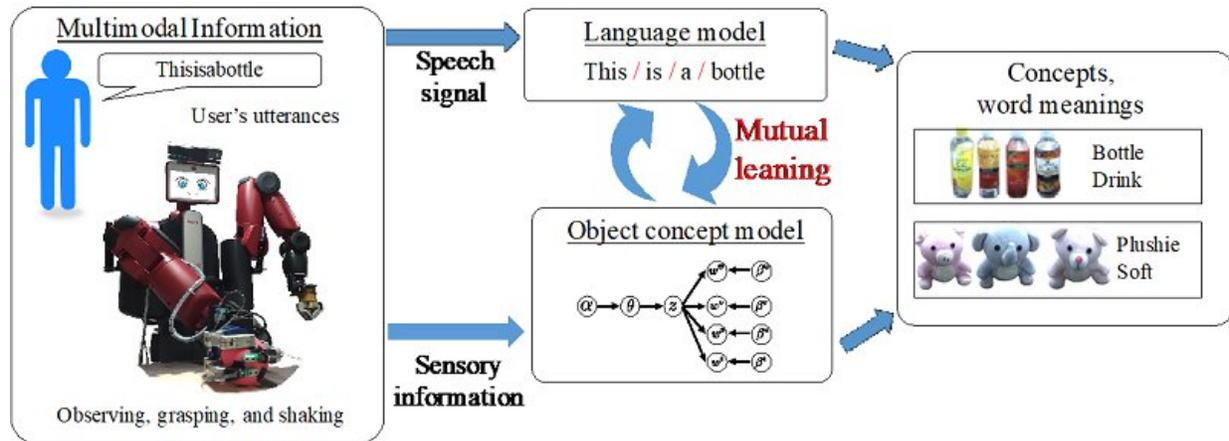


Robots that can learn like humans

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Credit: University of Electro Communications

Researchers say that artificial intelligence (AI) is now superior to human intelligence in supervised learning using vast amounts of labeled data to perform specific tasks. However, it is considered difficult to realize human-like intelligence using only supervised learning because all supervised labels cannot be obtained for all the sensory information required by robots.

Here, Tomoaki Nakamura of UEC, Tokyo, and colleagues are conducting research on the realization of robots that can acquire knowledge in a manner similar to human beings.

To this end, the researcher believes that it is important for robots to

understand their environment by structuring their own [sensory information](#) in an unsupervised manner.

Recently, Nakamura proposed an algorithm that enables robots to learn concepts and language. The robots obtain multimodal [information](#) from objects and linguistic information by communicating with others. Using this information, the algorithm allows robots to form object concepts and learn languages. Moreover, concepts that are learned by robots using this algorithm are compared with the corresponding human concepts and the similarities between them are shown.

Nakamura has also proposed a method for robots to learn motions by observing human motion. Additionally, this method allows robots to learn the rules of interaction by observing human interaction.

"Through this research, I would like to develop robots like humans," says Nakamura. "Additionally, I believe that this research will lead to a better understanding [human intelligence](#)."

More information: Tomoaki Nakamura et al. Ensemble-of-Concept Models for Unsupervised Formation of Multiple Categories, *IEEE Transactions on Cognitive and Developmental Systems* (2017). [DOI: 10.1109/TCDS.2017.2745502](https://doi.org/10.1109/TCDS.2017.2745502)

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