

Abstract

1. **DUAL FUNCTIONAL RECONFIGURABLE MOBILE ROBOT.**

Fast innovation speed in the hardware and software technologies in the field of embedded robot systems, it becomes more and more necessary to develop applications based on methodologies, which take to account the easiness of future modifications, updates and improvements.

According to these requirements, mobile robot is designed to convey basic knowledge about the basic block technologies that make up a robot. This mobile robot can function as autonomous mobile robot as well as wireless mobile robot.

In autonomous mode with the help of infrared light sensor input robot follows wooden maze. In wireless mode, robot movement is decided according to the speech of the human interfaced to PC , power supply & communicating devices.

2. **DEVELOPMENT OF ZIGBEE BASED STREET LIGHT CONTROL SYSTEM**

Industry of street lighting systems are growing rapidly and going to complex with rapid growth of industry and cities. To control and maintain complex street lighting system more economically, various street light control systems are developed. Nevertheless most of developed systems have some drawbacks.

So we are going to develop new light control system which can overcome old systems drawbacks. We surveyed various street light control systems and analyzed its characteristics. Through these efforts, we found that common drawbacks of most light control systems are uneasiness of handling and difficulty of maintenance.

To reduce uneasiness of handling and difficulty of maintenance in operating light control system, we designed new street light control system by using Zigbee communication technique.

In this thesis, we describe on the H/W design of new street light control system designed by using Zigbee communication protocol.

Index Terms

H/W Design, Remote Control terminal, Street Light Control System, Zigbee,

3. SMART WIRELESS TEMPERATURE DATA LOGGER USING IEEE 802.15.4/ZIGBEE PROTOCOL

This Paper proposed a portable wireless data acquisition system for temperature in real time process dynamics. Process variables (like temperature, pressure, flow, level) vary with time in certain applications and this variation should be recorded so that a control action can take place at a defined set point This paper proposes an 8 bit embedded platform for a sensor having a network interface using the 802.15.4, ZigBee protocol that is specially designed for the sensors network.

The ZigBee protocol is a wireless technology developed as an open global standard to address the unique needs of low-cost, low power, wireless sensors network .This wireless data logger senses and monitors the variations in the local temperature thereby transmits the data within the range to an assigned embedded processor based server.

Received temperature is displayed on a local liquid crystal display (LCD) on assigned server and simultaneously on a computer.

4. A HANDS GESTURE SYSTEM OF CONTROL FOR AN INTELLIGENT WHEELCHAIR

When an unfortunate event affects the motor capacity of a person, it is necessary to use devices like wheelchairs that offer a means o displacement for patients with motors problems of the lower limbs.

Some patients that cannot manipulate the wheelchair with their arms due to a lack of force or psychomotor problems in the superior members, request electric wheelchairs, frequently manipulated with joysticks; however the joystick manipulation is even not

practical and frequently it must be handle with the mouth.

The present article presents the partial results in the development of a wheelchair controlled by an intuitive interface, where the instructions are given by hand gesture instructions. The advances are presented in the realization of the control software using a Webcam and some distances and presence sensors controlled by a microcontroller that establishes the communication with a program developed in Labview.

Keywords

Digital image processing, hand gesture control, Labview, wheelchair control.

5. RESEARCH OF TRAFFIC SIGNAL LIGHT INTELLIGENT CONTROL SYSTEM BASED ON MICROCONTROLLER

A development of distributed area traffic signal lights control based on singlechip microcontroller is described. With the core of AT89C51, infrared receiver receives the infrared signal coming from launcher.

The demodulation signal is treated by single chip microcontroller. The single chip microcontroller controls the communication system to transmit the data.

The paper introduces total scheme and system structure, also the hardware design of the system in detail. By experimental testing, when the key '1' is pressed ,time setting of east west, south north direction, emergency car, imperials increase ,decrease ,holding are effectively controlled.

6. DESIGN AND IMPLEMENTATION OF REAL TIME VEHICLE TRACKING SYSTEM

Tracking systems were first developed for the shipping industries to determine the position of ships and boats in the sea. Initially passive systems were developed to support in tracking and navigation for location based applications.

For the applications that require real time location information of the vehicle, these systems cannot be employed, because they store the location information in the internal storage that can only be accessed when vehicle is available. Recently, Automatic Vehicle Location (AVL) systems are developed and deployed in numerous environments.

