

Title	コーパスを使ったマルチエージェントシミュレーションによる言語意味の普遍性と相対性の研究
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The Study of Universality and Relativity of Word Meaning in Multi-agent Simulation Using Corpus

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In our life, we learn word meaning from our language experiences. So our language should be diverse because of our various language experiences. But basically we can communicate with other if we use the same language. In the other side, we sometimes misunderstand what others say because of difference of each word meaning.

The phenomena that we can use same word meaning even if we have other language experiences is called word meaning universality, and the phenomena that our word meaning depends on our language experiences is called word meaning relativity. The purpose of this study is to know how they occur and analyze the relation with word characteristics.

The study about word meaning universality and relativity is a very important part in cognitive linguistics and language evolution, but it is very difficult to do it. because they are not only human internal phenomena, but also social phenomena, and moreover, to measure word meaning in each people is very difficult to do.

One of the major ways to treat area, which is difficult to observe like social effect and long-term evolution, is multi-agent simulation (MAS). In it, we can simulate them in ideal situation, many times.

As related work, the naming game, studied by Luc Steels 2000 is about spontaneous lexicon in a group of people. It treats how we learn word and word

meaning by communication, and how the diversity about word meaning occurs. But in normal MAS, as it is made in ideal and conceptual situation, they may spoil many important constraints and rules which exist in real world.

In the other side, the way to analyze real word meaning from large amount of used text data has already made a certain result in corpus linguistics. They can define word meanings not by explanation of the word but by usage and relation with other word.

In this study we propose new simulation method to analyze word meaning universality and relativity using corpus linguistics.

In this method, agents have corpus as their language experiences. At first they define his word meaning with it, communicate with others then adjust his corpus to get more fluent communication. In detail, they make their word meaning of a word as co-occurrence with other words, measure the Euclid distance of word meaning with other, and then rewrite their corpus to acquire closer distance.

We construct them as Multithread program in Java, and analyze how the distance changes in many words. Though the system is very primitive, we can get some result that reflects real word characteristic.

We get three types of result classified by convergence of distance are converged and speed to converge. In the concrete word groups. they converge very quickly. In the abstract and conceptual words group, slowly but they converge, and in the group of words about emotion, feeling, evaluation, they never converge.

The result shows the existence of universality and relativity of word meaning, and the relation of word characteristics and them.