



# **SMART BABY: REAL- TIME MONITOR SYSTEM FOR BABIES UTILIZING SENSORS AND CAMERAS**

**Mrs. A. Leela Kumari**

# **Smart Baby: Real- time Monitor System for Babies utilizing Sensors and Camers**

Mrs. A. Leela Kumari,  
Assistant Professor, Department of CSE,  
G. Narayanamma Institute of Technology and Science (for Women), Shaikpet, Hyderabad.

## PREFACE

The demand of innovated advanced control is rapidly increasing due to the significance of in low-income settings, half of the babies born at or below 32 weeks (2 months early) die due to a lack of feasible, cost-effective care and reducing the death ratio among the infant baby. The chance of providing better infant care is reduced. This may cause many troubles to the health of children. There is a danger of losing the life even, if the babies are not monitored properly and continuously.

There are number of parameters in the application presented as an advanced control system, used to monitor some important parameters like health care assistance, harmful gas monitoring that affect the life of infant baby. This technique simultaneously monitors and controls more than one parameter with advanced control system and provides smooth operation which helps to increase the accuracy.

The proposed system consists of a contactless moisture sensor, a gas (O<sub>2</sub>) sensor, and a presence sensor for the baby in the crib using a Raspberry Pi camera. The system can monitor external conditions such as wetness detection of the baby, presence of the baby in the crib when the parents are away from the infant, and harmful gas detection within a predetermined range, as well as monitor the baby's movement and detect any abnormality moving continuously around the baby, and indicate when the diaper needs to be changed if excessive wetness was observed. A gas sensor (O<sub>2</sub>) is a type of sensor that measures the amount of harmful gas in the air by testing the oxygen concentration in the air. The system is based on an Android application that sends alerts to the parents when any of these parameters exceeds the saved values. This system is attached with a video camera, which is operated based on the instructions from the VNC Viewer and is used for the presence detection of the infant through the "Pi-Camera". The video will be displayed on the screen to monitor the baby continuously, and a fall detection system is implemented based on a spatial segmentation sensing model that helps provide low-cost and secure motion. Furthermore, designing based on the CNN (convolution neural network) inception model helps to improve accuracy. Singular aspect inception model by applying CNN assiduously learning to achieve state-of-the-art accuracy in multiple datasets.

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