

GENERAL IDEA ABOUT SMART BABY CRADLE

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Received 05 Jan. 2017; Accepted 27 Jan. 2017

ABSTRACT

Infants or a toddlers needs parents' attention 24 hours a day and 7 days a week, which is practically impossible due to other priorities like house hold activities, official works and personal works. Baby care centre or nanny is the two options available which involves lot of passion. Now a day's lot of incidents is reported in social media featuring human attack to the toddlers in a brutal way. So, there is a need for safe and secure place to take good care of the children's need with minimum human intervention.

We live in a world where technologies are used all around us. The new generations of parents were raised with technology. There are many things these parents will buy to help them care for their baby (Cradle, Crib, Baby Monitor, etc.). We noticed that a lot of the products can be put into one product. "**Smart Baby Cradle**" provide parents a smart system help these parents monitor and comfort the baby. The Smart Baby Cradle allows them to monitoring their babies, the cradle, play soothing music and even speak to the baby.

I. INTRODUCTION

In this project we had made cradle to swing/oscillate without human Intervention /Automatic by the sensor which is actuated by movement or specific action done by the body. It will also contain a sound system or alert arm for the parent as an indication of that baby has walked up if they are away from the baby and in other room.

II. CRADLE PARTS DETAILS AND ANALYSIS

SLIDER- CRANK MECHANISM

The Slider-crank mechanism is used to transform rotational motion into translational motion by means of a rotating driving beam, a connection rod and a sliding body. In the present example, a flexible body is used for the connection rod. The sliding mass is not allowed to rotate and three revolute joints are used to connect the bodies. While each body has six degrees of freedom in space, the kinematical conditions lead to one degree of freedom for the whole system.

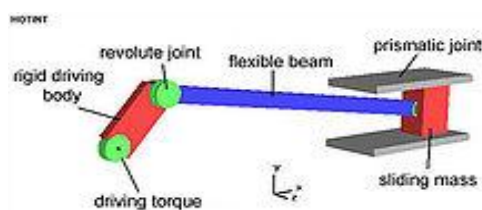


Figure 1:

A slider crank mechanism converts circular motion of the crank into linear motion of the slider. In order for the crank to rotate fully the condition $L > R + E$ must be satisfied where R is the crank length L is the length of the link connecting crank and slider and E is the offset of slider. A slider crank is a RRRP type of mechanism i.e. It has three revolute joints and 1 prismatic joint. The total distance covered by the slider between its two extreme positions is called the path length. Kinematic inversion of slider crank mechanisms produces ordinary a with worth quick return mechanism

DC MOTOR

A **DC motor** is any of a class of electrical machines that converts direct current electrical power into mechanical power. The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic; to periodically change the direction of current flow in part of the motor. Most types produce rotary motion; a linear motor directly produces force and motion in a straight line.

DC motors were the first type widely used, since they could be powered from existing direct-current lighting power distribution systems. A DC motor's speed can be controlled over a wide

range, using either a variable supply voltage or by changing the strength of current in its field windings. Small DC motors are used in tools, toys, and appliances. The universal motor can operate on direct current but is a lightweight motor used for portable power tools and appliances. Larger DC motors are used in propulsion of electric vehicles, elevator and hoists, or in drives for steel rolling mills. The advent of power electronics has made replacement of DC motors with AC motors possible in many applications.

BATTERY

The **lead-acid battery** was invented in 1859 by French physicist Gaston Planté and is the oldest type of rechargeable battery. Despite having a very low energy-to-weight ratio and a low energy-to-volume ratio, its ability to supply high surge currents means that the cells have a relatively large power-to-weight ratio. These features, along with their low cost, make it attractive for use in motor vehicles to provide the high current required by automobile starter motors.

As they are inexpensive compared to newer technologies, lead-acid batteries are widely used even when surge current is not important and other designs could provide higher energy densities. Large-format lead-acid designs are widely used for storage in backup power supplies in cell phone towers, high-availability settings like hospitals, and stand-alone power systems. For these roles, modified versions of the standard cell may be used to improve storage times and reduce maintenance requirements. **Gel-cells** and **absorbed glass-mat** batteries are common in these roles, collectively known as VRLA (valve-regulated lead-acid) batteries.

MOTION DETECTOR

A **motion detector** is a device that detects moving objects, particularly people. A motion detector is often integrated as a component of a system that automatically performs a task or alerts a user of motion in an area. Motion detectors form a vital component of security, automated lighting control, home control, energy efficiency, and other useful systems.

- Servo Motor / Rotation Sensor

Each motor has a built-in Rotation Sensor. This lets you control your robot's movements precisely. The Rotation Sensor measures motor rotations in degrees or full rotations [accuracy of +/- one degree]. One rotation is equal to 360

degrees, so if you set a motor to turn 180 degrees, its output shaft will make half a turn.

SOUND SENSOR

The Sound Sensor can detect both decibels [dB] and adjusted decibel [dBA]. A decibel is a measurement of sound pressure.

dBA: in detecting adjusted decibels, the sensitivity of the sensor is adapted to the sensitivity of the human ear. In other words, these are the sounds that your ears are able to hear.

dB: in detecting standard [unadjusted] decibels, all sounds are measured with equal sensitivity. Thus, these sounds may include some that are too high or too low for the human ear to hear.

The Sound Sensor can measure sound pressure levels up to 90 dB – about the level of a lawnmower. Sound pressure levels are extremely complicated, so the Sound Sensor readings on the MINDSTORMS NXT are displayed in percent [%]. The lower the percent the quieter the sound. For example:

- 4-5% is like a silent living room
- 5-10% would be someone talking some distance away
- 10-30% is normal conversation close to the sensor or music played at a normal level
- 30-100% are people shouting or music being played at a high volume

BABY BED WETTING URINE SENSOR

Sensitive Baby Bed Wetting Urine Sensor Wet Diaper Alarm Detector Features: Safe and reliable, no side effects. For children of 0-2 years old. Induction one second that will alert, easy to use. Perfect for avoiding baby catching cold or suffering from crotch eczema due to bedwetting. Material: ABS + Sensor Chip. How to use: Placed wet alert bedside or other suitable places, placed the alert's sensor chip under baby's diaper insert. (Do not direct contact with skin). Turn the switch to NO. Once baby pee, the alarm will remind parents immediately with the music to changing diapers. Then turn the switch to OFF, disarm the alarm. And dry sensor chip with a paper towel or cloth, the wet alarm can be used again. Notice: 1, Use a damp cloth to clean the sensor after every use. Do not submerge the sensor in water or use tissue paper. Also, not cleaning the sensor after every use can lead to skin irritation due to it no longer be hygienic. 2, if the alert is not used for a long time, please turn it off. 3, Make sure that

sleep-tight alert is used under the guidance of adults. be careful not to let the baby swallow it.
Package Included: 1 x Baby Bed Wetting Sensor

III. CONCLUSION

Project methodology is proposed to inculcate and enhance the outcome based education in technical educations for designing of various mechanical parts and analytics of forces acting on it. The present model is good for the student in Bringing out skills of the students and makes them work on it to make him an expertise in his domain. Enhancing outcome based education

which is highly essential for technical students. Creating the path for the students in enhancing the application of technical skills.

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