

Computational Model of Metaphor Generation Based on Statistical Analysis of Chinese Corpora

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Metaphor understanding and generation processes are very important aspects of language study. However, most cognitive studies of metaphor focus on the metaphor understanding process, while studies of the metaphor generation processes are relatively few. Kusumi (2003) showed that belief or experience affects the metaphor generating process, using a metaphor generation task dealing with the concept of love. It is not clear whether the results are applicable in the case of other concepts. In order to examine the applicability of the studies, the experimenter must conduct a metaphor generation task with a huge number of concepts. It is impossible to cover large scale language knowledge using only a psychological experiment, because psychological experiments require expensive time and labor.

In order to solve this problem, a previous study used a statistical analysis of Japanese language data to represent large scale human language knowledge stochastically (Abe, Sakamoto, Nakagawa 2006).

This previous study constructed a computational model which generates a “A like B” style metaphor process. Applying statistical analysis, a stochastic language knowledge structure can be automatically constructed without subjective judgment.

In this study, a statistical analysis of Chinese language data was conducted and a computational model of the metaphor generation process was constructed based on the results of the statistical analysis. A three layers model that transforms sentences (for example, “a child cries, plays and is excited”) into “A like B” style metaphors (for example, “A child like a puppy”) was constructed (ref. the following figure). After that, a psychological experiment was conducted to examine the validity of the model.

