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Human Monitoring System Using PDA

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ABSTRACT: This paper deals with, this project consist of power supply, PIR sensor, LCD. The aim of the project is too time consuming and power saving. Using PIR sensor we are switching ON &OFF the home appliances. This project is deserved for the purpose of saving the electricity and to save the wear and tear of the appliance. As per the block diagram the PIR sensor is installed in the room where the entry of the people is detected. This PIR when detected switches on the appliance. When the PIR doesn't senses the people the light will switch off automatically.

LINTRODUCTION

In recent years, due to the proliferation of high-speed communication networks and increased Internet use, interest in the smart home has grown. In general, the smart home seeks to offer appropriate intelligent services that actively assist in the resident's activities such as housework, amusement, rest, and sleep. To enhance the resident's convenience and safety, devices such as home appliances, multimedia components, and Internet devices should be interconnected by a home network, and they should be controlled or monitored remotely using a television (TV) or personal digital assistant (PDA).

In particular, attention has been focused on location determination as a way to offer high-quality intelligent services while considering the human factors such as patterns of living, health, music style, and the resident's personal idiosyncrasies, i.e., if the smart home can recognize the resident's pattern of living or health, then home appliances should be able to anticipate his or her needs and offer appropriate intelligent service more proactively. For example, in a passive service environment, the resident controls the operation of the heating, ventilating, and air conditioning (HVAC) system. In contrast, the smart home would control the temperature and humidity of a room according to the resident's needs.

Various indoor location-aware systems have been developed to recognize the resident's location in the smart home or smart office. In general, indoor location-aware systems have been classified into three types according to the measurement technology, as shown in Table I: triangulation, scene analysis, and proximity methods. The triangulation method uses multiple distances from multiple known points. Examples include active badges and active bats that use infrared sensors and ultrasonic sensors.

II.LITERATURE SURVEY

An embedded system is a special-purpose computer system designed to perform a dedicated function. Unlike a general-purpose computer, such as a personal computer, an embedded system performs one or a few pre-defined tasks, usually with very specific requirements. Since the system is dedicated to specific tasks, design engineers can optimize it, reducing the size and cost of the product. Embedded system comprises of both hardware and software. Embedded system is fast growing technology in various fields like industrial automation, home appliances, automobiles, aeronautics etc.

The very simplest embedded systems are capable of performing only a single function or set of functions to meet a single predetermined purpose. In more complex systems an application program that enables the embedded system to be used for a particular purpose in a specific application determines the functioning of the embedded system.

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The applications software on such processors is sometimes referred to as firmware. The simplest devices consist of a single microprocessor (often called a "chip"), which may itself be packaged with other chips in a hybrid system or Application Specific Integrated Circuit (ASIC). Its input comes from a detector or sensor and its output goes to a switch or activator which (for example) may start or stop the operation of a machine or, by operating a valve, may control the flow of fuel to an engine.

Application Areas:

Nearly 99 per cent of the processors manufactured end up in embedded systems. The embedded system market is one of the highest growth areas as these systems are used in very market segment.

Consumer appliances:

At home we use a number of embedded systems which include digital camera, digital diary, DVD player, electronic toys, microwave oven, remote controls for TV and air-conditioner, VCO player, video game consoles, video recorders etc. Today's high-tech car has about 20 embedded systems for transmission control, engine spark control, air-conditioning, navigation etc. Even wristwatches are now becoming embedded systems[1].

Industrial automation:

Today a lot of industries use embedded systems for process control. These include pharmaceutical, cement, sugar, oil exploration, nuclear energy, electricity generation and transmission. The embedded systems for industrial use are designed to carry out specific tasks such as monitoring the temperature, pressure, humidity, voltage, current etc., and then take appropriate action based on the monitored levels to control other devices or to send information to a centralized monitoring station. In hazardous industrial environment, where human presence has to be avoided, robots are used, which are programmed to do specific jobs.

Computer networking:

Computer networking products such as bridges, routers, Integrated Services Digital Networks (ISDN), Asynchronous Transfer Mode (ATM), X.25 and frame relay switches are embedded systems which implement the necessary data communication protocols. For example, a router interconnects two networks.

Telecommunications:

In the field of telecommunications, the embedded systems can be categorized as subscriber terminals and network equipment[2]. The subscriber terminals such as key telephones, ISDN phones, terminal adapters, web cameras are embedded systems. The network equipment includes multiplexers, multiple access systems, Packet Assemblers Disassemblers (PADs), satellite modems etc. IP phone, IP gateway, IP gatekeeper etc. are the latest embedded systems that provide very low-cost voice communication over the Internet

Wireless technologies:

Advances in mobile communications are paving way for many interesting applications using embedded systems[3][4]. The mobile phone is one of the marvels of the last decade of the 20'h century. It is a very powerful embedded system that provides voice communication while we are on the move.

Security:

Security of persons and information has always been a major issue. We need to protect our homes and offices; and also the information we transmit and store[5]. Developing embedded systems for security applications is one of the most lucrative businesses nowadays. Security devices at homes, offices, airports etc. for authentication and verification are embedded systems. Encryption devices are nearly 99 per cent of the processors that are manufactured end up in~ embedded systems[6][7].

