

Alzheimer with GPS tracking

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ABSTRACT

This is a project to help someone with advanced Alzheimer. It is a GPS (Global Positioning System) unit for Alzheimer patients. Alzheimer patients often get lost, or wander off. They forget familiar land marks. It works like this: The patient carries a combination cell phone and GPS unit on a necklace or lag band. When the patient touches the unit, or holds it, it starts giving verbal instructions on how to walk home, repeating as necessary. If the patient is too far from home to walk, it phones home and reports the location of the patient, using street names, as well as latitude and longitude. Note that there are no buttons to push and nothing to look at on the unit. It is activated just by touching it.

Keywords: Alzheimer's Patients, Real Time Monitoring, Safety

I. INTRODUCTION

This is a project to help someone with advanced Alzheimer. It is a GPS (Global Positioning System) unit for Alzheimer patients. Alzheimer patients often get lost, or wander off. They forget familiar land marks. It works like this: The patient carries a combination cell phone and GPS unit on a necklace. When the patient touches the unit, or holds it, it starts giving verbal instructions on how to walk home, repeating as necessary. If the patient is too far from home to walk, it phones home and reports the location of the patient, using street names, as well as latitude and longitude. Note that there are no buttons to push and nothing to look at on the unit. It is activated just by touching it. The family at home can at any time phone the unit and get it to report the ambient sounds, let them talk to the patient and find out where the patient is. The patient does not need to do anything to answer the call. For less far gone people, the unit can be programmed to, for example, guide the patient to a friend's house, or a store and back home again. The unit might also have a mode for fully functional people to call any number or navigate

to any location. A normal voice-style GPS unit is geared toward drivers. This would be geared toward slow walkers who need very simple instruction. The primary difficulty of this project is getting at the interfaces to the GPS and maps. The secondary problem is selling the Alzheimer idea to a GPS manufacturer, after showing them your laptop software prototype.

II. SYSTEM SPECIFICATIONS

Our main purpose is that we provide convenient software for Alzheimer patient. It will provide easy and fast user access. It will also connect doctor and patients relative to the system.

The structure of proposed system consists of three main parts. Each of them has specific functions as following:

1. Physical devices: Physical devices or GPS tracker is attached in patient body(necklace, leg band).

2. Alarm notification: If patient is out of range a set of emergency steps (including sending alarm message via GPS connection) is executed.
3. Position Allocation:- Patient's position is monitored continuously to ensure the ability of reaching the patient in emergency situation.

The system can simultaneously covers different stages of operations, the main stages are:

1. Registration and Information Updating: in this phase, the system handles the patient's registration or patient relative's registration process.
2. Monitoring: the system, in this mode, monitors patients' health status and their position.
3. Emergency Handling: at any emergency instance (i.e., when the patient is lost), the system performs a set of operations to make sure that the patient will be safe and, if needed; a patient can reach him as soon as possible.

There are three main types of players in the Alzheimer with GPS tracker system; each of them has its own responsibilities, and plays a specific role in the system.

1. Patient: it is the main player in the system. GPS tracker is attached in patient body & Patient should be supplied with Android mobile device that follows the patient location (using the embedded GPS receiver). Figure (1) shows patient location.

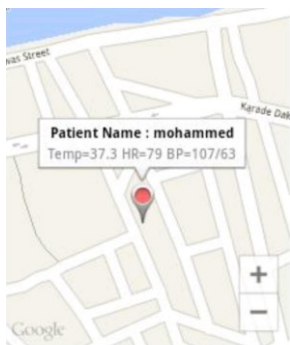


Figure 1.1 Map

2. Doctor: Present time we don't know the knowledge about Alzheimer but in future we know when they give medicine, how to treat and work with Alzheimer's patients so we need a doctor in our system
3. Guide: Present time we don't know the knowledge about Alzheimer but in future we know all the health tips related the patients & how to treat and work with Alzheimer's patients so we need a Guide in our system

III. SYSTEM WORKFLOW

Two types of paths the system can flow. The first one works with the ordinary case; in such case the system just collects the patient's data periodically. The second path is followed when emergency case is occurred.

GPS tracker (physical device) is attached in the patient's body (necklace, leg band) to the device wirelessly which gives the patient mobility within the coverage area, When the patient touches the unit, or holds it, it starts giving verbal instructions on how to walk home, repeating as necessary. If the patient is too far from home to walk, it phones (patient's Android based device) home and reports the location of the patient, using street names, as well as latitude and longitude.

