Research area in Strategic Objective "Advanced interaction technologies within networked intelligent information environment"

6.2.4 The Future of Humans and Interactions

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Overview

Artificial intelligence and technology for big data analysis have been widely been used, and the Internet of things (IoT) has pervaded all areas of life, allowing for the information space and real society to merge. Given this situation, a "super smart society" is expected to emerge, in which every person takes for granted the receiving of optimum, high-quality services, shows his/her abilities, and enjoys a comfortable life.

This research area aims to use various approaches, including information science and technology, to create new methods for augmenting human ability that will contribute to promoting interactions in various situations, such as those between a person and a person, a person and a machine, a person and the information environment, and a person and the real global environment. It furthermore aims to create technologies that will enable high-level harmony between a person and the environment, as well as to deepen our understanding of interaction.

More specifically, this research area covers all aspects of information science and technology, including human-computer interaction, virtual/augmented reality, human augmentation, cooperation/merger between humans and AI, telepresence, wearable computing, communications technology, the smart environment, high-level sensing, and digital fabrication. The research collaborates with such related academic fields as cognitive science, psychology, and neuroscience, which have a focus on these technologies, to promote future-oriented research and development for supporting, understanding, and utilizing interaction.

Interaction technology can be used to deepen mutual understanding between people, support individuals' natural behaviors in accordance with their various lifestyles and abilities, and contribute to building a society that allows everyone to enjoy the full extent of the benefits of rapidly progressing artificial intelligence, IoT, and so on.

This research forms a part of the artificial intelligence/big data/IoT/cyber security integration (AIP) project of the Ministry of Education, Culture, Sports, Science and Technology.

Research Supervisor's Policy on Call for Application, Selection, and Management of the Research Area

Background

An important objective of our country is to realize a "super smart society," in which goods and services are provided to meet various needs, everybody can show and augment their abilities, and each person can live a vivid, comfortable life. The rapid development of artificial intelligence, technology for big data analysis, IoT, and so on is a major driving force for the realization of this super smart society. However, in order for everyone to enjoy the maximum benefits of these innovative technologies, research and development plays an important role. This allows for an understanding of interactions and synergy for optimum utilization in various situations, including interactions between a person and a person, a person and a machine, a person and the information environment, and a person and the real environment.

Regarding invited research proposals

In view of the background described above, this research area covers a wide range of information science and technologies related to humans, as listed below. This allows for collaboration with academic fields such as cognitive science, psychology, and neuroscience, which have a focus on these technologies, in order to invite future-oriented research proposals for supporting, understanding, and utilization interaction.

- Human-computer interaction
- Human augmentation
- Human-robot interaction
- Cooperation and merger between humans and AI
- Intellectual user interface, autonomous/intellectual agent
- Virtual reality (VR), augmented reality (AR), telepresence
- Wearable/cyborg technologies, brain-machine interface (BMI)
- Interaction with real space, smart environment
- Digital fabrication

- Wearable electronics and the like, high-level sensing for the realization of interaction, actuation, material technology
- Cognitive science

For this research, we earnestly anticipate participation by young researchers who can increase Japan's international presence and will actively challenge the world through their proposals. We request participants to have a strong will for seriously competing with and leading the world. Although certain interaction studies appear to be unusual or eccentric, this research area supports researchers who have a vision for the future and are committed to working for its realization, which is the reason for the name of the research containing the word "future." Challenging the world through this PRESTO research will provide an impact that can lead to the realization of science and technology innovation and an improved future society.

For this research area, we request not only upgrading of technology elements, but also considerations and studies on how interaction technology is made useful for society, and how the society utilizes and accepts the technology. It is expected to exhibit a clear vision of a future society to be realized by core information science and technology in order to enable progress in innovative research and development. In this regard, researchers are asked to participate in Science for Society (SciFos) activities during the research period, as a means of information collection for building a vision and streamlining the research direction following adoption. This program allows young researchers to verify which societal values the challenged approach in the research creates, and whether it meets the manifest or potential needs of the society. The researchers themselves leave their laboratories and conduct interviews with business firms regarding the societal values of their research to verify these values and re-implement them. The purpose is to reposition our own research against societal expectations, further develop the task, and upgrade future research. See below for details: https://www.jst.go.jp/kisoken/presto/research/scifos.html

This research area explores relevant issues while collaborating with related research organizations, including the Center for Advanced Intelligence Project of the Institute of Physical and Chemical Research, as a research area of "AIP network laboratories," which constitutes the artificial intelligence/big data/IoT/cyber security integration (AIP project) of the Ministry of Education,

Culture, Sports, Science and Technology, in order to contribute to integrated management of the AIP project.

*A proposal invitation and explanation session is scheduled as below. We eagerly anticipate the attendance of many interested parties.

	Date	Venue
Kyoto	13:00 – 16:00 April 18 (Tuesday)	Mewruparuku Kyoto Conference room B, 5th floor (Higashinoshiokouji-Machi 676-13, Shichijo Kudaru, Higashinotouin Dori, Shimogyo-Ku, Kyoto Shi, Kyoto)
Tokyo	14:00 – 17:00 April 19 (Wednesday)	1st floor hall, Annex to JST Head Office (7 K's Gobancho, Gobancho, Chiyoda-Ku, Tokyo)