DIGITAL JEWELRY

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Abstract: - Mobile computing is beginning to break the chains that tie us to our desks. Jewelry is worn for many reasons – for aesthetics, to impress others, or as a symbol of affiliation and commitment. Basically, jewelry adorns the body and has a very little practical purpose. The combination of microcomputer devices and increasing power has allowed several companies to begin producing fashion jewelry with embedded intelligence i.e. Digital Jewelry. Digital Jewelry is the fashion jewelry with embedded intelligence. It can be best defined as wireless, wearable computers that allow you to communicate by ways of e-mail, voicemail, and voice communication. This paper helps us understand how various computerized jewelry (like earrings, necklace, ring, bracelet, etc.) will work with embedded intelligence.

Keywords- Mobile computing, microcomputer, embedded intelligence, Digital Jewelry, wireless, wearable computer, computerized jewelry.

I.   INTRODUCTION

The latest wireless computers craze has been to be able to wear wireless computers. Best examples are wearable biosensors, smart watches etc. The "Digital Jewelry" looks to be the next sizzling fashion trend of technological wave. In the next wave of mobile computing devices, our jewelry might double as our cell phones.

The combination of shrinking computer devices and increasing computer power has allowed several companies to begin producing fashion jewelry with embedded intelligence. Today, manufacturers can place millions of transistors on a microchip, which can be used to make small devices that store tons of digital data. Digital Jewelry appears to be one of the biggest growing promotions of its time. The whole concept behind this is being able to communicate to others by means of wireless appliances. The other key factor of this concept is to stay fashionable at the same time.

II.   What is Digital Jewelry?

Digital Jewelry is the fashion jewelry with embedded intelligence. It can be best defined as wireless, wearable computers that allow you to communicate by ways of e-mail, voicemail, and voice communication. This paper helps us understand how various computerized jewelry (like earrings, necklace, ring, bracelet, etc.) will work with embedded intelligence.

Imagine being able to email your boss just by talking into your necklace. Digital Jewelry can help you solve problems like forgotten passwords and security badges. These devices have a tiny processor and unique identifiers that interact with local sensors. Digital Jewelry is nascent catchphrase for wearable ID devices that contain personal info like passwords, identification, and account info. They have potential to be one-in-all replacements for your drivers' license, key chain, business cards, credit cards, health insurance cards, corporate security badge, and loose cash. They can solve a common dilemma of today's wired world the forgotten password.

III.   Digital Jewelry and its components

Soon, cell phones will take a totally new form, appearing to have no form at all. Instead of one single device, cell phones will be broken up into their basic components and packaged as various pieces of digital jewelry or other wearable devices. Each piece of jewelry will contain a fraction of the components found in a conventional mobile phone. Together, the digital-jewelry cell phone should work just like a conventional cell phone.

The various components that are inside a cell phone are Microphone, Receiver, Touchpad, Display, Circuit Board, Antenna, and Battery.

IBM has developed a prototype of a cell phone that consists of several pieces of digital jewelry that will work together wirelessly, possibly with Bluetooth wireless technology, to perform the functions of the above components.

Fig 1-Earrings

Here are the pieces of computerized-jewelry phone and their functions:
- **Earrings** – Speakers embedded into these earrings will be the phone's receiver.
- **Necklace** – Users will talk into the necklace's embedded microphone.
- **Ring** – Perhaps the most interesting piece of the phone, this "magic decoder ring, is equipped with light-emitting diodes (LEDs) that flash to indicate an incoming call. It can also be

programmed to flash different colors to identify a particular caller or indicate the importance of a call.

▪ **Bracelet** – Equipped with a video graphics array (VGA) display, this wrist display could also be used as a caller identifier that flashes the name and phone number of the caller.

With a jewelry phone, the keypad and dialing function could be integrated into the bracelet, or else dumped altogether – it's likely that voice-recognition software will be used to make calls, a capability that is already commonplace in many of today's cell phones. Simply say the name of the person you want to call and the phone will dial that person. IBM is also working on a miniature rechargeable battery to power these components.

