Abstract

According to facts from ministry of girls and children development, as many as 20 kids on an average go missing in the national capital each day. And handiest 30 percent of the kids are reunited with their families, the respite remain entrenched. Of the 20 children, the handiest one or two kids goes missing on their personal, ultimate kids are abducted. Kidnapped kids are pushed into toddler labor, flesh trade, domestic provider or begging racket.

Despite CCTV cameras, preserving an eye fixed at the roads and a hi-tech police force guarding the residents, predominant cities in India has grown to be a hub of kidnappers each as a transit and destination point. The alarming records embody abortive to induce police officers into urgency. To get rid of kid abduction, we proposed to built a virtual agent - Tracking and monitoring elementary school kids (TMESK system) meant to design a at ease gadget that continuously tracks and monitor kids and alert the parents, school management if anything went wrong. In proposing model Linear Support Vector Machine used to train TMESK system using GPS trajectory data and smart IOT wearable gadgets alert when kids exits from a safe zone or enters to unexpected location change, TMESK sends an alert message to their mother and father, caretakers and nearest police station to make sure the safety of the child.

Keywords: Internet of Things (IOT), Global Positioning system (GPS), Deep Neural Network (DNN)
I. Introduction

Kid’s safety is of utmost importance to their parents. Despite the best safety measures, children can end up in a situation which endangers their lives due to their lack of skills to protect themselves. In this paper, we concentrate on a particular risk associated with the kids as they move from and to school. There have been previous incidents where a child is forgotten in the bus and eventually dies because of suffocation [XXII].

To ensure the safety of elementary school kids and avoid kid’s abduction, we propose to build TMESK (i.e. virtual agent) system that collects data continuously from smart IOT gadget, makes a prediction using Support Vector Machine. The system aims at automatically detecting when a kid leaves the safe zone and issues an alert message when a kid leaves the safe zone, to reduce the parents’ concerns about safety of their kids.

II. Literature Survey

Rapid advancement in the technology helps to develop incredible things that ensures safety of the humans, for the past few years, wearable devices have seen an explosive growth of popularity [XVI]. Corresponding to such advancement, more devices are available to record various aspects of our daily lives [XXI], affecting our live in a sensible way. Internet of things creates an interconnected network for all things and is later recognized as renew technology [IX], incorporating Artificial intelligence into wearable IOT devices can develop Smart Intelligent wearable device and allows building an applications that manage real time data and enhances predictive analysis. This smart intelligent IOT device analyze data and enables to make decisions and act on that data without involvement by human beings [I].

Finkelhor et al. had been derived for three otherwise outlined sorts of activities: conventional kidnappings, during which an unknown wrongdoer took child night long, or a distance of fifty miles or more, or killed, ransomed, or evidenced an motive to hold the kid completely; legal-definition nonfamily abductions, wherein a stranger or other nonfamily member took, detained, or lured a kid, frequently in conjunction with another crime consisting of sexual assault and attempted abduction, wherein an unsuccessful strive become made to take, detain, or entice a kid [III]. A. Jatti et al. proposed to develop a wearable device for the safety and protection of women and girls [I]. Al-Lawati et al. paper proposed two main units, bus unit and a school unit to ensure the safety transportation of the children from source to destination point [II].

N. Z. Hamid et al proposed a project that can help in giving forewarning to the person in charge about the surrounding of the worker if it is harmful for him/her [X]. P. P. Harlikar et al. proposed prototype that monitors the individual's scenario in any aquatic surroundings particularly near seashores. This method includes three principal modules namely, wearable module, standstill and monitoring system [XI]. Spilman, Sarah et al. examines how parents of own family and non family members of kidnapped children

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address stress because of the disappearance in their kid. The effects display that all parents revel in misery, irrespective of whether it became a own family or nonfamily abduction [XIII]. In the area of design type, the feed-ahead of time system is actually very most once taken advantage of. They feature the BP-based multilayer perceptron (MLP) along with the Radial-Basis Function systems [XIV]. In this paper author concluded that multilayer perceptron systems are organized straight into coatings to possess unidirectional hyperlinks in between the levels.

