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Smart Baby Cradle

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***Abstract*: There is a need to develop a new low cost indigenous electronic cradle because the existing cradles are imported and costly. In this project the design and implementation of a new indigenous low cost Smart Baby Cradle that soothes the baby with some soft music when the baby cries, for this it has a cry analyzing system which detects the baby's cry and accordingly the cradle plays some soft music for the baby to stop crying. The system has inbuilt alert system that indicates two conditions – first when the mattress is wet, which is an important parameter to keep the baby in hygienic condition, second when baby does not stops crying within a stipulated time, which alerts the parents or the user the that baby needs attention. This system helps parents and nurses to take care of babies without physical attention. The system also includes a mobile app which shows the user or the parents the nutritional values of the food intake of the baby.**

***Keywords*: Raspberry Pi, Smart cradle, GSM, Audio processing**

1. Introduction

An infant bed is a bed specially designed for very young children or newborn. It is called as "cradle" in British English or "crib" in American English and bassinet (derived from French word bassin). Generally, the Bassinet is used for newborn to four month old babies. Sufficient, uninterrupted sleep is needed to build a good health. The more quality sleep a baby gets, the more he or she grows. Hence from centuries, different types of beds are made especially for babies. By the time according to requirement, advancement is done in the design of this bed or cradle.

Both the parents in today's world are working and busy. Thus, they don't get enough time to take care of their babies. Many parents don't want to hire caretakers because of safety issues and expenses. An automatic baby care system can help the parents to look after their babies without being physically present with the baby all the time. The design of the system aims at following points:

- Recognize baby cry through microphone, play soft music, and send alert message to parents through GSM Module.
- Sounds an alarm when the baby's mattress gets wet.

- *Automatic E-Baby Cradle Swing based on Baby Cry:* This paper introduces the plan and usage of another indigenous minimal effort E-Baby Cradle that swings naturally when infant cries, for this it has a cry breaking down framework which distinguishes the child cry voice and in like manner the support swings till the infant quits crying. The speed of the support can be controlled according to the user requirement. The system has inbuilt alert that shows two conditions – first when the sleeping pad is wet, which is a vital parameter to keep the infant in sterile condition, second when infant does not quit crying with in a stipulated time, which insinuated that infant needs attention. This system encourages guardians and medical attendants to deal with children without physical consideration.
- *A Survey on Advancement of Baby Cradle:* A baby bed is a bed exceptionally intended for extremely youthful kids or infant. It is called as "support" in British English or "bunk" in American English and bassinet. For the most part, the Bassinet is utilized for infant to multi month old children. Adequate, continuous rest is expected to assemble a decent wellbeing. The greater quality rest an infant gets, the more the individual in question develops. Consequently, from hundreds of years, distinctive sorts of beds are made particularly for children. When as indicated by prerequisite, progression is done in the structure of this bed or support.
- *An Arduino-Based Resonant Cradle Design with Cries Recognition:* This paper proposes a full electric support structure with newborn child cries acknowledgment, utilizing an Arduino UNO as the centre processor. For most economically accessible electric supports, the drive engine is firmly joined with the bearing on the best, bringing about a great deal of vitality utilization. In this proposition, a metal ball configuration was embraced and the main thrust is under the support to build the separation from the protest support and torque. The sensors are intended to identify the swaying state, and after that the power is driven at the basic time to accomplish the most extreme yield reaction while sparing vitality as per the guideline of reverberation. Concerning the main impetuses, the winding force and engines are deliberately set under the support. The sensors, including the three-pivot accelerometer and infrared sensor, are tried and connected under swinging sufficiency control. Likewise, baby cry acknowledgment innovation was fused in the plan to additionally build up its usefulness, which is an uncommon element in this sort of equipment. The proposed nonlinear administrator of essential recurrence examination can distinguish diverse kinds of baby cries. Taking everything into account, this paper proposes a vitality sparing electric support with newborn child cries acknowledgment and the exploratory outcomes exhibit the

viability of this methodology.

- *Analysis and Synthesis of Smart BASSINETS for Infants*: The system proposed is designed to help parents and nurses in infants care. The design aims at following points: 1. Cradle starts swinging automatically when baby cry and swings till the baby stops crying. 2. Sounds an alarm when mattress gets wet. 3. Sounds an alarm if baby cries for more than a stipulated time indicating that baby needs attention.
- *Adaptive Sway Control for Baby Bassinet Based on Artificial Metabolic Algorithm:* To enhance the Household the board and decline the youthful guardians' Labor power, another infant bassinet is made. The sort of bassinet can understand versatile influence as indicated by infant status. A few sensors can apperceive the development of infant and other data, for example, child cry. Caution flag can be created by infant abnormity status. A sort of fake metabolic calculation is proposed in the paper. The calculation can be connected for modifying the bassinet influencing degree. The genuine precedent can demonstrate that infant can achieve calm quickly and other control gadget can work effectively for the infant well being.
- *Automatically rocking baby cradle:* A bassinet or support adjusted to be shaken consequently by an oscillatory, activity engine having indistinguishable impact from would be accomplished by a mother shaking a lodging containing a newborn child, the den being significantly bolstered at each end thereof to a help rack and stand. The lower segment or base of the bunk is adjusted to be operably associated with the engine. The engine additionally incorporates a managing, responding implies for giving the activating development of the den in a smooth-shaking movement.
- *Baby Cry Recognizer:* A child cry recognizer is unveiled which incorporates an amplifier circuit for enhancing a got sound flag. In reaction to the amplified sound flag. A heartbeat generator circuit produces a heartbeat flag having zero intersections which are lined up with Zero intersections of the amplified sound flag. The beat motion, thus. is inputted to a flag acknowledgment circuit. The flag acknowledgment circuit is fit of acquiring the zero intersection rate of the beat motion amid each of a preselected number of casings in a foreordained length time interim. The flag acknowledgment circuit at that point decides whether the zero intersection rate of the beat motion, in more than first limit number of this preselected number of casings, is inside a specific recurrence run. The flag acknowledgment circuit likewise decides whether the zero crossing rate of the beat motion over the whole time interim is more noteworthy than or equivalent to a second low limit however less than or equivalent to a third high limit. On the off chance that these two conditions are satisfied. at that point the flag acknowledgment circuit yields a flag demonstrating that an infant's cry was distinguished.

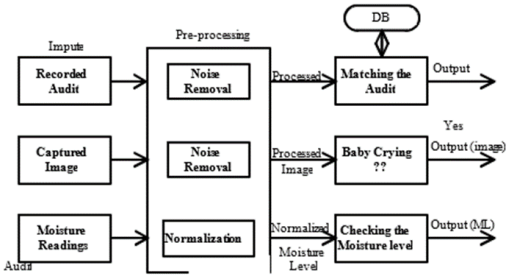

Fig. 1. Block diagram

2. Conclusion

This paper presented an overview of smart baby cradle.

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