These systems are capable of transmitting vehicle's location information in real time. In these systems, the device installed in the vehicle can transmit the location information in real time to a remote data centre, instead of storing into local storage, using some radio network.

In this paper, we present the design and implementation of a real time AVL system that incorporates a hardware device installed in the vehicle and a remote Tracking Server (TS).

7. A WIRELESS DATA ACQUISITION AND TRANSMISSION SYSTEM DESIGN

In the field of modern wireless communication, there are mainly some technologies that provide solutions to the wireless data transmission network, such as: GSM, CDMA, 3G, WiFi.

These solutions make network work with high efficiency and good quality, but still with high cost. So it was difficulty in popularizing in with low cost and at the circumstance of infrastructure less or infrastructure destruction.

According to this situation, in this paper, the key components of the information terminal and the wireless receiving modules on the data collection and wireless transmission network were designed with the principle of transceiver RF and 51 series of single chip computer as the core hardware, besides, combining with the current technology on the wireless ad hoc networks, a short-range wireless data sampling and transmission network was putting up , which provides a low powered and high-performance wireless data communication system. Then, an available solution to the wireless data communications was

put forward, and this solution was good at stronger real-time response, higher reliability requirement and smaller data amount. Through software and hardware debugging and actual measuring, this system based on our solution had work well, reached the expected goal and been already successfully applied to wireless vehicle system.

8. APPLICATION OF ZIGBEE FOR POLLUTION MONITORING CAUSED BY AUTOMOBILE EXHAUST GASES

Gases emitted from automobile exhausts have been monitored using a gas sensor arrays. The information from the sensor array has been transmitted to a remote location by ZigBee wireless technology. Quantitative and qualitative analysis of gases has been conducted at the remote location by a computer.

Programs have been developed in LabView and excel to display data and alarm conditions. Results indicate that unlike the automobiles using natural gas the unleaded and premium unleaded fuel automobiles can have significant effect on the environment conditions due to their high level of toxic gas emission.

9. AN INTERNETBASED INTERACTIVE EMBEDDED DATAACQUISITION SYSTEM FOR REALTIME APPLICATIONS

In this paper, we present the principles of a lowoperationalcost but flexible Internet based data acquisition system. The main core of the system is an embedded hardware running a scaled down version of Linux: a popular choice of operating system for embedded applications.

The embedded device communicates through general packet radio service (GPRS), which makes it accessible from anywhere in the world through a Web server built into the embedded device. In addition, GPRS provides a bidirectional real-time data transfer allowing interaction.

The proposed system eliminates the need for server software and maintenance. A novel approach is introduced to minimize the operational costs while operating with

a large amount of data. The system is demonstrated to be suitable for different embedded applications by attaching several real-time modules through appropriate interfaces.

10. BODY TEMPERATURE AND ELECTROCARDIOGRAM MONITORING USING AN SMSBASED TELEMEDICINE SYSTEM

A mobile monitoring system utilizing short message service with lowcost hardware equipment has been developed and implemented to enable transmission of the temperature and ECG signal of a patient.

Communication between a mobile phone client and a remote Smartphone (or PDA) consultation/server unit is achieved through programming the client using attention commands (at commands), and the protocol description unit (PDU) mode.

The experimental setup can be operated for monitoring from anywhere covered by the Cellular (GSM) service by exchanging SMS messages with the remote mobile device.

At the consultation unit, a dedicated application software is required to manage the follow of SMS messages from the mobile and display the temperature and ECG of the patient.

11. BLUETOOTH DATA ACQUISITION SYSTEM BASED ON ARM

In response to the complexity of the cable, the occurrence of accidents and completing the task without cables in industrial field, an embedded Bluetooth data acquisition system which was combined with Bluetooth wireless networking communication technical and data acquisition technical, based on LPC2129 and Bluetooth chip is designed to reduce cable connection.

The major difference with other data collector is that it has achieved the wireless data transmission after the A/D conversion. It is also simpler in circuit, stronger in integration anti interference, mobility and practicality, it can be widely used in the complex environment of the industrial field.

