

# “Spiraling invasive Computing keen on a Life Saving Tool Using IOT Device”

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## ABSTRACT

Technology is moving from personal computers to handheld, intelligent and everyday devices with embedded technology and connectivity. Pervasive computing is a new dimension of personal computing that integrates mobile communication; Ubiquitous embedded computer systems, consumer electronics and the power of internet. With pervasive computing, we envision a future in which computation becomes part of the environment. In this paper, we propose our idea to turn pervasive computing into a life saving tool by using Iot devices. Our vision is that the application of pervasive computing technologies can significantly help patients manage their diseases and hence improve patient adherence to medical treatments. The scenario that we envision is one in which smart medication augmented with pervasive computing technologies – informs the patient about his blood pressure, sends reminders to take medication, informs doctors and relatives of elderly patients about their condition. If the patient’s condition is critical, he is informed to be admitted to the nearby hospital. From a technological perspective, we propose the combination of smart objects (temperature sensors), the patient’s mobile phone and internet.

## INTRODUCTION

The goal of pervasive computing, which combines current network technologies with wireless technologies, voice recognition, internet capability and artificial intelligence, is to create an environment where the connectivity of devices is embedded in such a way that the connectivity is unconstructive and always available. It is a numerous, causally accessible, often invisible devices. It makes a computer so natural that we use it without even thinking about it. It provides access to relevant information and applications through a new class of ubiquitous, intelligent appliances that have the ability to easily function when and where needed. Projecting this trend into the future, we envision an explosion of interconnected small devices from watches to cars that make our lives easier and more productive. A parallel revolution lies in the network-enabling these pervasive computing devices by providing transparent,

ubiquitous access to e-business services. In general, it is roughly the opposite of virtual reality.

**Any time/anywhere---> any device--->any network--->any data.**

Any time: 7 days X 24 hours, global, ubiquitous access  
Any device: pc, laptops, cell phone and so forth.

Any network: access, notification, data synchronization, queued transactions, wireless optimization, security, content adaptation, development tools, device and user management

Any data: e-mail, personal information manager, inter-intranet, public services

## PERVASIVE COMPUTING

Imagine a world filled with all sorts of electronic devices - traditional desktop computers, wireless laptops, smart cell phones, tiny wristwatch pagers, clever little coffee pots. Imagine all these devices talking easily to one another to bring you the news you need when you need it, regardless of where you are. You have just imagined the future of Pervasive Computing (PvC).

## PRINCIPLES

The basic principles of pervasive computing are

- Decentralisation
- Diversification
- Connectivity
- Simplicity

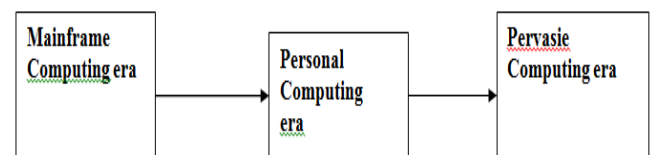


Fig1: Flow of Control

## DECENTRALISATION

The shift from a centralized view to a strongly decentralized computing landscape is the first paradigm of pervasive computing. During mainframe era, powerful supercomputers provided their processing capacity to dumb terminals. With the upcoming personal computer the client-server architecture was introduced which shifted computing power from server systems to the client workstations. Pervasive computing goes one step further and distributes the responsibilities between

the variety of small devices, each of which take over specific tasks and functionality. The ability to use applications and information on mobile devices and synchronize any IOT devices with network based systems or other devices is a new task arising from that decentralisation. Pervasive devices and applications are often embedded into a service infrastructure, like a cellular phone network. Decentralisation makes it necessary for service providers to administer their deployed software and deliver to the customer's devices from remote.

### **DIVERSIFICATION**

Pervasive computing introduces an entirely new view of functionality: there is a clear move from universal computers challenging performance, price and functionality to diversified devices which aim at best meeting the requirements of a specific group of users for a specific purpose. The new gadgets appearing in these days in association with pervasive computing, such as WAP phones, screen phones, or handheld computers, offer only a highly customized functionality for a particular application context. Applications are a seamless integration of software and hardware. They are intended to be used in a specific situation and optimized for exactly that environment. A consumer will own and use several devices in parallel, which might have some overlap in functionality, but he will have preferred tools for each specific purpose. One major challenge arising from the increasing diversity is how to manage the different capabilities of those manifold devices. Each delivery platform has its own characteristics making it difficult to provide common applications.

### **CONNECTIVITY**

The third paradigm of pervasive computing is the strong demand towards connectivity. Manifold devices are seamlessly integrated in an IT world without boundaries. Handheld computer collaborates in the cellular phone via infrared in order to synchronize data over a wireless network. Alternatively, the same handheld can connect via serial port to a LAN. The vision of pervasive connectivity is "Everybody's software, running on everybody's hardware over everybody's network". One approach for achieving connectivity is to base the applications on common standards. Open standards have to be established which are prepared to face the demands of the described manifold and differentiated devices. New standards like WAP, Bluetooth have been created by large cross-industry initiatives, defining the necessary communication protocols as well as the underlying physical connections. The Internet has evolved to be the backbone of worldwide private and public networks.

