Position Tracking and Path Guidance for Alzheimer's Patient by Using Shoes

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Abstract-- The system is a research area in the wireless communications. This system represents the necessity as a safety monitor for Alzheimer's patients. Alzheimer's patient is a person having dementia means the difficulties about memory with the concepts of place & time. Global Positioning System (GPS) Footwear System is a revolutionary, patented technology, designed to help individuals who may have a tendency to wander or who are not totally independent and possibly at risk of becoming disoriented and lost. Their tendency to wander may be the result of Alzheimer's, aphasia, dementia, autism or any cognitive disability where a person is at risk. For the Parent or Caregivers, these innovative shoes feature the latest 2-way GPS tracking technology that allows you to quickly track and locate the wearer of the shoe Navistar GPS Shoes at any hour of the day using the interactive tracking website service. The advantage of the system is that, we store the wav file in any language and play it back.

Keywords: Alzheimer's patient, GPS,

I. INTRODUCTION

GPS based wireless shoe is developed for path guidance. A person having the difficulties about memory with the concepts of place & time is called Alzheimer's patient. This type of disease is mostly occurred in the person, approaches towards the age of 65. The rates of Alzheimer's sufferers are expected to continue to rise significantly in the coming decade. According to the Alzheimer's Association, about 5.4 million Americans are living with the disease that figure predicted to rise to as many as 16 million by 2050. So for the safety of these patients GPS platform shoe is developed. Global Positioning System (GPS) locator watches for patients are essentially RT-trackers that allow the family members or caregivers to have a complete access to whereabouts of person 24hrs.

In our daily life, mobile phone is accessory for good wireless communication. With the help of GPS technology in mobile, communication is easier. Aetrex Company embeds its GPS technology into comfort and wellness shoes for the elderly. The latest GPS tracking technology embedded in the base of the right heel, providing real-time tracking .at frequent and specific time interval, the GPS tracking device sends a signal to the central monitoring station determining the

LITERATURE SURVEY

The Aetrex Navistar GPS Footwear System Founded in 1946, Aetrex is widely recognized as the global leader in comfort and wellness footwear products. It is dedicated to manufacturing the finest foot health products on the market today. The 65 year old company is headquartered in Teaneck, New Jersey and employs over 200 people, including 20 certified pedorthists. [1]

M. Mohandes, "Wireless Sensor Networks for Pilgrims Tracking," letter reports a real-time pilgrim tracking system that has been designed and implemented. The system relies on a dedicated delay-tolerant wireless sensor network (WSN). This WSN is interfaced to the Internet through gateway(s) available from an internet service provider (ISP). Energy efficiency, robustness, and reliability are key factors in the design of the system. Each pilgrim is given a mobile sensor unit which includes a GPS chip, a microcontroller, and antennas. A network of fixed units is installed in the Holy area for receiving and forwarding data. Periodically, each mobile unit sends its user identification (UID), latitude, longitude and time stamp. A central server maps the latitude and longitude information on a geographical information system (GIS). [2]

Igor Bisio, "GPS/HPS-and Wi-Fi Fingerprint-Based location Recognition for Check-In Applications Over Smart phones in Cloud-Based LBSs" proposes a new location recognition algorithm for automatic check-in applications (LRACI), suited to be implemented within Smart phones, integrated in the Cloud platform and representing a service for Cloud end users. The algorithm, the performance of which is Independent of the employed device, uses both global and hybrid positioning systems (GPS/HPS) and, in an opportunistic way, the presence of Wi-Fi access points (APs), through a new definition of Wi-Fi Finger Print (FP), which is proposed in this paper. [3]

wearer's exact location and relays that information to a tracking website for you to view.

The proposed system is path guidance and embedded position tracking for Alzheimer's patient or children. For that first make the schedule of person according to his/her work. For that particular place, store the coordinates in the base station coming from the GPS and the name it in to the SD card via the matrix Keyboard. Also store the recorded voice from the user which explains the name and other information about the place that can guide the patient or the person wearing the shoes.

After this as soon as the user wears the shoes, the µc continuously compares the latitude and the longitude co-ordinates. If at any place the co-ordinates matches with the co-ordinates coming from the GPS with the co-ordinates stored in the SD card memory, the massage displays. The proposed system informs the loaded information to user.

The system shoes the name and other details of that place on the LCD and also can hear the info about the place from the earpiece. Also mobile sends these co-ordinates to the base unit via the GSM modem. The PC receives these co-ordinates via GSM and redirects these latitude and longitude co-ordinates to the visual basic software. The VB s/w then shows these co-ordinates on the GOOGLE map so that the person can exactly locate the location of the user.

