

■Purpose of Exhibition

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What does "Information" really mean? A computer is necessary to process "Information". In this exhibit, we will explain briefly about what "Information" really is, how a computer processes information, and how a computer works.



■Additional Knowledge

[World of Information]

"Mr. Yamada's hat is red." This is a piece of information.
"The music Mr. Suzuki is listening to is Beethoven's." is also information. Come to think of it, it can be said that everything in this world is information for us human.

[Mechanism of the Human Brain]

Here, let us think about the mechanism of our brain. Our consciousness is caused by one of our brain functions, and it occurs as brain cells exchange electric signals. And "the five senses" such as sight, hearing, touch, smell and taste are all felt by electric signal exchange in the brain.

[Five Senses]

What does it mean by "Seeing with Eyes" for example? A light coming into our eyes makes a figure on the retina. At this moment, visual cells in the retina convey electric signals to nerves. We can see things by the signals as being interpreted as an image in our brain. Likewise, hearing, touch, smell, taste and all senses are also transformed into electric signals and are understood in our brain (Chart 1).

<Chart 1>

SenseMajor SensorsMechanismSightEyesLight is turned into electric signals in retina.

HearingEarsSound (air vibration) becomes electric signals in the eardrum.

TouchHands (skin)Depending on how strong a thing touches, skin cells send electric signals to brain.

SmellNoseWhen a substance touches olfactory cells, electric signals depending on the substance are transmitted.

TasteMouthWhen food touches taste receptor cells, electric signals depending on the food are sent.

[Brain and Computer]

Thinking in this way, since a computer runs on electricity, our brain and a computer are very similar. A computer for example can see with a camera and hear with a microphone. These sensors transform the information of things like images and sounds into electric signals.

[Human and Computer]

A brief computer mechanism is like that; whatever the input is from a keyboard, a mouse or a camera, goes into a CPU (Central Processing Unit), and the result comes out of the monitor or printer. Furthermore, a memory device is equipped and the information and processing result can be stored in the computer. This is similar to human activities in which we remember, converse and write based on what we see and hear.

[Robot]

An artificial object that can work as a human is a so-called robot. The robots which appear in SF movies and cartoon shows can see, hear, think, even run and fly in the sky. So far, there has been no such a robot in this world, but some robots that can mimic a few human activities have already been invented. When can we build a real robot made by our various and comprehensive technology?

Article by Tetsuro Ojio, curator