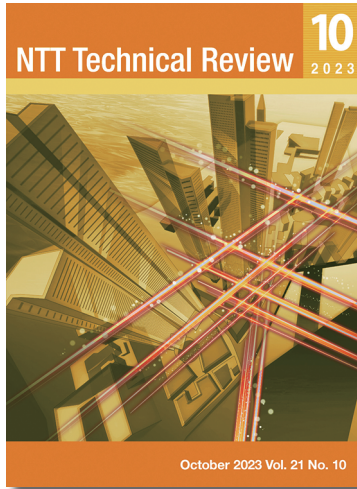


<https://www.ntt-review.jp/archive/2023/202310.html>



Front-line Researchers

- ▶ Takahiro Kawabe, Senior Distinguished Researcher, NTT Communication Science Laboratories

Rising Researchers

- ▶ Yuka Hashimoto, Distinguished Researcher, NTT Network Service Systems Laboratories

Feature Articles

Designing a Future Where Everyone Can Flourish by Sharing Diverse Knowledge and Technologies

- ▶ Design a World Where Everyone Can Flourish by Deciphering the Future of Individuals, Society, and the Earth—Communication Science That Connects the Past, Present, and Future through Diverse Knowledge and Technologies
- ▶ Machine Learning That Reproduces Physical Phenomena from Data
- ▶ Understanding Mindful Awareness in Mindfulness Meditation—Investigation of the Psychological, Physiological, and Neural Mechanisms of Mindfulness Meditation
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Practical Field Information about Telecommunication Technologies

- ▶ A Case Study of Malfunction of Wireless Communication System Caused by Electromagnetic Disturbance at a Construction Site

Front-line Researchers

Takahiro Kawabe, Senior Distinguished Researcher, NTT Communication Science Laboratories

▼ Abstract

Head-mounted displays for cross reality (XR) have been released by various companies and are gradually gaining popularity. Such XR displays present three-dimensional stereoscopic images that take advantage of the characteristics of the human visual system and give users a greater sense of reality. However, illusions are not just created by sight; they are the result of a combination of sight with other senses, such as hearing and touch. Takahiro Kawabe, a senior distinguished researcher at NTT Communication Science Laboratories, is engaged in research on illusions related to the texture of objects created by the combination of multiple senses. We interviewed him about his research on presenting the texture of objects for touchless user interfaces, the fusion of psychology and engineering, and his attitude as a researcher.



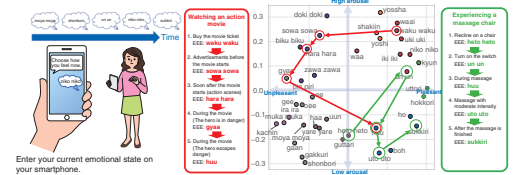
Feature Articles

Designing a Future Where Everyone Can Flourish by Sharing Diverse Knowledge and Technologies

Design a World Where Everyone Can Flourish by Deciphering the Future of Individuals, Society, and the Earth—Communication Science That Connects the Past, Present, and Future through Diverse Knowledge and Technologies

▼ Abstract

Since its establishment, NTT Communication Science Laboratories (CS Labs) has been engaged in researching basic theories that address the essence of human science and information science and creating innovative technologies that will bring about changes in society to achieve communication that reaches the heart between humans and between humans and computers. This article introduces recent research activities of CS Labs from the perspective of deciphering individuals, society, and the Earth.



Machine Learning That Reproduces Physical Phenomena from Data

▼ Abstract

Machine learning has made remarkable progress and has been used successfully in various applications. Our research goal is to use machine learning to simulate physical phenomena. In this article, I introduce machine-learning models that can accurately reproduce physical phenomena from observed data by using prior knowledge of physics. I also discuss the prospects of and value that can be created with this research.

