

Towards an Emergent Semantic Web

Edy Portmann
University of California, Berkeley

ABSTRACT

In his influential article about the evolution of the Web, Berners-Lee [1] envisions a Semantic Web in which humans and computers alike are capable of understanding and processing information. This vision is yet to materialize. The main obstacle for the Semantic Web vision is that in today's Web meaning is rooted most often not in formal semantics, but in natural language and, in the sense of semiology, emerges not before interpretation and processing. Yet, an automated form of interpretation and processing can be tackled by precisiating raw natural language.

To do that, Web agents extract fuzzy grassroots ontologies through induction from existing Web content. Inductive fuzzy grassroots ontologies thus constitute organically evolved knowledge bases that resemble automated gradual thesauri, which allow precisiating natural language [2]. The Web agents' underlying dynamic, self-organizing, and best-effort induction, enable a sub-syntactical bottom up learning of semiotic associations. Thus, knowledge is induced from the users' natural use of language in mutual Web interactions, and stored in a gradual, thesauri-like lexical-world knowledge database as a top-level ontology, eventually allowing a form of computing with words [3]. Since when computing with words the objects of computation are words, phrases and propositions drawn from natural languages, it proves to be a practical notion to yield emergent semantics for the Semantic Web.

In the end, an improved understanding by computers on the one hand should upgrade human-computer interaction on the Web, and, on the other hand allow an initial version of human-intelligence amplification through the Web.

BODY

Inductive fuzzy grassroots ontologies form a basis for computing with words. In time they will allow the Web to merge with the Semantic Web.

REFERENCES

- [1] T. Berners-Lee. The semantic web. *Scientific American*, 2001.
- [2] M. Kaufmann and E. Portmann. A concept of semantics extraction from web data by induction of fuzzy ontologies. In *International Workshop on Uncertainty Reasoning for the Semantic Web*, 2012.
- [3] L. A. Zadeh. Precisiating of Meaning—Toward Computation with Natural Language. In *IEEE International Conference on Information Reuse and Integration*, 2010.

Volume 1 of Tiny Transactions on Computer Science

This content is released under the Creative Commons Attribution-NonCommercial ShareAlike License. Permission to make digital or hard copies of all or part of this work is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. CC BY-NC-SA 3.0: <http://creativecommons.org/licenses/by-nc-sa/3.0/>.