IOWN INTEGRAL

NTT R&D FORUM 2024

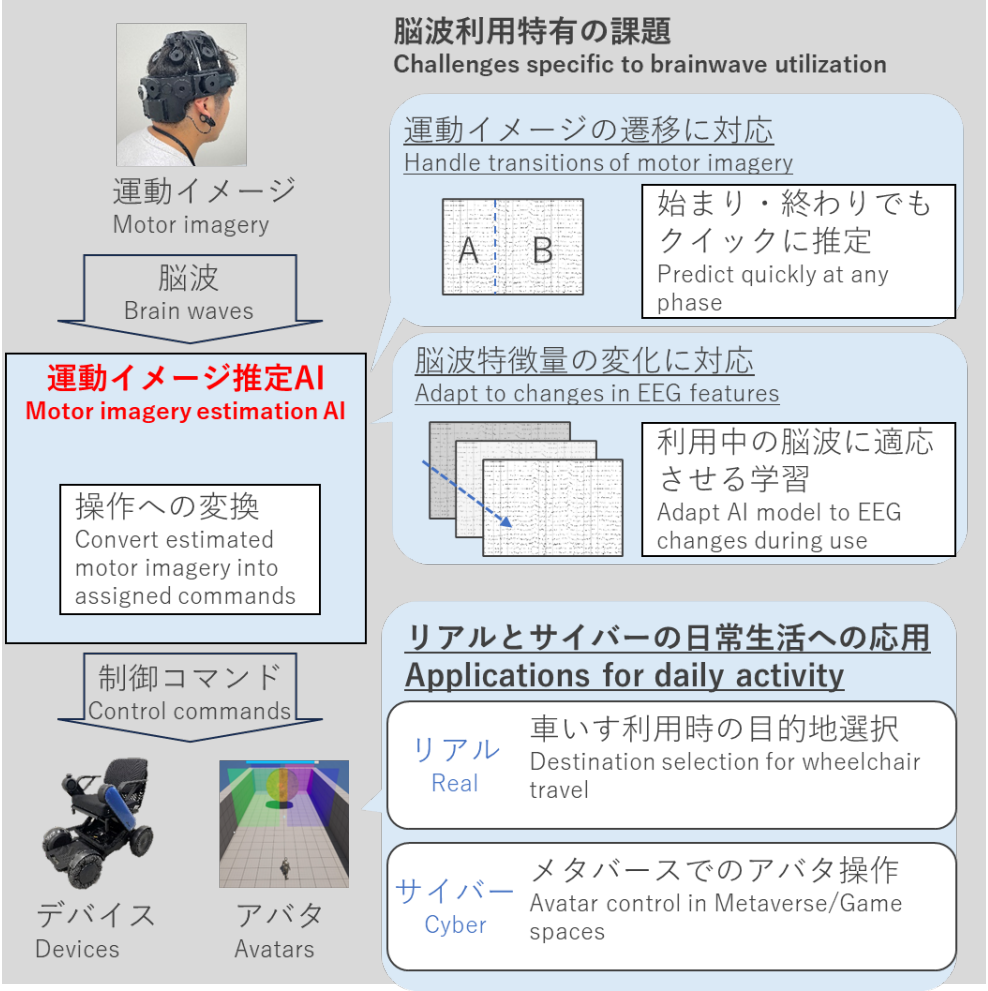
RESEARCH

γ03-01

Motor-skill transfer: Movement support via brainwaves

You can control devices such as wheelchairs using brainwaves, even without moving your body

#Well-being, Human Capital Management



///Technical Issue

The accuracy of motor imagery estimation decreases due to brainwave changes from sensor reattachment, user fatigue, and continuous motor intention switching.

///Research Goal

Unlock new possibilities beyond physical limits with brainwave-powered device control.

---Technology

(1) A deep learning model with a phase token to capture timing in motor imagery changes.
(2) Weak supervised learning that updates the model using supplementary labels for clear errors based on usage context.

---Novelty

(1) Achieved a 4.94% reduction in accuracy loss during intended switching periods using EEGConformer.
(2) Achieved a 9.5% reduction in accuracy loss for 3-class classification using EEGNet.

---Applicable Business

In the brain-tech field, the technology will be applied to assist device and avatar control for individuals with movement limitations (such as people with motor disabilities or temporarily restricted movement due to carrying objects, even for healthy individuals). The technology is expected to be established by 2025 Q4. [Projected BMI/brain measurement device market size in 2030: ¥1.2 trillion]

Exhibitors= NIPPON TELEGRAPH AND TELEPHONE CORPORATION

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