Navigating the Digital Realm: A Journey into HCI

Kobe City College of Technology

ALL: Hello everyone.
Y: I'm Yuki Adachi.
S: I'm Seiya Irimoto.
M: I'm Makoto Otsuka.

Y: We are students of the Department of Electronics at Kobe City College of Technology.
Y: Today we would like to talk about a field in Electronics that we 3 work on as a graduation project.
Y: The field is called HCI.

Y: Have you ever heard of it? Do you know?
Y: Ok. If you have not, let's start with a quiz.
Y: Which do you believe is correct for HCI?
    A. Hardware Composing Insulator
    B. Hybrid Crystal Ionization
    C. Hyper Communication Interface
    D. Human Computer Interaction
Y: Did everyone pick one?
S: Oh! I know the answer!
Y: Of course, you do.
Y: The correct answer is D, Human Computer Interaction.
Y: Congratulations to everyone who got it right!

Y: HCI, which stands for Human Computer Interaction, is a field that explores the best ways for people to interact with computers and digital devices.
Y: In simple terms, we focus on creating new and user-friendly interfaces.
Y: It involves studies such as sociology, behavioral science, art/design, psychology, communication.
Y: And it involves computer science, information science, software engineering, measurement engineering, and ergonomics.
Y: We will talk especially about CUI and GUI, so tell your friends what you learned today.

S: The most familiar example that is connected to HCI is called GUI.
S: GUI surrounds you in many devices, for instance, in a computer.
S: GUI, which stands for Graphical User Interface, is a method that uses graphical objects and hardware devices, like the mouse and the keyboard, to make your computer life experience better.
S: Graphical objects makes it easier to use the computer by:
    ・giving different colors for what you want to separate
    ・putting icons on the screen to show what kind of function that the button will give
    ・giving animation or movement to the object you want to stand out the most
S: In ways like this, using GUI fulfills the commands that you want the computer to do.
S: For instance, clicking or double-clicking icons on the desktop with a mouse to launch software is possible because of GUI.

M: Does everything use GUI?
S: Actually, no.

S: Sometimes people use CUI to operate the computer.
S: CUI, short for Character User Interface, is a way of showing information by using only letters, numbers, and symbols.
S: People used keyboards to interact with the computer.
S: You would need to know specific commands and syntax to use CUI well.
S: CUI is much faster than moving your mouse with GUI, so some people like me use it.

M: Are CUI and GUI the only ways to interact with computers?
S: No, nowadays, we have next-generation interfaces that you're likely familiar with.
S: For instance, smartphones don't need to use mouses or keyboards to check Twitter or Instagram.
S: You can touch directly on the screen on what you want to see and the smartphone will show you more information about it.
S: Also, with an Alexa in your house it supports your daily life.
S: Do you have an Alexa in your house, Yuki?
Y: Yes, I do.
Y: I use it to turn on the lights when I get home or ask about the weather in the morning just by speaking.
S: That's great!
S: A device that you command with your voice is another way of interacting.
S: Commanding with your voice is much more user friendly, because you can use it like talking to a friend.

M: How about the devices?
M: How does that connect with HCI?
M: Let's look at devices that move the mouse pointer in different ways as an example.
M: This is a normal mouse.
M: To move the mouse pointer, you move your hand around to make the pointer move to the position that you want to.
M: Currently most mice measure movement with an optics system.
M: However, the first mouse was not like this.
M: Do you know who made the first mouse Seiya?
S: Yes, it was made by Douglas Engelbart and his group in 1963.
M: Exactly!
M: The first mouse made by them looked like this.
M: It measured the hand's movement with wheels.
M: It was easy to detect horizontal and vertical movement, but it was hard to move it diagonally.
M: The current mouse solved the problem by changing the way to measure the movement of the hand and made it more user friendly.

M: Another kind of mouse is like this.
M: This is called a trackball mouse.
M: The trackball mouse moves the mouse pointer by moving the ball with the thumb.
M: This type of mouse is very different from the normal mouse, so it takes time to learn how to use it.
M: However, there are big benefits that counterbalance the time that you spend learning it.
M: The trackball mouse allows the user to move the mouse pointer like a normal mouse but without having to move their wrist or arm.
M: This leads to less damage to the user, even if they are using this mouse for a long time.
M: Also, because the movement of the mouse pointer is linked to the movement of the

ball with the thumb, another benefit is that you wouldn't have to use much space to move the mouse pointer around the screen compared to a normal mouse.

M: Using your hands is not the only option to move the mouse pointer.
M: By wearing a particular device your eye movement can be used as a mouse pointer.
M: This is possible because of a technology called eye-tracking.
M: Using eye tracking technology, you would not need a desk to put a mouse on, and you would not have to use your hands at all to move the mouse pointer.
M: This way of moving the pointer still lacks accuracy, but it is believed to be a better option for VR (virtual reality) goggles and AR (augmented reality) glasses in the future.

M: Although each option has good points and bad points, they make the user's experience better, each in a different way.
M: We only looked at mice as an example today, but there are many fascinating ideas included in the hardware being created by the engineers.

Y: We hope you could see the efforts of the engineers that have created the devices that support our daily lives today.
Y: Whether it's improving existing interfaces, or developing something completely new, HCI holds the potential to shape the future of human interaction with technology.
Y: We hope we can shape the future together!
Y: Thank you for listening.