



Addis Ababa University

CNCS

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Assignment

Concept Note: *Microsoft surface, MIT the sixth sense, Mood ring, and Google glass*

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Introduction

The dynamic field of technology is constantly pushing the boundaries of human-computer interaction. This assignment explores four distinct and fascinating mobile technologies that illustrate this ongoing pursuit: Microsoft Surface, MIT Sixth Sense, Mood Rings, and Google Glass. Each technology tries to bridge the gap between the physical and digital worlds in different ways, serving different use cases and functionalities.

Microsoft Surface

The Microsoft Surface journey began with the release of the Surface RT tablet in October 2012. The main focus of Microsoft Surface devices was to create a powerful line of touchscreen-based personal computers and tablets that have been carefully designed to enhance the user experience.

These devices bridge the gap between laptops and tablets by offering touchscreen functionality with the power of a traditional PC. These are designed to prioritize a user-friendly experience by running on the familiar Windows operating system optimized for touch interaction. They set themselves apart from many tablets by being able to transform into laptops with the addition of a keyboard attachment, which makes them desirable to users who value both portability and power. This versatility is what differentiates them from traditional laptops and tablets.

The Microsoft Surface integrates standard PC hardware components like processors, memory, and storage while at the same time emphasizing touch interaction. These devices run on the Windows operating system and optimize touch input. Certain models also feature advanced pen support for creative tasks. Microsoft Surface technology is proprietary, exclusively developed, and controlled by Microsoft. Microsoft Surface devices typically use x86 processors, while some lower-powered Surface devices, like the Surface Go, have adopted ARM processors for improved battery life.

The Microsoft Surface products present a variety of devices tailored to specific user needs. From the Surface Laptop's conventional laptop form factor to the Surface Pro's detachable tablet functionality and the all-in-one desktop Surface Studio's creative powerhouse, each device is made to accommodate a wide range of user preferences.

MIT Sixth Sense

The MIT Sixth Sense project introduces a gestural interface worn by the user. This wearable device distinguishes itself from traditional mobile computing by easily integrating digital information with the physical environment. Unlike screen-based devices that demand user focus on a separate display, the Sixth Sense employs a projector to overlay relevant information directly onto surfaces or objects the user interacts with. This was achieved through a combination of a camera, a projector, and various sensors. It fosters a more intuitive and natural

interaction paradigm within the real world. For example, a researcher pointing the Sixth Sense at a specific artifact in a museum will instantly see its detailed description or historical context projected onto the object itself.

The MIT Sixth Sense technology improves natural and intuitive data interaction by effectively integrating digital information with the physical world. This project's initial prototype was first made by Steve Mann in 1994 and 1997 (headworn gestural interface) and 1998 (neck-worn version) and further developed by Pranav Mistry (also at MIT Media Lab) in 2009, which set the stage for further research and paved the way for developments in wearable augmented reality.

The MIT Sixth Sense was equipped with a projector, camera, and various sensors, which enabled users to interact with digital information through gestures. It also opened up possibilities for a wide range of applications, from remote collaboration to real-time data access and information visualization.

Even though the current prototype has drawbacks like bulkiness, low processing power, and short battery life, technological advancements have a lot of promise. The Sixth Sense idea has the potential to completely change how we interact with augmented reality interfaces as hardware component sizes decrease and processing power increases.

Mood Ring

Mood rings were first invented in the mid-1970s and have remained a popular fashion accessory ever since. They utilize liquid crystals with thermochromic properties, changing color based on temperature fluctuations.

Mood rings are popular fashion accessories that claim to measure emotions based on color changes. Despite its trendy appeal, this method's lack of scientific support raises questions about its effectiveness. Their ability to accurately reflect emotions is also limited because a variety of factors affect the color change of the liquid crystals they utilize. These factors include:

- Ambient temperature: A warm environment will cause the mood ring to display a "warmer" color, regardless of emotional state.
- Activity level: Physical activity raises skin temperature, potentially misrepresenting emotional responses.
- Individual baseline skin temperature: People have natural variations in baseline skin temperature, impacting the color reading.

However, researchers are exploring alternative technologies that analyze physiological data (like heart rate, blood pressure, and skin conductance) to develop more accurate tools for understanding emotional states. This could lead to advancements in mood ring technology that

include incorporating multiple sensors and leveraging machine learning for precise emotional state interpretation.

Google Glass

Google Glass pioneered the concept of wearable augmented reality (AR) computing. It used an optical head-mounted display (OHMD) that projected information directly onto the user's field of view. It aimed to enhance human-computer interaction by providing hands-free access to information and functionalities like communication, navigation, and photo/video capture, all overlaid onto the real world.

Google Glass uses voice commands, touch interaction, and an ARM-based processor in user interaction for maximum functionality. This approach differed from existing mobile technologies by aiming to integrate digital information into the user's immediate environment, providing a more intuitive and potentially less disruptive way to interact with technology in daily life.

This tool has broad applications with the goal of enhancing personal productivity, communication, navigation, and even professional tasks. It promised hands-free access to information and management tools, streamlining communication through voice commands, and revolutionizing navigation with AR overlays. Additionally, professionals saw potential in accessing real-time data and recording procedures directly.

However, despite these benefits, Google Glass faced ethical and privacy concerns. The ability to record video and capture photos anonymously sparked worries about potential misuse and invasion of privacy. Additionally, concerns arose regarding user distraction while walking, driving, or engaging in activities requiring full attention.

Google Glass was made available to a small group of developers and testers in 2013, but was eventually withdrawn from the market for consumer use in 2015 due to privacy concerns and social discomfort. The development of the Google Glass Enterprise Edition is still ongoing for particular professional uses. But as technology develops, wearable augmented reality gadgets like Google Glass might have wider adoption across several industries for better user experiences in the future.

Conclusion

The technologies explored in this assignment show the diverse and innovative approaches being undertaken in creating advanced mobile devices, which are constantly evolving. Microsoft Surface prioritizes user experience with a familiar as well as versatile device, while the MIT Sixth Sense extends the boundaries of augmented reality through a wearable gestural interface and projection display. Mood rings, despite their limitations, represent an early exploration of wearable technology for potential emotional state detection. Finally, Google Glass pioneered the concept of wearable AR, showing what the future would look like where information effortlessly integrates with our visual field. As technology continues to advance, we can expect even more innovative and advanced mobile devices to emerge.

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