Also, it receives the GPS signals, using internal GPS receiver, in order to register patient's location data. When the patient changes his location the position. The family at home can at any time phone the unit and get it to report the ambient sounds, let them talk to the patient and find out where the patient is. The patient does not need to do anything to answer the call. For less far gone people, the unit can be programmed to, for example, guide the patient to a friend's house, or a store and back home again. The unit might also have a mode for fully functional people to call any number or navigate to any location. A normal voice-style GPS unit is geared toward drivers. This would be geared toward slow walkers

who need very simple instruction. The primary difficulty of this project is getting at the interfaces to the GPS and maps. The secondary problem is selling the Alzheimer idea to a GPS manufacturer, after showing them your laptop software prototype.

IV. CONCLUSION

In this study, the Alzheimer GPS tracking is successfully supporting the Alzheimer's Real Time Location System functionality. Alzheimer's real time location is a relieve tool in reducing the caregiver burdens in a closed monitored wandering resident. The Alzheimer's real time location also helps the caregiver in monitoring the resident movement for their safety and enhances the security by alerting the caregiver with resident location at the day care center in real time. The caregiver can plan a good management for each resident by knowing the resident visiting frequency of visiting place zone in the day care center. Hence, the care for resident will be more efficient and enhanced with better management by the caregiver. The proposed analysis process eases the caregiver in determining the residents spatial movement for behaviour study and planning residents care management plans.

V. REFERENCES

1. P. Hii, W. Chung, A Comprehensive Ubiquitous Healthcare Solution on an Android Mobile Device, *Sensors* (14248220), Vol. 11, Issue 7, pp.6799-6815, 2011.
2. U. Varshney, Patient monitoring using infrastructure-oriented wireless LANs, *Int. J. Electronic Healthcare*, Vol. 2, No. 2, pp.149-163, 2006.
3. B. Holl, Design and Development of a Mobile Computerized Glucose Management System to Support Inpatient Care for Patients with Diabetes, Master's thesis, Graz University of Technology, Austria, 2011.
4. G. Koshmak, An Android Based Monitoring and Alarm System for Patients with Chronic Obtrusive Disease, M.Sc. thesis, Örebro University, Sweden, 2011.
5. M. A. Matin, R. Rahman, Android-Based Telemedicine System for Patient-Monitoring, North South University, Bangladesh, 2012.
6. P. Sundaram, Patient Monitoring System Using Android Technology, *International Journal of Computer Science and Mobile Computing*, Vol. 2, Issue 5, pp.191-201, May, 2013.
7. V. Pournaghshband, M. Sarrafzadeh, P. Reiher, Securing Legacy Mobile Medical Devices, *Wireless Mobile Communication and Healthcare - Third International Conference, MobiHealth*, pp. 163-172, Paris, France, November 21-23, 2012.
8. M. Aminian, H. R. Naji, A Hospital Healthcare Monitoring System Using Wireless Sensor Networks, *J Health Med Inform* 4: 121. doi:10.4172/2157-7420.1000121, 2013.
9. S. Khor, K. Nieberl, K. Fugedi, E. Kail, Telemedicine ECG-telemetry with Bluetooth technology, *Proceedings of the Computers in Cardiology*, Rotterdam, pp. 585-588, 2001.
10. N. P. Jain, P. N. Jain, T. P. Agarkar, An embedded, GSM based, multiparameter, realtime patient monitoring system and control—An implementation for ICU patients, *Information and Communication Technologies (WICT)*, IEEE, pp. 987-992, 2012.
11. J. S. Adivarekar, A. D. Chordia, H. H. Baviskar, P. V. Aher, S. Gupta, Patient Monitoring System Using GSM Technology, *International Journal Of Mathematics And Computer Research*, Vol. 1, issue 2, pp. 73-78, 2013.
12. M. B. Albujeer, L. E. George, Simple Model for Coding Geographic Location Coordinates, *International Journal of Scientific & Engineering Research*, Vol. 4, Issue 7, pp. 2468-2470, July, 2013.
13. L. Goldman, A. I. Schafer, *Goldman's Cecil Medicine*, 24th edition, Elsevier publishing, 2012.