1 REQUIREMENT ANALYSIS

We have come up with the smart baby monitoring cradle, the main idea behind this project is to make the task of parents (especially when both of them are working) little simple. With the help of our device which is based on IOT parents can monitor their infant’s activities and can perform the required activities. This cradle is having a lots of sensors varying from humidity sensor, sound detection sensor, temperature sensor etc. The design of the cradle assures the full comfort of the baby.

* 1. **Proposed System Modules**

**Mobile Application**

This mobile application has UI controls which include the feature of controlling the webcam which monitors the baby, there we also have a controls for playing the toy/projector when ever baby cries and the swing of the cradle too. It also has the messaging features through which parents’ nanny or grandparents can interact and are able to send the required and urgent messages.

**Sound Detection Mechanism**

This is a core feature of our system with this we can detect the crying of the baby we have sound detection sensor of this if the sound is above the threshold and for a specific amount of time let’s say for more than 30 seconds then it will detect that baby is crying and the notification will send to the parents/nanny/grandparents through mobile application.

**Humidity Sensing Mechanism**

We have a sensor grid of humidity detection installed in our cradle with this we are able to detect whether the baby is wet or not and if yes then will notify the nanny.

**Other modules**

We have a web cam installed in our cradle which monitors the baby and if any malicious activity is happen to found it will take actions to protect the baby hence the security of baby is also assured by our smart cradle.

We have cradle swing mechanism which can be achieved using motor keeping in mind the comfort of the baby. Temperature detection mechanism and facility of playing toy/projector are also there in our project.

* 1. **Associations**
     1. I/P: - When the baby cries for a specific duration of time above the threshold value.

Sensor: - Sound detection sensor used

O/P: - Toy should play or projector should be on or cradle must swing.

Actors: - parents, nanny, grandparents.

* + 1. I/P: - When cradle is weighting zero.

Sensor: - weight measuring sensor used

O/P (optional): - parents / nanny can switch on the web cam.

* + 1. I/P: - When humidity is measured

Sensor: - Humidity detection sensor is used.

O/P: - Notification simply sends through the mobile application.

O/p: - Switching on web cam or playing projector /toy can be done explicitly without any I/P whenever parents or nanny or grandparents wants.

* 1. **Functional and Non Functional Requirements**
* Data through various sensors sent to cloud is further used for analysis of various activities of baby like sleep analysis cry analysis health analysis etc.
* Toy/projector mechanism is very well implemented.
* Swing motion controls of cradle are handled efficiently.
* Notification and communication system is well maintained.
* Comfort of the baby is assured.
* Security is maintained.
* Mobile application is user friendly.
* Work load of parents can be minimized and better nurturing of baby is possible.