12. DEVELOPMENT OF ZIGBEE MOBILE ROUTER FOR SUPPORTING NETWORK MOBILITY IN HEALTHCARE SYSTEM

In this paper, we propose a Network Mobility (NEMO) based ZigBee Mobile Router architecture and operations for supporting the network mobility of ZigBee network.

Also, we present a design and implementation of the ZigBee mobile router for healthcare system. The architecture is particularly useful to manage patient's mobility where each patient is equipped with ZigBee sensor nodes.

13. THE MOBILE ECG TELEMONTORING SYSTEM BASED ON GPRS AND GPS

This presentation provides a description of a new mobile ECG telemonitoring system.

The portable ECG monitoring terminal in the system consists of GPRS and GPS module in order to send the ECG signal data through GPRS network with the position information of the user, and an accelerometer is embedded in the terminal to sense the sudden posture change of the user, this will enable the monitoring center in the system give an immediately response to the user who suffer a suddenly cardiac failure.

14. MOBILE ROBOTS IN MINE RESCUE AND RECOVERY

Mining accidents have occurred since the early days of mining. There were a total of 525 mining disasters (incidents with five or more fatalities) in both coal and metal/nonmetal mines from 1900 through 2007 in the United States, resulting in 12,823 fatalities.

Most of these disasters involve mine rescue teams, which are specially trained to perform search and rescue operations in extremely hostile environments.

Robots have a great potential to assist in these underground operations, searching ahead of rescue teams and reporting conditions that may be hazardous to the teams.

When explosive conditions exist or when heavy smoke or unstable ground

conditions prevent team members from entering a mine, robots can become an invaluable tool.

15. A BLIND NAVIGATION SYSTEM USING RFID FOR INDOOR ENVIRONMENTS

A location and tracking system becomes very important to our future world of pervasive computing, where information is all around us. Location is one of the most needed information for emerging and future applications.

Since the public use of GPS satellite is allowed, several stateoftheart devices become part of our life, e.g. a car navigator and a mobile phone with a builtin GPS receiver. However, location information for indoor environments is still very limited. Several techniques are proposed to get location information in buildings such as using a radio signal triangulation, a radio signal (beacon) emitter, or signal fingerprinting. Using radio frequency identification (RFID) tags is a new way of giving location information to users.

Due to its passive communication circuit, RFID tags can be embedded almost anywhere without an energy source. The tags stores location information and gives it to any reader that is within a proximity range which can be up to 1015 meters for UHF RFID systems. We propose an RFID based system for navigation in a building for blind people or visually impaired.

The system relies on the location information on the tag, a user destination, and a routing server where the shortest route from the user current location to the destination. The navigation device communicates with the routing server using GPRS networks.

We build a prototype based on our design and show some results. We found that there are some delay problems in the devices which are the communication delay due to the cold start cycle of a GPRS modem and the voice delay due to the file transfer delay from a MMC module.

16. AN INTEGRATED ZIGBEE AUTOMATION SYSTEM: AN ENERGY SAVING SOLUTION

ZigBee is the latest wireless technology which provides three lowest solutions, low data rate, low power consumption and low cost. One of the ultimate goals of ZigBee is to provide a energy saving solution.

Low power consumption and power management are important characteristics of ZigBee. To explore the concept of energy saving, an integrated ZigBee automation system (ZAS) for lighting automation and power management is investigated.

In this paper, the details of system design for ZAS are described including the system overview, deployment as well as the power management algorithms.

17. GSMBASED NOTIFICATION SPEED DETECTION FOR MONITORING PURPOSES

This paper presents the design of GSMbased black box system for speed detection. The idea is clear that the current existing black box system only notify the driver through alarm systems and information is recorded in the black box.

However, this could be impractical for the authorized personnel to check every public transports. With the rapid development of GSM application in monitoring purposes, the current system can be integrated to facilitate the authorized personnel and to ease the monitoring process as well.

The purpose of this research is to design and integrate a new black box system integrated with GSM notification system to send alert information to traffic authorized personnel or Transport Department through Short Message Services (SMS).

The scope of this research is primarily concerned on express buses which prone to accident.