IV. Technical specifications and Display Technologies

Digital Jewelry devices consists of screen or display for information, most likely consisting of 7-16 segment or dot matrix LED's and LCD's. An audio visual or other display could consist of speaker, a single flashing light and a sensor of some kind.

The Digital Jewelry for instance, every alphabet and number system has found representation within the electronic realm and dot matrix. It is used to display Chinese and Japanese characters sets, as can alternative display for LCD's, also often used in watches.

V. Prototype Bracelet by IBM

In addition to changing the way we make phone calls, digital jewelry will also affect how we deal with the ever-increasing bombardment of e-mails. Imagine that the same ring that flashes for phone calls could also inform you that e-mail is piling up in your inbox. This flashing alert could also indicate the urgency of the e-mail. Two of the most identifiable components of a personal computer are the mouse and monitor. These devices are as familiar to us today as a television set.

Fig 2- Prototype Bracelet by IBM

The mouse-ring that IBM is developing will use the company's Track Point technology to wirelessly move the cursor on a computer monitor display. You're probably most familiar with Track Point as the little button embedded in the keyboard of some laptops. IBM Researchers have transferred Track Point technology to a ring, which looks something like a black pearl ring. On top of the ring is a little black ball that users will swivel to move the cursor, in the same way that the Track Point button on a laptop is used.

This Track Point ring will be very valuable when monitors shrink to the size of the watch face. In the coming age of ubiquitous computing, displays will no longer be tied to desktops or wall screens. Instead, you'll wear the display like a pair of sunglasses or a bracelet.

Researchers are overcoming several obstacles facing these new wearable displays, the most important of which is the readability of information displayed on these tiny devices.

Similar Designs:

1. Garnet Ring:

Fig 3- Garnet Ring

The picture shown above is a ring containing a microprocessor. It vibrates to let you know that you have received a message from someone.

2. The Java Ring:

It seems that everything we access today is under lock and key. Even the devices we use are protected by passwords. It can be frustrating trying to keep with all of the passwords and keys needed to access any door or computer program. Dallas Semiconductor is developing a new Java-based, computerized ring that will automatically unlock doors and log on to computers.

Fig 4- The Java Ring

The Java Ring, first introduced at Java One Conference, has been tested at Celebration School, an innovative K-12 school just outside Orlando, FL. The rings given to students are programmed with Java applets that communicate with host applications on networked systems. Applets are small applications that are designed to be run within another application. The Java Ring is snapped into a reader, called a Blue Dot receptor, to allow communication between a host system and the Java Ring.

The Java Ring is a stainless-steel ring, 16-millimeters (0.6 inches) in diameter, which houses a 1-million-transistor processor, called an iButton. The ring has 134 KB of RAM, 32 KB of ROM, a real-time clock and a Java virtual machine, which is a piece of software that recognizes the Java language and translates it for the user's computer system.

VI. Advantages and Disadvantages:

A. Advantages:

1. Security- This is one of the important advantage. Java Ring is used to unlock doors or computers. Hence, we don't need passwords and keys to lock or unlock them. We don't need to remember all those passwords and carry keys. Hence, Java ring does this work.
2. As computing devices are embedded, it is not necessary to carry cells or computers. These devices do that work.
3. It is wireless wearable technology, hence easy to carry anywhere.
4. Supports Dynamic Programming.
5. High durability.
6. It functions in -40 to 70C i.e. even n harsher environment.

B. Disadvantages:

1. Charging capabilities
2. Cost
3. Display is small.

VII. Conclusion:

The use of wearable devices has been growing enormously in today's world. When you compare the size of electronics devices today with that of what it was ten years back, you can think about the kind of advancements happened in the world of technology. It may happen that by the end of the decade, we could be wearing our computers instead of sitting in front of them.

The basic idea behind the Digital Jewelry concept is to have convenience of wearable, wireless computers while remaining fashionably sound. It is hoped to be marketable soon, however, several bugs remain. Charging capabilities and cost are just a sample of the problems that lurk. Digital jewelry, designed to supplement the personal computer, will be the evolution in digital technology that makes computer elements entirely compatible with the human form.

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