Advances in computational approaches for metaphor

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Advances in computational approaches for metaphor: opportunities for social sciences

Metaphor is subject to a significant attention from the academic literature. In particular, this figurative language receives a deep interest from two research communities: social sciences and computer sciences. Our contribution sheds some light on the promising research on metaphor done at the crossing of both communities.

On the one hand, human scientists benefit from solid background theories in the understanding of metaphors and the underlying mechanisms. The main references include the conceptual metaphor theory of Lakoff and Jonhson(1980) and the conceptual blending theory of Fauconnier and Turner (2002). However, human scientists get only a limited tooling support to draw their analyses.

On the other hand, Computer sciences consider three main topics of investigation concerning metaphor: identification, interpretation and imagination of metaphors. The automation of the identification task has been investigated under the name "metaphor detection". There is a large diversity of techniques used using merely statistical techniques and knowledge bases. The second task, interpretation is typically called "metaphor understanding" in the literature. Using similar techniques, it provides three different types of outcomes: literal substitute, main transferred properties enhancement, or source domain matching.
Finally, imagination covers the creation of new metaphors and takes place in research on computational creativity.

After drawing a brief survey of the computational techniques, this contribution pinpoints how these techniques could offer support to humanities and social sciences in dealing with metaphors. In particular, the identification of metaphors could be automatically supported using recent advances in Natural Language Processing.

Finally, we draw research avenues aiming to support the analyst in the interpretation task. First perspectives would consist in tooling existing identification techniques and offering visual support. Other ones explore the extension of the analysis scope to a complete text or a corpus.

Bibliography.

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Gilles Fauconnier and Marc Turner. 2002. The Way We Think: Conceptual Blending And The Mind's Hidden Complexities, Basic Books.