**Objective:**  
The goal of this project is to develop a Baby-Sitting System that monitors exceptional circumstances when an infant is in a cradle. The system can remotely control and monitor abnormal temperature (too high or too low) and unusual situations (such as the infant falling or being stolen). It will detect falls and automatically alert emergency contacts, ensuring prompt assistance.

**Components:**

* **TTGO T1:** Responsible for sound detection and analysis, and controlling the cradle’s rocking motion.
* **Raspberry Pi:** Handles real-time video monitoring and web server setup, receives data from TTGO T1, and manages overall control.
* **Web Interface:** Allows users to view real-time video, sound detection results, and remotely control the cradle’s rocking.
* **SIM 800L GSM Module:** Sends SMS alerts to pre-configured emergency contacts using a 2G micro-SIM card.
* **Camera:** Allows manual activation when the parents require monitoring of the infant’s situation.

**Methodology**

* **Unusual Leaving Detection:** The pressure sensor monitors the infant’s status after the parent sets a monitoring period. If it detects sudden weightlessness during this period, the Raspberry Pi processes the data to confirm the event.
* **Sound Detection:** Detects the baby’s crying and analyses the sound characteristics to trigger appropriate actions.
* **Real Time Alert Transmission:** Upon confirmation of crying or unusual leaving, the system uses the GSM module to send an SMS alert to designated emergency contacts.
* **Manual Activation:** The camera enables the user to manually monitor the infant.
* **Power-off Protection:**  
  When the network connection of the smart baby cradle is disconnected or unstable, or the power is interrupted, causing the cradle to lose connection, the system will use heartbeat signals and regular checks to determine whether the network is connected normally. It will use voltage monitors to detect changes in power supply voltage. If the network is disconnected or the voltage falls below a certain threshold, a sound alarm is issued promptly. The device can notify people at home through audible alarms or visual indications (such as LED flashing). The device should have local storage facilities to ensure that information is stored locally when the network is disconnected.
* **Leakage Protection:**  
  By monitoring the device’s current and voltage in real time, any abnormal current flow, especially leakage current that may cause electric shock, is detected. A leakage circuit breaker installed at the power inlet of the device detects unbalanced current in the circuit. When leakage current exceeding the safety threshold is detected, the power is immediately cut off, and the user is notified by a warning sound.
* **Observe Behaviours and Trends:**

Use ESP32 to log data continuously from sensors monitoring temperature, humidity, and the baby’s movements. This data will be stored and displayed on a dashboard in the form of graphs and charts, allowing parents to review past data and observe trends over time

**Expected Outcomes:**

The Baby-Sitting System is expected to provide a reliable and efficient monitoring solution for infants in a cradle. It will accurately detect abnormal temperature changes and unusual situations such as the infant falling or being removed from the cradle. Upon detection, the system will promptly alert emergency contacts, ensuring a swift response. Additionally, the integration of power-off and leakage protection will enhance the system's safety and reliability, providing parents with peace of mind knowing their infant is being monitored and protected at all times.

Function

Sound detect:

1 define how loud need to be worried: sound level

2 manaly