18. MOBILE WEB SERVER FOR ELDERLY PEOPLE MONITORING

In this paper we propose a mobile system for monitoring of moving objects, namely tracking elderly people. This system aims to provide help for people with some kind of memory loss disease, namely Alzheimerpsilas. It is capable of

providing the geographic position of the person carrying the mobile equipment, both by a patient request (pressing a key to send a message) or anytime through a webpage consult by an external authorized person.

The portable device consists of a GSM/GPRS module, a GPS module, a I/O and MCU module and a web server. It also incorporates hands free voice communication capability, which allows communication with a distant person, in the event of an unexpected incident. The problem of external web server dependency is tackled by implementing an embedded web server in the mobile device.

This significantly reduces the user expenses that are limited to the data communication between any authorized person and the mobile system. Additionally, we have included a trail accelerometer sensor to constrain the current consumption while the device is not moving, which can also detect the falling of the patient.

19. TRAVEL TIME PREDICTION UNDER HETEROGENEOUS TRAFFIC CONDITIONS USING GLOBAL POSITIONING SYSTEM DATA FROM BUSES

Travel time information is a vital component of many intelligent transportation systems (ITS) applications. In recent years, the number of vehicles in India has increased tremendously, leading to severe traffic congestion and pollution in urban areas, particularly during peak periods.

A desirable strategy to deal with such issues is to shift more people from personal vehicles to public transport by providing better service (comfort, convenience and so on). In this context, advanced public transportation systems (APTS) are one of the most important ITS applications, which can significantly improve the traffic situation in India.

One such application will be to provide accurate information about bus arrivals to passengers, leading to reduced waiting times at bus stops. This needs a real time data collection technique, a quick and reliable prediction technique to calculate the expected travel time based on real time data and informing the passengers regarding the same.

The scope of this study is to use global positioning system data collected from public transportation buses plying on urban roadways in the city of Bangalore, India, to predict travel times under heterogeneous traffic conditions.

20. WIRELESS REPROGRAMMING OF VEHICLE ELECTRONIC CONTROL UNITS

The new generation vehicles will have many sophisticated systems such as drivebywire, navigation, traffic congestion control, road guidance, and advance crash warning. Already, dozens of onboard computers control complex vehicle functions. From time to time, an onboard computer needs reprogramming.

Currently, dealers manually reprogram software in onboard computers via a wire based electrical connection. Updating software wirelessly is a preferred alternative to the manual method because the vehicle need not be physically present at a repair facility to perform the update.

Wireless software reprogramming will save customers' and technicians' time and money. In this paper, we present a wireless download algorithm for reprogramming of vehicles' electronic control units, using current wireless technologies. Our algorithm proposes a hybrid infrastructure that combines wireless unicasting and multicasting data delivery.

21. RESEARCH AND DEVELOPMENT OF THE REMOTE I/O DATA ACQUISITION SYSTEM BASED ON EMBEDDED ARM PLATFORM

With the rapid development of the field of industrial process control and the fast popularization of embedded ARM processor, it has been a trend that ARM processor can substitute the single chip to realize data acquisition and control. A new kind of remote I/O data acquisition system based on embedded ARM platform has been researched and developed in this paper, whose hardware platform use 32bit embedded ARM microprocessor, and software platform use the uC/OSII core of real time multitask operating system which is open source and can be grafted, cut out and solidified.

This system can measure all kinds of electrical and thermal parameters such

as voltage, current, thermocouple, RTD, and so on. The measured data can be displayed on LCD of the system, and at the same time can be transmitted through RS485 or Ethernet network to remote DAS or DCS monitoring system by using Modbus/RTU or Modbus/TCP protocol.

The system has the dual redundant network and long distance communication function, which can ensure the disturb rejection capability and reliability of the communication network.

22. DEVELOPMENT OF ENERGY MANAGEMENT AND WARNING SYSTEM FOR RESIDENT: AN ENERGY SAVING SOLUTION

This paper is proposing the household energy management and warning system for energy saving solution. The overall control scheme is mainly governed by a 8051 microcontroller.

There are four subsystems to be concerned

- (i) Air condition's inverter control,
- (ii) Light control,
- (iii) power switching control (for general loads such as television, radio, Fan, etc.),
- (iv) Household electricity usage warning system. This whole system can Monitor the power usage and display through a LCD monitor.

Then, it can warn the users through LED bulbs when the power usage is getting close to the monthly prescribed energy usage levels.

