

ABSTRACT

Real-time monitoring of the baby's condition is essential to ensure the safety and security of the baby, especially when outside of parental supervision. In Indonesia, the infant mortality rate is still relatively high, reaching around 20,000 people aged 0-28 days in 2020, most of which are caused by human negligence, both by caregivers and the baby's mother herself. Internet of Things (IoT)-based infant monitoring systems offer an efficient solution to reduce this risk. However, the development of these systems faces challenges in terms of algorithm detection accuracy, network connectivity, and data communication speed.

The system utilizes IoT technology by using several sensors to collect data on the baby's condition such as emotions, facial expressions, voice, and temperature. The collected data is then analyzed using artificial intelligence algorithms to detect signs of discomfort in the baby. The results of the analysis are transmitted via the cloud to a mobile application that can be installed on the parent's or caregiver's device. The system achieved an accuracy of 94.8% in detecting the baby's face and 93.2% in detecting the crying baby's face by applying the YOLOv5 algorithm. For baby crying sound detection, the system used SVM algorithm and achieved an accuracy of 72%. This system not only reduces the risk of negligence, but also provides peace of mind for parents when they cannot provide full supervision of their babies.

Keywords: artificial intelligence, automated system, baby, internet of things, mobile application.