### **SIMPLICITY**

Pervasive devices are very specialised tools that are not optimized for general use. They perform the task for which they have been designed very well from a usability point of view. These lines up with the fourth paradigm of pervasive computing; aiming at simplicity of usage. The magic words are availability, convenience, and ease of use. Information access and management must be applicable without spending significant time learning how to use technology. While proper selection and education of user groups was required to manage the complexity of traditional computer systems, pervasive computers are intuitive to use and might not even require the reading of a manual. Pervasive computing postulates a holistic approach: Hardware and software should be seamlessly integrated and target the very specific needs of an end-user. Speech recognition, one handed operation are just a few features of a mature human computer interfaces. Providing all these in a small and cheap device is definitely a challenging task for developers.

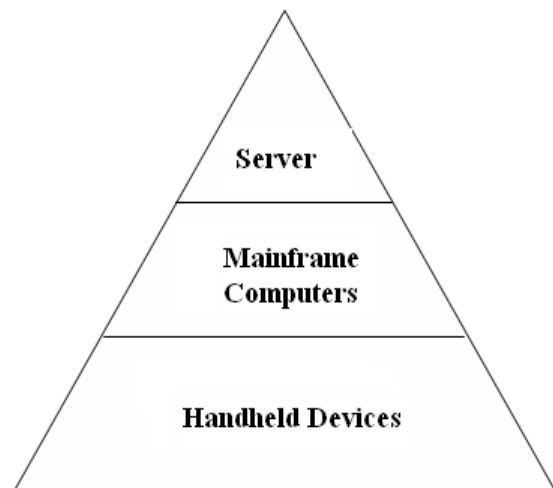


Fig 2: Architecture

### **APPLICATIONS**

Pervasive computing will have strong impact on our society with new technical possibilities, entirely new kind of applications and services arise, bringing benefits for individuals and business. Some of the important applications are

- Airline check-in and booking
- Sales force automation
- Health care
- Car information systems
- Email access via WAP and voice
- Entertainment industry
- Manufacturing industries and logistics
- Mobile phones
- PC access through watches

### PROPOSED WORK

There are several sensors to detect human blood pressure. A patient suffering from blood pressure will be fixed with this sensor in his wrists. When blood pressure either increases or decreases, these sensors detect them and inform them to the patient's IOT DEVICES. The IOT DEVICES is set in such a manner that it automatically sends information to the hospital server via internet. The hospital server analyses the information, prepares a report regarding the patient's condition. Then it sends the report to the doctor. In accordance to the report, it alerts the patient's relative and also the patient(through IOT DEVICES). When the patient is somewhere outside and if he moves to a critical unconscious state, the sensor will automatically detect it and it will be indicated to the hospital server. Hence, the patient's relative will be informed with the problem and the patient can be rescued immediately.

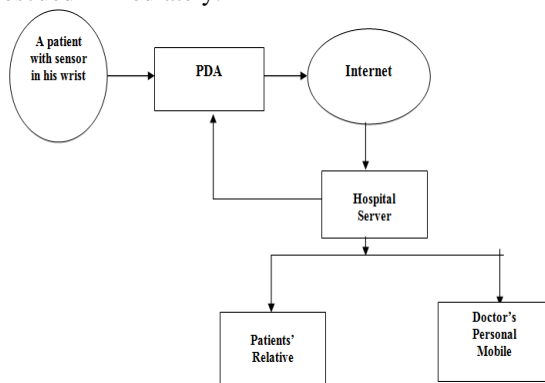


Fig 3:Shows how the system functions

### PROPOSED ALGORITHM

STEP 1:

Sensor monitors blood pressure.

STEP 2:

Input port receives from embedded wireless networked sensor nodes.

STEP 3: If (BP == normal)

then

goto step 1.

else

goto next step.

STEP 4:

Read values from IOT DEVICES [using internet]

STEP 5: If (BP == LOW)

Then

Send report A to doctor's mobile.

Else

Send report B to doctor's mobile.

STEP 6:

Send message in accordance to patient's relative.

STEP 7: Goto step 1.

### CONCLUSION

Pervasive computing is quite a bit different, because it assumes a distributed environment model. It has the potential to dramatically alter how people use devices to connect and communicate in everyday life. In this paper, we have described the implementation of pervasive computing in medicine – as a life saving tool. Thus, we stand at the beginning of yet another era in computers – pervasive era.

### FUTURE ENHANCEMENTS

It is difficult to predict the future evolution in a rapidly changing environment. Almost every business process involving people will integrate pervasive computing into marketing and delivery channels. Highly personalised services and the ability to control communication and services via easy to use interfaces are key to gaining acceptance. Mobile communication and the Internet are converging into an overall mobile computing infrastructure with the next generation of the Internet. Security and privacy will be guaranteed by the extensive use of encryption and public key infrastructure. Pervasive portals servicing millions of concurrent users will demand web application servers and scalable server infrastructure with high performance and availability. Managing the rapid change in the pervasive computing space will be a major challenge for all participants.

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