An experiment conducted by installing this system in an apartment room has shown a satisfactory result in reducing power usage level.

23. APPLICATIONS OF SHORTRANGE WIRELESS TECHNOLOGIES TO INDUSTRIAL AUTOMATION: A ZIGBEE APPROACH

Bluetooth, ultrawideband (UWB), ZigBee, and WiFi are four popular wireless standards for shortrange communications. Specifically, ZigBee network is an emerging technology designed for low cost, low power consumption and low rate wireless personal area networks (LRWPAN) with a focus on the devicelevel communication for enabling the wireless sensor networks.

In this paper, after a brief overview of the four shortrange wireless standards, the developed ZigBee platforms, ITRI ZBnode, have been presented for wireless sensor networking applications.

Moreover, design issues for ZigBee industrial applications and the experimental implementation have been demonstrated via a multihop tree network.

24. DEVELOPMENT OF PEDESTRIANTOVEHICLE COMMUNICATION SYSTEM PROTOTYPE FOR PEDESTRIAN SAFETY USING BOTH WIDEAREA AND DIRECT COMMUNICATION

We propose a prototype pedestriantovehicle communication system which uses a cellular phone and wireless communication to improve the safety of pedestrians. One of the effectual measures against pedestriantovehicle accidents is to make each of pedestrians and drivers find the others and recognize the risk from out of sight and with time to spare for avoidance of accidents.

A pedestriantovehicle communication system was developed by using a cellular phone and a car navigation system equipped with GPS and wireless communication function.

We focused on intersections as a traffic scene to be covered by the system. After data was exchanged via FOMA in a wide area, information could be exchanged between a pedestrian and a vehicle via WLAN 20 m, 100 m away from an intersection to different directions in about 20 ms. And, the system could give an alarm to pedestrians and cars with collision risk.

25. USING RFID TECHNOLOGY TO DEVELOP AN ATTENDANCE SYSTEM AND AVOID TRAFFIC CONGESTION AROUND KINDERGARTENS

This paper aims at developing applications based on active RFID and wireless GSM message to construct an active student attendance system that sends the message to parents cellular phone informing whether their children are safely arrive in classroom at morning.

Meanwhile, the system is also used to relieve the traffic congestion around kindergartens especially while the parents are driving cars to pick up their children after class at rush or on rainy days.

Finally, the encountered problems are summarized to discuss according to our developing experience.

26. REMOTE POWER ON/OFF CONTROL AND CURRENT MEASUREMENT FOR HOME ELECTRIC OUTLETS BASED ON A LOWPOWER EMBEDDED BOARD AND ZIGBEE COMMUNICATION

In this paper we have designed a remote power On/Off control and a current measurement for electric outlets, based on both an embedded board and on ZigBee communication.

This design consists of two parts: the ZigBee control module and the server module. The ZigBee control module contains several controllable outlets, a current measurement circuit, the ZigBee receiving and transmission circuit and a microcontrol unit. The measurement circuit senses the current and sends back a signal to the server module through the ZigBee. The measurement data of the current and voltage detection can be stored in the embedded board, and they can be designed to become aware of any overload and to send out a message to the circuit breaker for safety. We use Visual Basic as the interface software for the design of the graphic user

interface to provide a user-friendly operation of a typical home's electric outlets.

27. SHOPPING PATH ANALYSIS AND TRANSACTION MINING BASED ON RFID TECHNOLOGY

The RFID technology is gaining strong support from business for various applications such as supply chain management, access control, airline luggage management, etc. Due to the cost consideration, it is still not a replacement for the traditional item level Bar Code.

Therefore, tracking and analyzing the shopping paths and purchasing behaviors of customers in a superstore such as Wal-Mart is still a challenging task.

In this paper, we propose a RFID deployment model for collecting shopping paths and purchased items of customers. Algorithms based on Customer Access Matrix (CAM) and Customer Transaction Mining (CTM) are then proposed for mining preferred shopping paths and their relationships to the purchased items.

In the experiments, we build a dataset generator for generating shopping paths and purchased items of customers, and the results show that our model is applicable to real applications.

28. THE ELECTRONIC PASSPORT AND THE FUTURE OF GOVERNMENT ISSUED RFID BASED IDENTIFICATION

Passports and other identification documents may be enhanced using recent advancements in technology. Various national and international bodies are pursuing machine readable approaches with biometric information.

