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Research on a conscious robot

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The human brain and its consciousness functions have not yet been clearly explained. There have been many discussions about this issue, with various positions being stated, such as that human consciousness does not exist at all or that there are consciousness functions. However, it is reasonable to think that all mental functions of humans, including consciousness, arise from brain cells, and that connections between these brain cells act as information bridges between the brain and the body. If this is so, then all mental functions can be expressed mathematically as computational algorithms. And programs comprised of such algorithms can also be created. In this lecture, we will first present a computational model of the neural circuits that form the basis of human consciousness, implement artificial neural network circuits using consciousness modules that we call MoNADs, which stands for Module of Nerves for Advanced Dynamics, and then describe the experiment that is performed using the robot. The model features neurons that resemble mirror neurons and has self-referencing functions with double recursive neural networks. Basically, we use some of the MoNADs to imitate the movement behavior of the other image that is captured by the robot's visual sensor, and compare the other's movement with the robot's own movement. We will describe and discuss such topics as emotion and feelings when learning to make determinations about known and unknown information, the capabilities of consciousness in color perception, the principles of pleasant and unpleasant feelings, modeling and simulation experiments on the Rubin's vase phenomenon, the ego as a program, and the modeling of advanced traumatic brain injuries.

Speaker Biography

Junichi Takeno is a Professor at Meiji University and President of Heuristics Science Research Institute. He has also been the Associative editor of the ELSEVIER.

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