**CHAPTER-1**

**INTRODUCTION**

* 1. **Background**

Under fast-paced life conditions, everyone is busy in their professional life including parents. They leave the house early in the morning and come back before dinner time. Even the mothers are working. Thus, they do not have sufficient time to take care of their babies. Not all parents could afford a nanny to help them with their children. Then, after working for long hours, the mothers still have to manage the house and take care of their babies simultaneously. Parents might not have the time to soothe their baby to sleep or rock their baby back to sleep in the middle of the night. Studies about the effect of rocking a baby have been carried out and found that babies sleep better while being rocked or swung lightly because the rhythmic movement mimics the gentle rocking they felt while in their mothers’ womb. Most available automated cradles are designed to rock non-stop. However, the rocking movement can make the baby nauseous and uncomfortable. Thus, allowing the automated cradle to rock the baby to sleep in the middle of the night is also a problem. Furthermore, some parents place their baby in a separate room. Therefore, parents could not hear the baby crying and could not be there to ease their baby back to sleep in the middle of the night. Other parents may be occupied with house chores. Thus, because they cannot hear their baby crying, they cannot attend to them immediately. Sometimes, the baby only needs a little distraction to return to deep sleep. Several types of baby cradles are available in stores, but they are expensive, and not everyone can afford them. In addition, the existing automatic cradles in the literature have many limitations in terms of functionality, cost, and communication technology support. To the best of our knowledge, no previous studies have developed a smart cradle with IoT support from scratch, similar to that in the present study. To overcome this problem, a new automatic IoT-based baby monitoring system is designed, allowing the parents to access an account to monitor the baby’s condition anywhere and anytime.

**1.2 Overview of the Present Work**

The proposed system that is, Smart Cradle consists of features such as camera, LCD screen, audio speaker and servo motor for swinging of the cradle. Further more, few sensors such as sound sensor and temperature sensor are used to monitor the baby more effectively. The parents can monitor the baby remotely and may even place a video call for communication purposes with the help of the audio speaker and LCD screen. The sound sensor detects the sound of the baby’s crying and automatically start the swinging of the cradle with the help of servo motor.

Besides, there are extra features or functions which are provided by the new smart cradle that is beneficial for parents. Because in the present world people are very busy in their professional life so they do not get ample time to take care of their infants. It will be very difficult to control the babies and if someone is hiring professional to take care of their infants, it may increase your expenses from monthly expenditure. Moreover, in today’s life, it is very hard for even the homemakers to sit nearby their babies and soothe them whenever they feel uncomfortable. Though, it is automatic, this work is very useful for the nurses in maternity units of hospital.

#### ProblemStatement

To Design and Develop a Smart Cradle for Monitoring Baby using IoT.

#### Objectives

#### Some of the key objectives of Smart Cradle for Monitoring Baby are,

#### Keep track of the baby’s activities.

#### Alert the parents of the baby in abnormal conditions.

#### Make the baby’s cradle safe and reliable.

* Make task of working parents easily.