CIEM Central Institute for Experimental Medicine and Life Science

Development of a novel behavior analyzer for marmosets using AI

~Expectations for analysis of changes in behavior and social activities~

Points

Non-invasive identification of marmoset ID by face recognition using AI.

Combination of laser radar, deep learning, and facial recognition for individual tracking.

Analysis of social activities between marmosets without stress in the home cage.

The research group led by Dr. Terumi Yurimoto, Senior Research Scientist, and Dr. Eria Sasaki, Director of the Department of Marmoset Biology and Medicine, Central Institute for Experimental Medicine and Life Science (CIEM), have developed a new automated marmoset behavioral analyses system, named Full Monitoring and Animal Identification (FulMAI) System. Marmosets are small primates that live in family groups and can easily maintain the same social environment in the laboratory as they do in the wild. A variety of neurological diseases model marmosets have been developed by genetic modification, such as Alzheimer's disease and Parkinson's disease. It is known that neurological disorders affect patients' behaviors, and it is unclear when and how the behavior alters in response to disease. FulMAI has been developed to help understand this question.

Focusing on marmoset individual differences in facial features like humans, the AI-based identification of faces has enabled non-invasive identification and tracking of individuals. Then, FulMAI was developed to continuously track the behavior of each individual by combining individual identification, deep learning, and laser radar. Furthermore, FulMAI can detect marmosets' behavior through deep learning, and it enables to detect who, when, and where the grooming behaviors were performed. FulMAI is expected to solve when and how the behaviors are altered in response to disease using disease model marmosets.

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