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2.1.2 Overview of Embedded System Architecture:

Every embedded system consists of custom-built hardware built around a Central Processing Unit (CPU). This hardware also contains memory chips onto which the software is loaded. The software residing on the memory chip is also called the 'firmware'. The embedded system architecture can be represented as a layered architecture as shown in Fig.

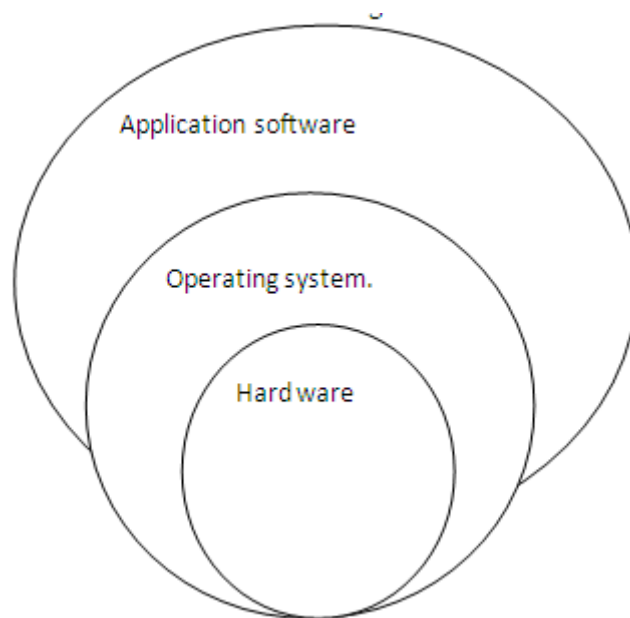


Fig 2.1: Layered Architecture of an Embedded System

The operating system runs above the hardware, and the application software runs above the operating system. The same architecture is applicable to any computer including a desktop computer. However, there are significant differences[8]. It is not compulsory to have an operating system in every embedded system. For small appliances such as remote control units, air conditioners, toys etc., there is no need *for* an operating system and it can write only the software specific to that application. For applications involving complex processing, it is advisable to have an operating system[9]-[11]. In such a case, it needs to integrate the application software with the operating system and then transfer the entire software on to the memory chip.

- Central Processing Unit (CPU)
- Memory (Read-only Memory and Random Access Memory)
- Input Devices
- Output devices
- Communication interfaces
- Application-specific circuitry

Central Processing Unit (CPU):

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The Central Processing Unit (processor, in short) can be any of the following: microcontroller, microprocessor or Digital Signal Processor (DSP). A micro-controller is a low-cost processor. Its main attraction is that on the chip itself, there will be many other components such as memory, serial communication interface, analog-to-digital converter etc. So, for small applications, a micro-controller is the best choice as the number of external components required will be very less. On the other hand, microprocessors are more powerful, but it needs to use many external components with them. DSP is used mainly for applications in which signal processing is involved such as audio and video processing.

Memory:

The memory is categorized as Random Access Memory (RAM) and Read Only Memory (ROM). The contents of the RAM will be erased if power is switched off to the chip, whereas ROM retains the contents even if the power is switched off. So, the firmware is stored in the ROM. When power is switched on, the processor reads the ROM; the program is executed[12].

Input devices:

Unlike the desktops, the input devices to an embedded system have very limited capability. There will be no keyboard or a mouse, and hence interacting with the embedded system is no easy task. Many embedded systems will have a small keypad-it press one key to give a specific command. A keypad may be used to input only the digits. Many embedded systems used in process control do not have any input device for user interaction; they take inputs from sensors or transducers and produce electrical signals that are in turn fed to other systems[13].

Output devices:

The output devices of the embedded systems also have very limited capability[14]. Some embedded systems will have a few Light Emitting Diodes (LEDs) to indicate the health status of the system modules, or for visual indication of alarms. A small Liquid Crystal Display (LCD) may also be used to display some important parameters.

Communication interfaces:

The embedded systems may need to, interact with other embedded systems as they may have to transmit data to a desktop. To facilitate this, the embedded systems are provided with one or a few communication interfaces such as RS232, RS422, RS485, Universal Serial Bus (USB), and IEEE 1394, Ethernet etc

Application-specific circuitry:

Sensors, transducers, special processing and control circuitry may be required for an embedded system, depending on its application[15][16]. This circuitry interacts with the processor to carry out the necessary work. The entire hardware has to be given power supply either through the 230 volts main supply or through a battery. The hardware has to design in such a way that the power consumption is minimized[17].

III.CONCLUSION

As one example of a non terminal-based location-aware system based on the proximity method, we presented a PILAS that recognizes the resident's location to provide location-based intelligent services in the smart home. To increase the accuracy of PILAS, this correspondence introduced an enhanced location-recognition algorithm using a Bayesian classifier. For developing the Bayesian classifier, to defined a 2-D feature vector for sensor output, created three classes of sensor output patterns, and estimated the parameters of the multivariate Gaussian probability density function.

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