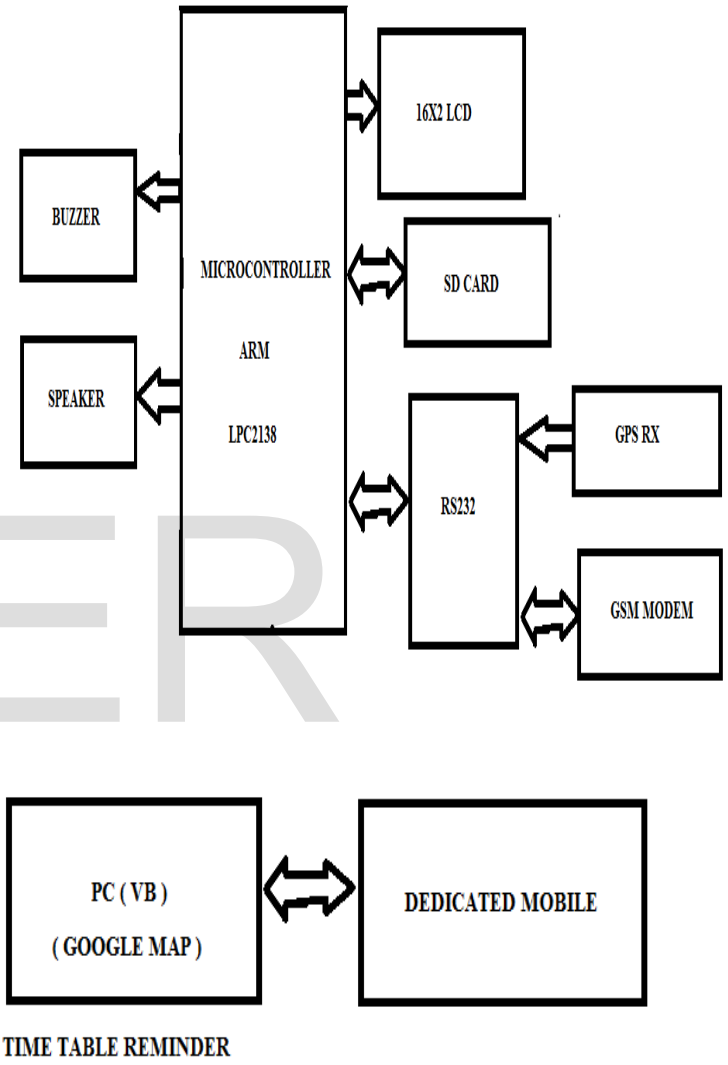
There are already a number of wearable GPS devices such as watches and bracelets designed to keep track of loved ones - young and old. Shoes are a perfect fit for the technology as it's something the person being track is unlikely to wander off without. They're also likely to be more comfortable or the elderly than the GPS platform shoes we looked at a few years ago.

The GTX system uses low power two-way GPS tracking technology. It continually tracks the location and movement history of the wearer and relays the information to a monitoring center through mobile networks. The wearer is pinpointed by logging into a secure internet portal or via a smart phone app. The system also allows caregivers to receive an alert sms or alarm on their smart phone or computer. There is a direct link to Google maps plotting the wearer's location when the GPS shoe moves outside a preset area. [4]

The sensor network developed for tracking system uses a delay/disturbance tolerant design. There are mobile units as well as permanent units. The number of mobile units to be monitored is significantly large compared to the fixed units. Thus, the WSN for this application has similarity to the Zebra Net [3] designed for surroundings monitoring. It makes use of opportunistic, ad-hoc, and short-range wireless communications to disseminate data.

BLOCK DIAGRAM and DESCRIPTION

Microcontroller unit: The µC unit receives these coordinates and compares it with the co-ordinates stored in serial memory, if both match, the corresponding advertisement is displayed on the LCD.



GPS unit: The GPS unit continuously sends the co-ordinates to the µc kit. These co-ordinates are received and stored in µc memory.

LCD: The received co-ordinates are shown on the graphical LCD. Also the name of place that matches with the database is displayed on LCD.

Serial memory and matrix kb: The matrix kb is used to store the GPS coordinates as well as the name of place in the serial memory. The I2C bus based serial EEPROM is used to store these co-ordinates in memory.

[4]

The GPS Shoes allow real-time tracking of the wearer [1]

CONCLUSION

Proposed implementation presents the overall framework of the necessity of positioning system as a safety monitor for Alzheimer's patients. It is easier for finding and guiding the Alzheimer patient by sitting on one place. We can apply the system for the child also for safety and guidance. The design provides alarm for patient to request help in case of emergency. The location information is map onto a GIS system for ease of localization and efficiency in providing help. Our experiments showed that the system is strong and reliable. In this view, location identification is an application field, but the idea may be applied to other scenarios.

REFERENCES

[1] Order(+) your Aetrex Navistar™, GPS Shoes online available at http:// www.TrackingCentral.com.au /GPS-Shoe

[2] M. Mohandes, "Wireless Sensor Networks for Pilgrims Tracking," IEEE embedded systems letters, vol. 4, no. 4, December 2012

[3] Igor Bisio, "GPS/HPS-and Wi-Fi Fingerprint-Based Location Recognition for Check-In Applications Over Smart phones in Cloud-Based LBSs" ieee transactions on multimedia, vol. 15, no. 4, June 2013

[4] Darren Quick (*October 26, 2011*), Comfort shoes with embedded GPS to keep track of Alzheimer's patients available at: www.google.com

[5] P. Zhang, C. M. Sadler, S. A. Lyon, and M. Martonosi, "Hardware design experiences in zebra net," in *Proc. 2nd Int. Conf. Embed. Network Sensor Syst.*, New York, 2004, pp. 227–238, ACM Press.

[6] M. Mohandes, "RFID-based system for pilgrims identification & tracking," *J. Appl. Compute. Electromagnet. Soc. (ACES)*, vol. 25, no. 3, pp. 273–282, Mar. 2010.

[7] **Andrea Sciarrone,** Context and Location Awareness, Indoor Localization, Security and e-health Applications, Android Operative System.

[8] Mohandes, Haleem, Abul-Hussain, and Balakrishnan, "Pilgrim tracking using wireless sensor network," presented at the Workshops Int. Conf. Adv. Inform. Netw. Appl. (WAINA 2011), Singapore, Mar.22–25, 2011.

[9] LPC2131/2132/2138 *User Manual* File Format: PDF/Adobe Acrobat November 22, 2004. Philips Semiconductors. Preliminary *User Manual*. LPC2131/2132/2138. ARM-based Microcontroller... (*LPC2138* with 512kB Flash). www.mct.de/download/philips/lpc213x.pdf