Handling Medical Emergencies Through Better Interaction With Real-World Entities via GSM

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ABSTRACT

This article aims to provide innovative system for tracking and monitoring health objects using RF transmitters and receivers. We begin by proposing a prototype for the system and perform a simulation to check the feasibility of this project before applying it to a real-world scenario. In this simulation model, we test the capability of the transmitter and receiver to communicate effectively and also display the data sent by the transmitter. As a result, highly flexible wireless controlled systems would enable the bridging of the distance between the user and the electronic device. This would provide an easier access to real world entities by just using mobile phones, without the need to be physically present near the object. Also, the addition ensures authenticated access to resources in view of security aspect. The workings of the system can be divided into two phases: phase one contains an RF transmitter and a receiver coupled with a central database; phase two contains a GSM modem with a unique SIM linked to the central database via GSM network. In the first phase of the system, the RF transmitters are tagged to the objects of everyday use and have the capability to transmit signals and the paired receiver detects the transmission of the tagged object and stores its corresponding location in the central database. This is created specifically for information maintenance of the tagged objects. In the second phase of the system, a mobile phone is used to query the location of any tagged objects based on its availability in the vicinity, by sending a message to the SIM connected to a GSM modem. Object if present, the GSM modem fetches the location and other relevant information from the central database and encapsulates this information into a message which is sent back to the mobile device or phone that has requested the information.

KEYWORDS

Communication Technology, GSM, GSM Networks, RF Transmitters

INTRODUCTION

Day by day the growth in technology facilitates competitive and less expensive devices; keeping this in mind we tend to put forward a flexible system to play a major role in future computing systems. The aim of the system is to ensure a degree of freedom for an individual to locate health objects in his/her surrounding area without the need of any physical movement. This is done by monitoring everyday physical processes or entities and keeping track of it by a central database, provides novel

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features to the system. What currently hinders most of the conceived parallel similar type of systems from becoming commercial applications, however, is a lack of adequate infrastructure of following types: First, a well-marked sensing infrastructure must be installed in area or block wise to perform an efficient and ordered sensing task. Second, a communication infrastructure is required to transmit the data within the network of the connected devices; this involves distribution and aggregation of readings from multiple transmitters and so on. Thirdly, a commercial infrastructure is needed to manufacture and deploy the transmitting, receiving and communicating devices like GPS system, and to generate revenue from the system.

Compared to these hindrances, we put forward a system with a unique approach to establish a relationship between RF transmitters and receivers using a microchip, and link it to the GSM network, to provide an uninterrupted access to the data by the user. The incorporation of mobile phones in our system provides a unique opportunity to overcome most of the difficulties, indicating the ease of operating the system by an individual without the need of a specialised knowledge. Sensing technologies can be implemented using transmitters and a receiver and, data from the central database can be accessed from the mobile handset via wireless mobile networks. Wide area communication is a core property of the cellular network. It enables the integration of data from many transmitters and the support of applications with backend services such as data storage in a central system. The effectiveness of the system is shown by locating important day to day entities or objects, whether moveable or fixed, and querying their information by various users irrespective of their location.

Making use of these unique properties of mobile phones, RF components and the cellular network, we present a system which is mainly concerned with monitoring and locating objects by means of mobile phones, and sensing functionality carried out by the objects that are tagged with the hardware i.e. the transmitters in the vicinity, and are detected by the corresponding receivers. And the location is queried from the central database using a mobile phone by means of a GSM modem. The dual technique employed in this project is: First, object sensing using the RF transmitters and receivers. Second, user interface provided by the mobile phone aid for sensing and querying the personal items simultaneously. This system allowed us to identify a particular challenge that is common to many applications that makes use of large people-centric infrastructure provided by mobile phones and the cellular network. The challenge is to answer the question of whether a system based on RF transmitters and receiver can provide sufficient coverage in relatively short period of time. In an extensive evaluation, which includes a real-world experiment with our object localization prototype, we therefore analysed the properties of the coverage obtained given a wide range of different operational parameters such as the distance between transmitter and receivers, objects in the path of transmission and range of the transmitters used. One of the issues dealt in this article is the ability to query for an object in the database regardless of the distance. In addition to confirming the feasibility of object localization based on mobile phones, the study can provide valuable guidelines for the design of future people-centric sensing systems in general.

Security aspect is an essential factor that surrounds any network based application. Strengthening the security aspect of the system strengthens its application, thereby indicating a linear relation among the two. It is important to realize and ensure a reliable secured network based application, without which the entire system and its application tend to be meaningless. Therefore, security presents sacrosanct part of the system, hence needs to be addressed with due diligence. Keeping this in mind we tend to put forward few security related operations of the system that will increase the overall credibility and reliability of our task being carried out. Various security process that is Iris scan, Finger print secured access and Encrypted password access are discussed.

**Literature Survey**

The concept of GSM Based Health Monitoring System (Rupa Chandra, Asha Rathee, Pooja Verma, Archana Chougule, 2014) paper developed based upon the incorporation of wireless communications into medical applications to transform the personal healthcare. The aim of this project is to construct a
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