLLA VENKATESH (21AT1A0552)
C SAI SURYA REDDY (21AT1A0526)
GOLLA SAI VAMSHI (21AT1A0548)

Under the Guidance of

Mr D JAYANARAYANA REDDY M.Tech., (Ph.D)
Assistant Professor

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
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CERTIFICATE

This is to certify that the project report entitled **"IOT-POWERED SMART PENDANT FOR WOMENT SAFETY : A NEXT-GEN PROTECTIVE SOLUTION"** being submitted by **D ABDUL MOUIZE (21AT1A0540), A RISHITH (21AT1A0503), G VENKATESH (21AT1A0552), C SAI SURYA REDDY (21AT1A0526), G SAI VAMSHI (21AT1A0548)** in partial fulfillment of the requirement for the award of the degree of Bachelor of Technology in Computer Science and Engineering of G. Pullaiah College of Engineering and Technology, Kurnool is a record of bonafide work carried out by them under my guidance and supervision.The results embodied in this project report have not been submitted to any other university or institute for the award of any Degree or Diploma.

Mr. D JAYANARAYANA REDDY M.Tech., (Ph.D)
Project Supervisor

Mrs. K LAKSHMI M. Tech., (Ph.D)
Head of the Department

Date of Viva-Voce_____

INTERNAL EXAMINER

EXTERNAL EXAMINER

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Project Associates

DARJI ABDUL MOUIZE (21AT1A0540)
APPALA RISHITH (21AT1A0503)
GOLLA VENKATESH (21AT1A0552)
C SAI SURYA REDDY (21AT1A0526)
GOLLA SAI VAMSHI (21AT1A0548)

ABSTRACT

Despite societal progress, women's safety remains a major concern, particularly for solitary female travelers. As per the National Crime Records Bureau (NCRB), 93.3% of reported victims are lone women, underlining the urgency of deploying effective safety technologies. Existing solutions often fall short in terms of portability, real-time responsiveness, and seamless integration into daily life. Literature highlights various safety mechanisms, but most lack user-friendly interfaces and IoT-based automation, leaving a gap in the development of practical, wearable safety systems. This research addresses that gap by designing a Smart Pendant for Women's Safety, leveraging the ESP32-WROOM-32 microcontroller, integrated with GPS (NEO-6M) and GSM (SIM800L) modules, along with an accelerometer (ADXL345) for motion and fall detection. The primary objective is to create a lightweight, discreet, and efficient wearable device paired with a smartphone application to ensure real-time location tracking, SOS alerts, and automatic emergency calls.

Performance evaluation was conducted using simulated input data comprising location coordinates, accelerometer values, and GSM signal strength under various scenarios. Results demonstrate the pendant's capability to send emergency alerts within 4 seconds, achieve ±5m GPS accuracy, and maintain stable connectivity in urban conditions. These outcomes significantly improve personal safety by offering rapid response and reliable monitoring, supporting the vision of a secure and inclusive environment for women.

Keywords: Women Safety, Smart Pendant, IoT Device, ESP32-WROOM-32, Real-Time Alert System, GPS Tracking, GSM Communication, Wearable Technology..

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