NAME OF PAPER: Application of machine learning and IoT to enable child safety at home environment

NAME OF AUTHOR: V. Shenbagalakshmi , T. Jaya

JOURNAL PUBLISHED: The Journal of Supercomputing,Volume 78,Issue 8

MONTH AND YEAR PUBLISHED: January 2022

OBJECTIVE OF THE PROJECT:

Safety of children is of utmost importance in any home environment. IoT when combined with machine learning is found to offer tremendous benefits in creating smart and safe homes to the society. The aim of this research is to, apply machine learning models, in order to detect the anomaly on the dataset gathered from three IoT devices. The environmental parameters for which the anomaly is detected are smoke emission, light illumination, LPG gas emission, CO emission, motion detection, humidity changes and temperature-level changes. The research makes use of three machine learning models namely K-Means clustering, Isolation Forest and Inter-Quartile Range to detect anomalies. In addition to that, it also uses Facebook Prophet Model to predict the daily trends in the data predicted by the three models. The evaluation of performance shows that the accuracy of predicting anomaly is greater for the Inter-quartile range model when compared with that of the remaining two machine learning models. The accuracy obtained by the IQR model is 99% whereas the models K-means and Isolation Forest render an accuracy of 94% each. The study also provides a scheme of a hardware as a part of the future work that could be implemented in order to implement child safety in a better way in the near future.

NAME OF PAPER: IoT-based Child Security Monitoring System

NAME OF AUTHOR: Lai Yi Heng,Intan Farahana Binti Kamsin

JOURNAL PUBLISHED: 3rd International Conference on Integrated Intelligent Computing Communication & Security (ICIIC 2021)

MONTH AND YEAR PUBLISHED: January 2021

OBJECTIVE OF THE PROJECT:

The crime rate associated with children keeps increasing due to which draws people's' attention regarding child safety. This research is conducted to propose a child security smart band utilizing IoT technology. Online questionnaire and semi-structured interview are methodologies used to collect data. The online questionnaire gains feedbacks by sending questions electronically, where answers need to be submitted online. In the semi structured interview, researcher meets and asks respondents some predetermined questions while other being asked are not planned in advanced. Through information obtained, a smart band have been proposed to monitor the safety of children. By this, parents know what is happening remotely and can take actions if something goes wrong. The future improvements of this device will be adding functions and software to make it works like a phone such as messaging, gallery, Google, YouTube, meanwhile, adding more child security features so that child safety is guaranteed.

NAME OF PAPER: IoT-Enabled Smart Child Safety Digital System Architecture

NAME OF AUTHOR: Madhuri Madhuri; Asif Qumer Gill; Habib Ullah Khan

JOURNAL PUBLISHED: 2020 IEEE 14th International Conference on Semantic Computing (ICSC)

MONTH AND YEAR PUBLISHED: February 2020

OBJECTIVE OF THE PROJECT:

Safety of a child in a large public event is a major concern for event organizers and parents. This paper addresses this important concern and proposes an architecture model of the IoT-enable smart child safety tracking digital system. This IoT-enabled digital system architecture integrates the Cloud, Mobile and GPS technology to precisely locate the geographical location of a child on an event map. The proposed architecture model describes the people, information, process, and technology architecture elements, and their relationships for the complex IoT-enable smart child safety tracking digital system. The proposed architecture model can be used as a reference or guide to assist in the safe architecture driven development of the various child tracking digital systems for different public events.

NAME OF PAPER: iBaby: A Mobile Children Monitoring and Finding System with Stranger Holding Detection Based on IoT Technologies

NAME OF AUTHOR: Lien-Wu Chen,Tsung-Ping Chen,Chia-Chun Weng

JOURNAL PUBLISHED: The ACM SIGCOMM 2019 Conference Posters and Demos

MONTH AND YEAR PUBLISHED: August 2019

OBJECTIVE OF THE PROJECT:

This paper designs and implements a mobile children monitoring and finding system, called iBaby, using wearable devices and nearby smartphones to detect unexpected holding and find missing children through Internet of Things (IoT) technologies, respectively. In the monitoring mode, the iBaby system can prevent young children from taking away by strangers/people with bad intentions. In the finding mode, the iBaby system can cooperatively find missing children equipped with hand wearable devices consisting of the mobile iBeacon and 3-axis accelermeter through crowdsourced sensing networks formed by smartphone users with outdoor GPS and indoor IoT localization. To accurately detect stranger holding behaviors, multi-feature based, artificial neural network based, and convolutional neural network based posture recognition methods are designed to improve recognition success rates of iBaby as much as possible. In particular, an iOS-based prototype with Arduino wearable devices and static iBeacon nodes is implemented to verify the feasibility and correctness of our iBaby system.

NAME OF PAPER: Smart IOT Device for Child Safety and Tracking

NAME OF AUTHOR: M Nandini Priyanka, S Murugan, K N H Srinivas, T D S Sarveswararao, E Kusuma Kumari.

JOURNAL PUBLISHED: International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-8

MONTH AND YEAR PUBLISHED: 8 June, 2019

OBJECTIVE OF THE PROJECT:

Child safety and tracking is a major concern as the more number of crimes on children are reported nowadays. With this motivation, a smart IoT device for child safety and tracking is developed to help the parents to locate and monitor their children. The system is developed using LinkIt ONE board programmed in embedded C and interfaced with temperature, heartbeat, touch sensors and also GPS, GSM & digital camera modules. The novelty of the work is that the system automatically alerts the parent/caretaker by sending SMS, when immediate attention is required for the child during emergency. The parameters such as touch, temperature & heartbeat of the child are used for parametric analysis and results are plotted for the same. The above system ensures the safety and tracking of children.