Understanding and designing the body schema based on human factors and physiology

In the Information Somatics Lab, our work is built upon a foundation of psychology, cognitive science, and physics to understand the mechanisms of the human body from a systems perspective and to use the insight we gain to augment its innate sensory, physical, and intellectual capabilities.

Human Augmentation Engineering

Employing VR, XR, robotic, wearable, terahertz, machine learning, and telexistence technologies, we augment human abilities to achieve novel forms of embodiment (e.g., superhuman, disembodied, transformed, cloned, fused) to address social issues such as hyperaging.

Experience Transferral

We aim to provide experiential "supplements" which improve the quality of everyday life. These supplements are formed and administered by systems capable of recording, replaying, and transferring first-person audio-visual-haptic bodily and spatial experiences. We are working towards applying our work in the areas of entertainment computing, superhuman sports, and skill transferral.

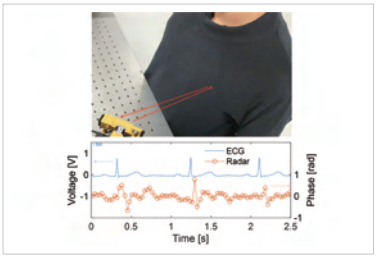
Experience Design

Building on a foundation of psychology and physiology, we design methods that make use of information technologies to enable the composition of arbitrary perceptual and emotional experiences by transforming a user's self perception as well as their perception of others.

Wireless interaction

We are working on wireless technology in a broad sense to control waves and fluids. By expanding non-contact transmission of information, energy, and matter based on the concept of distributed parameter systems, we aim to establish novel technology that assists and enhances human capabilities.

1 MetaLimbs: a Jizai Technology for Acquiring a Body Schema



2 Non-contact stethoscope that monitors human heartbeat through the clothes using terahertz waves.

3 Motor interventions to enhance users' physical ability

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Column

In the Inami-Monnai Laboratory, located in the Building No. 3, various studies are conducted to enhance human sensory, motor, and intellectual functions. The members usually spend their research life in a spacious room called 'LIVING LAB KOMABA.'

This room serves as a research space but is also used for various purposes such as interaction and relaxation. For example, the raised round table is used for hybrid meetings, lectures, and discussions, as well as for casual conversations during lunch and movie-watching events. The room is equipped with a kitchen and shower room, and it is not uncommon to see students taking naps on the sofas.

The format of lab meetings was disrupted temporarily due to the COVID-19 pandemic, but from this fiscal year, we have shifted from online slide presentations to in-person poster sessions. In the poster sessions, presentations include demonstrations, allowing for in-depth discussions on the implementation and application of each other' s research, which is often difficult in regular research life.

Moreover, to further enhance communication within the laboratory, BBQ events are organized after the poster sessions to deepen the interaction among students.

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