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| **PROJECT VISION DOCUMENT** | |
| **TITLE OF THE PROJECT** | **SOOTH EASE - An IOT-Driven Smart Cradle for Baby’s Comfort and Well-Being** |
| **VISION**  **(problem the project solves** and its **impact** on the users or stakeholders.**)** | To revolutionize infant care by creating an IoT-enabled smart cradle system that seamlessly combines automation and real-time monitoring to enhance the comfort and well-being of babies. The system will empower parents with timely alerts and automated responses to address their baby's needs, ensuring a safe, soothing, and stress-free caregiving experience. Through innovation and convenience, this project aims to redefine how parents interact with traditional baby cradles, making them more efficient and responsive. |
| **USERS/ACTORS OF THE SYSTEM**  **(**Identify who will interact with the Project**)** (e.g., end users, administrators, third-party services). | **Parents/Caregivers:** Parents and caregivers are the primary users of the smart cradle system, utilizing its features to monitor the baby’s comfort and safety.  **HealthcareStaff:**  Healthcare professionals in hospitals or childcare facilities act as secondary users, leveraging the smart cradle system to monitor infants in a group or specialized care setting.  **SupportingServices:** IoT platforms enable real-time notifications and monitoring, while sensor and hardware providers supply components like moisture, motion, and temperature sensors to power the system’s features. |
| **SYSTEM FEATURES**  **&**  **FUNCTIONAL CAPABILITIES**  **(**Describe the key features and functionalities the project will provide**)** | 1. **Timely Oscillation of the Cradle:** Implement a system to automate the cradle’s oscillations at regular, pre-configured intervals to ensure the baby remains calm and comforted**.** 2. **Moisture Detection and Notification:** Integrate moisture sensors to detect wet conditions in the cradle, triggering alerts to parents for prompt action. 3. **Motion-Triggered Oscillation:** Enable the cradle to detect baby movements and initiate oscillations automatically to soothe the baby in moments of discomfort or restlessness. 4. **Temperature Monitoring and Notification**: Integrate a temperature sensor to continuously monitor the cradle’s environment, ensuring the baby’s comfort. |
| **Technologies/Tools to be Used**  **(**List the programming languages, frameworks, and tools to be used.**)** | **Programming Languages:** For microcontroller programming.  **Frameworks:** Arduino IDE, Blynk IoT Platform.  **Hardware Components:** ESP32 microcontroller, MG995 Servo Motor, MPU6050 accelerometer, DHT22 temperature sensor, Soil Hygrometer sensor, Relay Module.  **Development Tools:** Breadboard, jumper wires, power supply modules.  **Cloud Services:** Blynk.io for real-time notifications and monitoring. |
| **Third Party libraries /APIs/Services to be used**  **(**Mention external libraries, APIs, or services that will be integrated.**)** | **Blynk IoT Platform API** – For real-time notifications and remote monitoring of the cradle system.  **MPU6050 Library** – To read data from the MPU6050 accelerometer and gyroscope.  **Arduino Servo Library** – For controlling the MG995 servo motor to automate cradle oscillation.  **WiFi Library (ESP32)** – To enable Wi-Fi connectivity for remote data access and communication with Blynk. |
| **Final Deliverable must Include**  **(**List all the components of the final deliverable**)**  Example:(**Softcopies**  1.Complete Project with Code with explanation steps,  2.Technical Documentation  3.PPT  4.Published/Final research paper) |  |
| **Documents**  **(**Specify the documents to be submitted along with the final deliverable.**)** |  |

**Signature of the Guide: - TEAM MEMBERS**

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