

Analogies as a Base for Knowledge Exchange and Argumentation

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Abstract

Analogies and analogical reasoning are major tools for the efficient communication between humans, and in particular for knowledge exchange and argumentation. In a simplistic definition the finding, exchanging, and understanding of analogies refers to a complex cognitive process of transferring information or meaning from one particular subject (the source) to another particular subject (the target). In the case of knowledge exchange, this means that without actually possessing deeper knowledge about a target entity or concept, the correct decoding of analogies allows to transfer some specific characteristics, attributes, or attribute values from a given source well known to all participants of the exchange; this effect is especially helpful in interdisciplinary discourses. In argumentation the benefit of analogies mostly lies in reducing complexity, for example when simplifying things or focusing a discussion by leaving out unnecessary details or when using analogies in the sense of precedence and arguing for similar measures to be taken in similar cases.

In a first phase of our work we are restricting analogies to information about entities, often referred to as entity summaries and provided in structured form, for instance by schema.org or Google's knowledge graph. However, for the later use in analogies not all properties of some entity can be used, since on one hand the intended property or concept has to be transferable over several cases of entities of the same category, and on the other hand it has to be widely known such that the analogy can be easily understood by the intended audience. To this aim we discuss how to derive a common entity structure or schema comprising attributes typical for entities of the same or similar entity type. To find out what is really typical, the definition of a practical measure for attribute typicality is needed (e.g., the measure derived from cognitive psychology presented in [1]). Since there is a wide variety of entity types and a manual inspection and classification might prove too expensive, further questions to be solved are the basic extraction of analogies from text and – where applicable – the generalization of analogies to other entities of a kind with the intention of finding out exactly which attributes or entity characteristics are essential for a certain the analogy to work.

[1] S. Homoceanu, W.-T. Balke: *A Chip Off the Old Block – Extracting Typical Attributes for Entities based on Family Resemblance*. In Procs. of the 20th International Conference on Database Systems for Advanced Applications (DASFAA), Hanoi, Vietnam, 2015.

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