In particular, the International Civil Aviation Organization (ICAO) has adopted standards whereby passports can store biometric identifiers. Countries that participate in the Visa Waiver Program (VWP) began issuing electronic passports in 2006.

However, the selection of technologies remains questionable due to privacy and security concerns.

This paper examines policy regarding these electronic approaches and developments toward electronic data storage and transmission. Radiofrequency identification (RFID) devices for electronic passports and other existing identity documents are discussed.

29. INTELLIGENT FLEET MANAGEMENT SYSTEM WITH CONCURRENT GPS & GSM REALTIME POSITIONING TECHNOLOGY

Fleet management system is a rapid growing industry. This system helps institutions to manage vehicle fleet efficiently and effectively through smart allocation of resources. In this project, an intelligent fleet management system which incorporates the power of concurrent Global Positioning System (GPS) and Global System for Mobile Communications (GSM) real-time positioning, Front-end intelligent and web based management software is proposed.

In contrast to systems which depend solely on GPS positioning, the proposed system provides higher positioning accuracy and is capable to track the target at areas where GPS signals are weak or unavailable.

The terminal is powered by Front-End Intelligent Technology (FEI), a comprehensive embedded technology that is equipped with necessary artificial intelligence to mimic human intelligence in decision making for quicker response, better accuracy and less dependence on a backend server. With less dependency on the backend, large scale fleet management system can be implemented more effectively.

Results from the test bed shown that user can monitor and track the real time physical location and conditions of their vehicles via Internet or Short Message Service (SMS). The web based fleet management software also helped the user to manage fleets more effectively.

30. WIRELESS ACCESS MONITORING AND CONTROL SYSTEM BASED ON DIGITAL DOOR LOCK

In this study, we propose a novel wireless access monitoring and control system based on the digital door lock, which is explosively used as a digital consumer device. Digital door lock is an electronic locking system operated by the combination of digital key, security password or number codes.

This paper presents a prototype of the proposed system and shows a scheme for the implementation. To implement the system with ZigBee network protocol, four types of modules are developed, ZigBee module, digital door lock module, human detection module, and ZigBee relay module.

ZigBee module is designed to support wireless sensor network and also used for the ZigBee tag to identify the access objects. Digital door lock module is implemented as a digital consumer device to control the access system as well as locking system. It is very convenient system for the consumers and has extensible and flexible characteristics.

That is, it can be used as a home security system by the ZigBee network with additional sensor devices. Therefore, it can be a good practical product for the realization of an access monitoring and control system. It also can be applied tthe real market for home networking system.

Furthermore, the system can be extended to another service such as a connection between mobile phone and home networking system

40. WIRELESS SMOKE DETECTION SYSTEM

This paper attempts to integrate RF technology into smoke detector circuitry. In the proposed system, a smoke detector upon senses smoke activates its alarm, sends a low voltage signal to all other smoke detectors in the vicinity.

This low voltage signal activates the individual relays in the other smoke

detectors causing them to emit a tone that alerts residents that one of the smoke detectors senses smoke. In this system the transmitter and receiver are installed in a unit and the need for a base is eliminated.

The individual smoke detectors are equipped with all the electronics required to both send and receive signals. They are battery operated and therefore they require no external connections. They can be installed by a homeowner just as they would a normal smoke detector.

The proposed design is aiming to have Cost efficient system, Compact design, easily expandable, Simple to install, Replaceable components. The system was tested indoor and outdoor with different distance and with the presence of noise.

41. INTELLIGENT CAMPUS MULTIAPPLICATION RFID INTEGRATION SYSTEM

RFID (radio frequency identification) technology is quickly evolving in the safe campus; using RFID technology can manage personnel and assets of the campus. The system can be obtained more efficient and automation.

Data collected through RFID can validate from traditional sources. RFID system has many applications and we combine the RSA algorithm to raise the safety of the system. RFID environment needs exchange data smoothly in heterogeneous networks.

