

Discussion on Uncertainty Ontology for Annotation and Reasoning (a position paper)

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In this position paper we discuss the what, who, when, where, why and how of uncertain reasoning based on achievements of URW3 XG [2], our experiments and some future plans.

What and Why – improving semantic web practice for machine processing. This vision is described in the URW3XG charter (see [2]), especially the objective is “*to identify and describe situations on the scale of the World Wide Web for which uncertainty reasoning would significantly increase the potential for extracting useful information; and to identify methodologies that can be applied to these situations and the fundamentals of a standardized representation that could serve as the basis for information exchange necessary for these methodologies to be effectively used.*” A crucial point in this is uncertainty annotation of web (extending W3C standards [3]).

Who and When - will create, maintain and use this annotation. This is a crucial point. Will this annotation be done by the creator using an annotation supporting tool for web page creation? Or, it will be done by a third party annotation? For this, we will discuss a refinement of URW3XG use cases. Another dimension of this problem is: how far it will be automated and/or human crafted. Possible use of this enriched web will be humans and services.

Where - will be this annotations stored. This the crucial point of our contribution and subject to future development, especially in the case of third party annotation. Our proposal (and initial experiments) is based on the web crawler Egothor repository [4] (we have crawled data in size of several TB from .cz domain) and an additional semantic repository build on the top of data pile technology [5].

How – to semantically enrich information and how to measure success and/or progress. This problem consists of two parts, namely, a data mining task and an ontology modeling task. Third party annotation of great data size can be done only in an automated way and it should be done according to an ontology.

Our annotation ontology grows out of URW3XG uncertainty ontology and extends some features needed for annotation. Below (Fig.1.) we show a part of our annotation ontology. We start here from assumption that part of annotation will be done by a web information extraction and assumption that this is the main source of uncertainty.

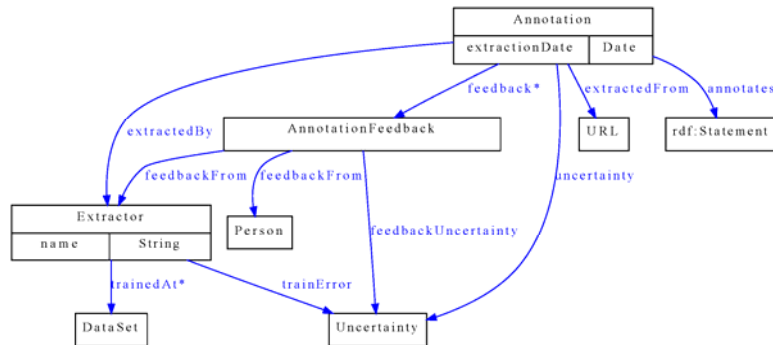


Fig. 1. Part of our uncertainty annotation ontology

Web information extraction splits to pages dominantly tabular and/or textual. Uncertainty issues connected with information extraction (and annotation) from tabular pages were discussed in [1]. Extraction of textual pages will use techniques described in [6].

Success of this approach can be measured primarily by advance of semantic web functionalities. This is easier to measure for software agents. More difficult is to design metrics to measure human user satisfaction. All these aspects will be discussed in this presentation.

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