

PurposeNet: A Knowledge Base Organized around Purpose^{*}

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1 Invited Talk Summary

We show how *purpose* can be used as a central guiding principle for organizing knowledge about artifacts. It allows the actions in which the artifact participates to be related naturally to other objects. Similarly, the structure or parts of the artifact can also be related to the actions.

A conceptual base, architecture and implementation of a semantic knowledge base called *PurposeNet*, with an evaluation performed in comparison with other knowledge bases, shows that PurposeNet is a superior method in terms of coverage. Building an exhaustive knowledge base is a laborious and intense task, it needs human expertise and it needs good web data processing tools so that information from the web can be easily extracted in order to build the knowledgebase semi-automatically. In order to maintain the quality of the resource, it has been, till now, a case where the knowledge base was manually created. Nevertheless, creating such a huge resource completely in manual mode would be a time-consuming work. PurposeNet also makes it possible for automatic extraction of simple facts (or information) from text for populating a richly structured knowledge base.

Therefore artifact related information which is useful for our knowledge base is available in various resources such as WordNet, Wikipedia and other web corpora. Results are reported on conducting a few experiments on detecting and extracting purpose of artifacts from web corpus. An experiment in domain-specific question-answering from a given passage shows that PurposeNet used along with scripts (or knowledge of stereotypical situations), can lead to substantially higher accuracy in question answering. In the domain of car racing, individually they produce correct answers to 50% and 37.5% questions respectively, but together they produce 89% correct answers. These experimental results in domain-specific question-answering have produced promising results.

^{*} An extended paper associated with this invited talk will appear in the Workshop Proceedings for the “Workshop on Modeling States, Events and Processes (MSEPS).”

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