This paper explained presents the current solutions to security and privacy of RFID system of the campus and wireless sensor networks (WSN) application. So it enhances the security of the RFID system of the campus

42. DESIGN OF A WIRELESS PHYSIOLOGICAL PARAMETER MEASUREMENT AND MONITORING SYSTEM

In this paper we present the design of a wireless, lowcost system that can be used to monitor physiological parameters, such as temperature, flex angle, pulse rate and oxygen saturation in the blood, of a human subject.

The system consists of an electronic device which is worn as a hand glove, by an elderly or atrisk person. Using several sensors to measure different vital signs, the person is wirelessly monitored within his own home.

The device also sends an alarm or SMS to a receiver unit that is connected to a computer. This sets off an alarm, allowing help to be provided to the patient. A prototype of the device has been fabricated and extensively tested with good results.

43. DESIGN AND REALIZATION OF REMOTE CONTROL IN SMART HOME SYSTEM

The technology of remote control is suit to home status monitor, so remote control is one of core functions in smart home system.

After analyzing typical framework of smart home system, software framework of main controller in smart home is proposed.

Deeply analyzing remote monitoring technology which is suitable to smart home, thorough comparisons about implementation schemes of remote control are did, and implementation schemes based on ARM and WinCE are introduced in details.

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Tracking systems were first developed for the shipping industries to determine the position of ships and boats in the sea. Initially passive systems were developed to support in tracking and navigation for location based applications.

For the applications that require real time location information of the vehicle, these systems cannot be employed, because they store the location information in the internal storage that can only be accessed when vehicle is available.

Recently, Automatic Vehicle Location (AVL) systems are developed and deployed in numerous environments. These systems are capable of transmitting vehicle's location information in real time.

In these systems, the device installed in the vehicle can transmit the location information in real time to a remote data centre, instead of storing into local storage, using some radio network.

In this paper, we present the design and implementation of a real time AVL system that incorporates a hardware device installed in the vehicle and a remote Tracking Server (TS).

45. A MULTISENSINGRANGE METHOD FOR POSITION ESTIMATION OF PASSIVE RFID TAGS

Recently, the RFID tag system is paid attention to as an identification source. Each RFID tag is attached to some object. With the unique ID of RFID tag, a user identifies the object provided with the RFID tag, and derives appropriate information about the object.

One of the important applications of RFID technology is the position estimation of RFID tags. It can be very useful to acquire the location information concerning the RFID tags. It can be applied to navigation systems and positional detection systems for robots etc.

In this paper, we propose a new position estimation method of RFID tags by using

a probabilistic approach. In this method, mobile objects (person and robot, etc) with RFID readers estimate the positions of RFID tags with plural communication ranges. We show the effectiveness of the proposed method by computer simulations.

46. RFID FOR PERSONAL ASSET TRACKING

The proposed mobile device uses radio frequency identification (RFID) to keep track of registered objects that are within range of the user. The goal is to provide a new security solution for keeping belongings that are carried around.

The device consists of a mobile RFID reader and a control program with a graphical user interface. The assets are attached with RFID tags with unique identifiers for each tag by using EPC Gen2. The graphic interface allows the user to create a catalog of objects that are to be kept track of Personal items such as keys, wallets, passports, jewelry, watches, glasses, medicine, portable flash drives, electronic devices (cell phone, PDAs, laptops, mp3 players, calculators) can be tracked using this system. The first phase of this project is to demonstrate how the assets will be tracked.

The benefits of having such a device is that the user can be notified if the object is lost, the time the object was lost, and the identity of the object that was lost. The demonstration of such a device becomes much more useful when it is combined with a Global Positioning System (GPS) receiver.

A GPS receiver can be used to keep record of where the RFID reader is when the assets are detected. This combination of the RFID reader and GPS receiver gives the user information on where the object was last detected. If the object was lost and not stolen, the object can be retrieved by going to where the RFID reader last detected the object.

47. A FRAMEWORK FOR AN ENDTOEND SECURE WIRELESS SMART HOME SYSTEM

This paper describes a complete framework for an end toend smart home monitoring and control system. The communication with all components of the system is done using a variety of wireless technologies.

The system incorporates security features at both ends that prevent unauthorized access as well as assign privileges to the users.

The complete prototype smart home system was implemented and it supports three main services: monitoring the status of devices, controlling their settings through configurations that are device dependent, and periodic notification of the status of devices.

The prototype system has a modular structure that enables the incorporation of additional components and services.

48.





