Curesen AI: Your Med Companion

A Project Report Submitted
In Partial Fulfillment
for award of Bachelor of Technology

In

Computer Science and Engineering (IoT)

by

Aditya Kesari (Roll No. 2101331550005)
Aman Singh (Roll No. 2101331550012)
Amit Srivastav (Roll No. 2101331550013)
Himanshu Bhanotia (Roll No. 2101331550034)

Under the Supervision of
Mr. Mushtaq Ahmad Rather
Assistant Professor, (CSE-IoT)

Computer Science and Engineering (IoT)
NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY,
GREATER NOIDA
(An Autonomous Institute)
Affiliated to
DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY, LUCKNOW
June, 2025

DECLARATION

We hereby declare that the work presented in this report entitled "**Curesen AI: Your Med Companion**", was carried out by us. We have not submitted the matter embodied in this report for the award of any other degree or diploma of any other University or Institute. We have given due credit to the original authors/sources for all the words, ideas, diagrams, graphics, computer programs, experiments, results, that are not my original contribution. We have used quotation marks to identify verbatim sentences and given credit to the original authors/sources.

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Name: Aditya Kesari
Roll Number: 2101331550005

Name: Aman Singh
Roll Number: 2101331550012

Name: Amit Srivastav
Roll Number: 2101331550013

Name: Himanshu Bhanotia
Roll Number: 2101331550034

CERTIFICATE

Certified that **Aditya Kesari** (enrolment no. 2101331550005) **Aman Singh** (enrolment no. 2101331550012), **Amit Srivastav** (enrolment no. 2101331550013) & **Himanshu Bhanotia** (enrolment no. 2101331550034) have carried out the research work presented in this Project Report entitled "**Curesen AI: Your Med Companion**" for the award of **Bachelor of Technology**, **Department of CSE(IoT)** from Dr. APJ Abdul Kalam Technical University, Lucknow under our supervision. The Project Report embodies results of original work, and studies are carried out by the students herself/himself. The contents of the Project Report do not form the basis for the award of any other degree to the candidate or to anybody else from this or any other University/Institution.

Signature	Signature	Signature
Mr. Mushtaq Ahmad Rather	Mr. Amit Kumar	Mr. Mayank Deep Khare
Assistant Professor, Department of CSE(IoT), NIET Greater Noida	Project Coordinator, Department of CSE(IoT), NIET Greater Noida	Head of Department, Department of CSE(IoT), NIET Greater Noida

Date:

ACKNOWLEDGEMENTS

We would like to express our sincere gratitude to Mr. Mushtaq Ahmad Rather for his valuable guidance, constant supervision, and for providing the necessary information and support throughout the project.

We also extend our heartfelt thanks and appreciation to our respected Head of Department, Mr. Mayank Deep Khare, for his continuous motivation and unwavering support..

ABSTRACT

CURESEN AI is a smart healthcare solution that integrates Internet of Things (IoT) and Artificial Intelligence (AI) technologies into a compact, wearable handband. Designed for real-time health monitoring and early disease prediction, the system aims to provide users with accessible and intelligent personal healthcare support. With the rise in chronic diseases and the increasing need for continuous health tracking, CURESEN AI offers a proactive approach to personal wellness and emergency response.

The wearable device is equipped with multiple sensors: the **MPU6050** for detecting falls using accelerometer and gyroscope data, the **MAX30102** for measuring heart rate and SpO2 levels, and the **DS18B20** for monitoring body temperature. These sensors are controlled by the **ESP32-C3 Super Mini**, a powerful microcontroller with Wi-Fi capability that transmits collected data to a connected mobile application. The device is powered by a rechargeable **lithium-ion battery**, ensuring portability and continuous operation throughout the day.

The mobile application serves as the user interface, displaying real-time health data, historical trends, and alerts. It also generates structured health reports based on sensor readings. This data is then analyzed by an AI system trained to interpret vital signs and detect anomalies. Based on the analysis, the AI provides insights into the user's health condition and suggests potential diseases or health risks that the user may be susceptible to, such as hypoxia, fever, or potential cardiac issues. This predictive capability enables timely medical attention and supports preventive healthcare.

CURESEN AI stands out for its integration of multiple technologies into a single, user-friendly platform. It not only empowers individuals to monitor their own health conveniently but also has applications in elder care, remote patient monitoring, and emergency response systems. The combination of low-cost hardware, smart data transmission, and AI-driven analysis makes it a scalable and impactful solution in modern healthcare.

In summary, CURESEN AI demonstrates how wearable technology, when combined with intelligent systems, can transform personal health monitoring into a proactive, data-driven, and life-saving process. The project exemplifies the future of digital health and the role of smart wearables in bridging the gap between patients and healthcare systems.

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LIST OF ABBREVIATIONS

Abbreviation	Full Form
CURESEN	Clinical Utility through Real-time Evaluation with Sensors and Embedded Network
IoT	Internet of Things
AI	Artificial Intelligence
Spo2	Peripheral Capillary Oxygen Saturation
HR	Heart Rate
ML	Machine Learning
DL	Deep Learning
ESP	Espress if Systems Platform
MCU	Microcontroller Unit
API	Application Programming Interface
MPU	Motion Processing Unit
GUI	Graphical User Interface
Wi-Fi	Wireless Fidelity
RAG	Retrieval-Augmented Generation
LPWAN	Low Power Wide Area Network