

Visvesvaraya Technological University, Belagavi – 590018



PROJECT PROPOSAL
ON
**BABYSPHERE 2.0: A cloud-based smart monitoring
device for your loved one**

Submitted in partial fulfillment of the requirements for the degree

**BACHELOR OF ENGINEERING
in
COMPUTER SCIENCE & ENGINEERING**

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**DEPT. OF COMPUTER SCIENCE AND ENGINEERING
ST JOSEPH ENGINEERING COLLEGE
An Autonomous Institution**

(Affiliated to VTU Belagavi, Recognized by AICTE, Accredited by NBA)

Vamanjoor, Mangaluru - 575028, Karnataka

2024-25

Project Title

BABYSPHERE 2.0: A cloud-based smart monitoring device for your loved one

Type of Project

Product based project (Software along with Hardware)

Background for the the project

In recent years, the rise in sudden infant death syndrome (SIDS)[2] and other health concerns related to newborns has highlighted the need for continuous and accurate monitoring of babies. Many parents face the challenge of balancing their busy schedules while ensuring their child's safety, especially when they are not physically present. Traditional monitoring devices often lack intelligent features that can detect critical signs, such as alerting the parent about variations in body temperature or unsafe sleeping positions. With advancements in cloud technology and computer vision, there is an opportunity to develop smart monitoring systems that provide real-time alerts and actionable insights. The 'BABYSPHERE 2.0' project aims to address these issues by creating a cloud-based system capable of monitoring baby body temperature, room conditions, and movements using computer vision, helping parents prevent potential dangers like SIDS through timely alerts.

Objectives

The objectives of the proposed project work are:

1. To develop a cloud-based monitoring platform that collects and manages baby and room temperature data.
2. To provide real-time alerts to parents regarding abnormal temperature readings.
3. To integrate computer vision technology to detect unsafe sleeping positions and notify parents.
4. To create a user-friendly interface that allows parents to easily monitor and receive notifications.

5. To deliver actionable notifications through SMS, email, or app alerts in a timely manner.

Software / Hardware Requirements

Software Requirements

1. React Native development framework to build the mobile app for cross-platform support.
2. Firebase cloud platform for real-time database management, data storage, and authentication.
3. TensorFlow Lite or OpenCV libraries for implementing computer vision algorithms[5] on mobile devices to detect unsafe sleeping positions[4][3].
4. Mobile-optimized signal processing algorithms[6] to analyze camera data for non-contact heart rate monitoring[7][1].
5. Node.js or similar backend technologies for handling API requests and interactions with cloud services.
6. Firebase Cloud Messaging or similar services for sending push notifications related to temperature changes, movement detection, or abnormal heart rate.
7. WebSockets or Firebase Realtime Database to enable real-time data updates in the app for temperature, movement, and heart rate monitoring.
8. Firebase Authentication to manage user accounts and secure access to baby monitoring data.

References

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