WEARABLE COMPUTING AND RELATED ISSUES

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Many important advances have been boosted by the use of inexpensive computer emulations. In Early days when funding and professional support was minimal, important advances were made by relatively few researchers. As said by The Henry Petroski, 1994 The Evolution of Useful Things may take time, but the incremental results pay the way. Currently, the Wearable computing field enjoys a resurgence of interest and a corresponding increase in funding. Wearable computing offers a personalized environment following the user. It will lead to a new form of synergy between human and computer, characterized by long-term adaptation through constancy of user-interface. In wearable computing, the strength lies in having complete control over the devices that you carry with you

Keywords: Neural Network, Wearable Computers, Laptops, PDA's etc.

1. INTRODUCTION

A wearable computer is a small portable computer that is designed to be worn on the body during its use. Wearable computers are usually either integrated into the user's clothing or can be attached to the body through some other means, like a wristwatch and hands-free cell phone. A wearable computer is a kind of accessory that can be worn every day without effort. It is meant to be as minimal as possible in order to free the user from its physical shape and form, Hands free cell phones with cell phone applications have become the most successful wearable computers these days. There are different PDAs and laptop computers which are designed for hand-held use. The concept of wearable computing was first brought forward by Steve Mann, with his invention of the 'WearComp' in 1979 created a pioneering effort in wearable computing. The six devices to be introduced represent the new frontiers in the development of wearable technology. They are:

1. Nomad – Wearable Audio Computing;

2. DyPERS – Dynamic Personal Enhanced Reality System;

3. Wearable Cinema;

4. Affective Computers;

5. FAST – Wearable Computing for Factory Personnel;

6. Computerized Clothing.

Some more examples of wearable computers are like:

In 2001 IBM developed and publicly displayed two prototypes for a wristwatch computer running Linux, but the product never came to market.

In 1998 Seiko marketed the Ruputer, a computer in a (fairly large) wristwatch, to mediocre returns.

"Dick Tracy" style watch Created by Steve Mann, a professor at U of T, 2000 is a Combination of wristwatch and imaging device which Send and receive video over short distances Computerized Clothing ex. Business Suit easily accessible to the internet and important documents.

Space exploration

Motor Bike Racing – Crew Pit

Head and Shoulder Cameras

Sign Language – Glove

Fig.1: A Style Watch Created by Steve Mann

2. PROPERTIES OF WEARABLE COMPUTERS

There are various properties for a wearable computer which are given below:

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- Wearable computing is a application of neural networks which is said to be worked on Three A's Principle

  Always on,

  Always ready,

  Always accessible

  Unlike a laptop computer which must be opened up, switched on, and booted up before use, it is always on and always running.

- Others can't observe or control it unless you let them. Others can't determine system status unless you want them to, e.g. clerk at refund counter in department store where photography is prohibited can't tell whether or not you are transmitting wireless video to a spouse for remote advice, in contrast to camcorder technology where it is obvious you are taking a picture when you hold it up to your eye.

- A wearable computer must be an adaptive system with an independent processor. That is the system must adapt to the whims and fancies of the user. The system must be perpetually on and must provide seamless information transfer whenever the user requires it.

- Like user programmable device that is always on and always ready and accessible. The always ready capability leads to a new form of synergy between human and computer characterized by long-term adaptation through constancy of user—interface. Its expressiveness property allows the wearable to be expressive through the medium, whether as a direct communication medium to others, or as means of assisting the production of expressive media.

- Wearable computer is that a mobile computer should not just be a machine it is &/will be an integral part of our every day outfit (hence wearable), always operational and equipped to assist us in dealing with a wide range of situations. The computing unit maybe anything small but powerful enough.

3. Various Attributes of Wearable Computing

The signal flow paths are, in fact, attributes of wearable computing, and are described, that follows, from the human's Point of view.

1. Ambulatory: Mobile, roving, and multitasking, means user can do other things while using it e.g. you can type and do other things while walking, etc.

2. Perceptibility: Almost always observable, It can get your attention continuously if you want it to. The output medium is constantly perceptible by the wearer.

3. Communicative: It can be used as a communications medium when user wants it to. Instead of asking the user to continuously select preferences from a menu, the affective wearable gets to know its wearer's preferences by recognizing and responding to signals that carry emotional information.

4. Controllability: Very much Responsive by nature. It has both operational and interact ional constancy. In automated processes user can manually override to break open the control loop and become part of the loop at any time He/She wants to. It is a device that is always with the user, and into which the user can always enter command and execute a set of such entered commands. Unlike a laptop or a palmtop, wearable computer is constantly turned on and interacts with the real-world task.

5. Sensing: Electronic circuits are built entirely to distribute data and power and perform touch sensing. The most salient aspect of computers is their reconfigurability and their generality, that their function can be made to vary widely, depending on the instructions provided for program execution. With the wearable computer this is no exception.

6. Privacy: The wearable computer serve as an intermediary for interacting with untrusted systems, such as third party digital anonymous clash cyber wallets.

4. Applications

Applications of wearable computers are widely spread over various fields like:

1. Medical Monitoring: Medical monitors have benefited from technological advances in the field of wireless communication, processing and power sources. These advances have made possible miniaturization and prolonged operating times of medical monitors, as well as their global integration into telemedical systems.

2. Microgravity Space and Other Non-Desktop Environments In-Shuttle Microgravity Space, Astronauts working inside a spacecraft could wear the units and use them for entering and retrieving data. A wireless link could be established between the wearable and the spacecraft's main computer, permitting the exchange and storage of information.

3. Earth-Bound\Non-Desktop Environment: A wearable is also well suited to work "in the field." This includes data collection and retrieval in out-of-doors situations, such as: field service, inventory, surveying, etc. As well, highly mobile in-door work can also benefit from having a wearable. For example, inspectors performing on-site evaluations of factories can take notes and call-up information on past evaluations. When not entering information, their hands are still free to point at things, grasp objects, make hand gestures, etc.

4. Safety Net: A further improvement to the personal safety device includes the use of biosensors where the quotient of heart rate divided by foot step rate. Suppose that someone were to draw a gun and demand cash from the wearer. The likely scenario is that the wearer's hear rate would increase without an increase in the foot step rate to explain it. Such an occurrence would be programmed to trigger message to other members of the personal safety network. Personal Safety Network.

5. Military Applications: The smart shirt project at Georgia Tech was originally financed by the navy, beginning in 1999. At that time the shirt was being designed for soldiers in combat, so that medical personnel could find the exact location of a bullet wound. To pinpoint the location of the bullet penetration, a light signal is continually be sent from one end of the optical fibre to a receiver on the other end. This fibre is also connected to a personal status monitor worn on the hip. If the light from the emitter does not reach the receiver inside the monitor, this signals that the soldier has been shot. The light signal then bounces back to the point of penetration, which helps doctors to find the exact location of the bullet wound.

5. CONCLUSION

The wearable computer demonstrated serves as a platform in which new ideas can be tested and tried out. In Today's days, when unlimited information is made available to the user through, it is found increasingly that the user suffers from information overload. That is, unwanted information is being provided to the user and this causes less stress being placed on the required information. The various system determines the method of presentation of the information based on the time of the day, physical position, scheduled tasks, message content, and level of interruption and acoustics of the environment so the People are carrying more and more electronic products In a near future, the aim to reduce the size of the equipment and make it usable from standard components off the shelf. To put it simply, it should just work. It is clear that these technologies will enable us to extent the desktop resources to anywhere in travel.

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