

A Restriction-Centered Theory of Reasoning and Computation to materialize a Web 3.0

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ABSTRACT

Researchers suggest that personalization on the Semantic Web adds up to a Web 3.0 eventually. In this Web, personalized agents process and thus generate the biggest share of information rather than humans. In the sense of emergent semantics, which supplements traditional formal semantics of the Semantic Web, this is well conceivable.

An emergent Semantic Web underlying fuzzy grassroots ontology can be accomplished through inducing knowledge from users' common parlance in mutual Web 2.0 interactions [1]. These ontologies can also be matched against existing Semantic Web ontologies, to create comprehensive top-level ontologies. On the Web, if augmented with information in the form of restrictions and associated reliability (Z-numbers) [2], this collection of fuzzy ontologies constitutes an important basis for an implementation of Zadeh's restriction-centered theory of reasoning and computation (RRC) [3].

By considering real world's fuzziness, RRC differs from traditional approaches because it can handle restrictions described in natural language. A restriction is an answer to a question of the value of a variable such as the duration of an appointment. In addition to mathematically well-defined answers, RRC can likewise deal with unprecisiated answers as "about one hour." Inspired by mental functions, it constitutes an important basis to leverage present-day Web efforts to a natural Web 3.0. Based on natural language information, RRC may be accomplished with Z-number calculation to achieve a personalized Web reasoning and computation. Finally, through Web agents' understanding of natural language, they can react to humans more intuitively and thus generate and process information.

BODY

Mimicking human thinking, the RRC theory allows building reasoners, which can deal with fuzzy reality. Such reasoners may enable a Web 3.0.

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