Psychological stress is threatening people’s health. It’s non-trivial to discover stress timely for proactive care. With the recognition of social media, folk’s square measure wants to share their daily activities and interacting with friends on social media platforms, making it possible to leverage online social network information for stress detection. In this paper, author discover the users stress state is closely associated with that of his/her friends in social, author proposed a completely unique hybrid model - an element graph model combined with Convolution Neural Network to leverage tweet content and social interaction data for stress detection [V]. Q. Liao employed SVM to extract patterns from the characteristics of a given dispatching trajectory [XII].

S. Hwang et al. Support Vector Machine (SVM) which is one of the machine learning algorithms, classifies the data received from the equipment as normal or abnormal[XV].A noteworthy issue with performing investigation on slide image data is the changeability of the image resulting from manual arrangement of the slides by lab professionals. Images are stained with haematoxylin and eosin (H&E) to help pathologists in identifying mitoses, yet the manual idea of the procedure implies that the final slides can change altogether in appearance, leading to false classification [VI].

A global position system of L1/L2 frequencies of printed antenna application is realized with a good gain and circular polarization. The printed quadrifilar helical antenna (PQHA) bandwidths of a conventional antenna are insufficient for such applications. The new FPQHA is designed to achieve a good bandwidth in axial-mode. The helix patch and diameter plane plays a vital role to achieve wide bandwidth [XIX]. The well-liked Q-learning protocol is actually recognized to overrate action market values under specific health conditions [XX]

III. Methodology

To ensure the safety of the children, we suggested developing a TMESK system with a three specific units such as safe zone unit - school premises, a mobile unit –that transmits emergency messages to school managers, parents, police station and nearest relatives mobile, and the virtual agent unit responsible for continuous child surveillance, within a safe zone or not, if something goes wrong automatically sends warning messages to preferred persons.
Figure 1. Architecture of TMESK system

A. Safe zone unit: Safe zone is a place, where we can trust someone like school place. In this unit we define a safe zone premises i.e. geo-location of the school premises are collected and same data can be used to train the TMESK system. Kid equipped with smart wearable IOT device, capable of reading geo–locations and transmits data to cloud server.

B. Mobile unit: A user interface is provided to the end users to monitor and track kids i.e. geo-location of the wearable IOT device will be displayed. Mobile unit capable of transferring alert messages to the preferred persons

C. Virtual agent unit: To ensure the safety of the children that we proposed to develop a Virtual Intelligent Agent, the parent’s fears regarding their children’s are minimized. The data set of geo-location of kid’s school can be used to train Virtual agent using model Support Vector Machine. Support vector machine learning algorithm is a versatile and more powerful machine learning model, capable of performing linear or nonlinear classification regression and even outlier detection [XVII]. Geo-location data set of school premises used to train the SVM model and data collected from wearable IOT devices can be used as a test data. Kid’s abduction can be minimized by smart virtual intelligent agents that continuously monitor the kids and sends the data to the cloud and track the child’s location if anything goes wrong. When kid steps out of the safe zone it immediately sends the alert message to the principal, then to the parents. Parents may collect information about their child through the interface provide to them in mobile unit. If the problem still persist, the virtual agent continuously track the child’s geo-location using wearable smart IOT device and
based on newly collected geo-location data it predicts the potential path of the child moving, prevents child abduction by making calls to the nearest police station, and sends an alert message to the relatives nearest to the child’s surroundings.

IV. Conclusion and Future Scope

A smart virtual agent can be developed by integrating wearable IOT device; intelligent machine learning algorithm, i.e. TMESK system helps prevent the kidnapping of the children, and reduces parent’s worries about the safety of their children. In the future, more robust devices need to be implemented to transmit data to cloud and predictive algorithm accuracy needs to be improved.

Conflict of Interest :

Authors declared: There is No conflict of interest regarding this article.

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