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Front-line Researchers

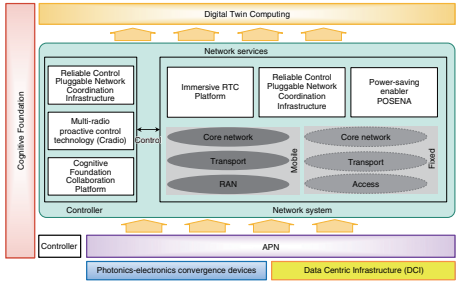
Toshikazu Hashimoto, Senior Distinguished Researcher, NTT Device Technology Laboratories

▼Abstract
As data traffic on networks continues to rapidly increase, highspeed, high-capacity, low-latency communications using light will make it possible to address such huge growth in data traffic. The Innovative Optical and Wireless Network (IOWN) will not only further enhance these features of optical communications but also reduce energy consumption. Optical communications use the properties of light as a wave to transmit digital signals. Although the world of information processing is digital, manipulating light waves in an analog manner makes it possible to process information faster while using less energy. Toshikazu Hashimoto, a senior distinguished researcher at NTT Device Technology Laboratories, is endeavoring to build neural networks and quantum computers by manipulating light waves in an analog manner. We spoke to him about his research on optical device technology for computing using light and its applications as well as his thoughts on the importance of collaborating with people outside one's organization to be stimulated, learn, and take on a difficult challenge.

Feature Articles
Fixed-mobile Convergence Services with IOWN

Activities for Fixed-mobile Convergence Services in the IOWN Initiative

▼Abstract
The IOWN Product Design Center within the NTT IOWN Integrated Innovation Center formulates and drives development and dissemination strategies for the implementation of a fixed-mobile convergence network, which provides seamless and highly experiential end-to-end communications, allowing users access without any requirement that they be aware of the access method or the type of terminal used, whether mobile or fixed. We are also studying how the All-Photonics Network, a key technology in the Innovative Optical and Wireless Network (IOWN) initiative, applies to network services and the creation of new value.



Regular Articles

AI-powered Beamforming for Listening to Moving Talkers

▼Abstract
Speech enhancement extracts the voice we want to listen to from the background noise and is essential for speech applications, such as automatic speech recognition, to work effectively in noisy environments. This article introduces a novel beamforming technique that tracks the speaker's movement and keeps extracting the target speaker's voice, even when the speaker is moving while talking. Beamforming requires spatial information of the target source and interfering signals such as the direction of arrival. We discuss our previously proposed method to estimate time-varying spatial information by incorporating powerful artificial intelligence technology. This method enables high-performance beamforming even when the target speaker is moving.