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[TITLE]

Network design is the key to computer performance

[MAIN BODY]

My biggest dream is to design a network of the world's greatest supercomputers and to make the services established by this network available from Japan. My current research believes that "lossless" networks are as essential as any local physical component of a supercomputer required to process huge amounts of information.

Greater significance of networks

Advances in semiconductor technology mean the evolution of all computers continues. This includes digital terminals, PCs, and supercomputers. Inside a single computer, a CPU performing numerical calculations and information processing, a memory device that stores data, and other components are connected by a network. Since this network is inside the computer system, the scale is significantly smaller than wide-area networks like the Internet. But the network inside the computer operates at very high speed.

Computers and their processing capabilities have grown more powerful due to the expanding capacity of CPUs and computer memory. These trends have made the networks connecting the CPU and memory more complex. Efficiently connecting the network now determines the processing speed of a computer system.

Taking a theoretical approach, I study the networks inside computers, a topic rapidly

assuming greater significance. I believe lossless networks represent an essential future technology. As the name indicates, lossless networks are free of data losses. To design such networks, I use a theoretically designed network and examine each and every part of the network where data is lost, then seek to improve those areas. One reward of this research is the actual increase in computer speed and power that results from my theories.

Lossless networks close to you

In any research on technologies, we have to consider practical future applications of the technologies. We can apply the results of research on lossless networks in a surprisingly wide variety of areas. Examples from our daily lives include terminal devices like mobile phones. Applying lossless network technologies can make products smart while adding functionality. It can also improve energy efficiency.

The design of the network used to connect individual PCs becomes an important factor in determining computer performance when we connect several ordinary PCs to build a high-performance computer system similar to a supercomputer.

(Interviewed and summarized by Akiko Ikeda)