

Abstract – PhD Seminar 2009

Feedback-Driven Ontology Reorganisation

Elmar P. Wach

Hummelsbüttler Hauptstraße 43, 22339 Hamburg, Germany
Technikerstraße 21a, 6020 Innsbruck, Austria
wach@elmarwach.com, elmar.wach@sti2.at

This research aims to create a semantic-based recommender system for e-commerce applications that is capable to optimise itself by processing implicit user feedback. E-commerce recommenders have become business relevant in filtering the vast information available in the Internet (and e-shops) to present useful search results and product recommendations to the customer.

Most of times, ontologies in e-commerce recommenders are used for the user profiling, and there has been put less effort in researching the use of domain ontologies. Approaches in other domains like media (e.g. TV or newspapers) research the recommendation result with the different recommender categories (i.e. content-based filtering, collaborative filtering, hybrid approaches). They neither address the question of self-improvement of the recommendations nor enhance the system to an adaptive one. While a formally described domain offers all the commonly known advantages, it is, moreover, capable to adapt to new situations like a given (implicit) user feedback. Due to fast changing domains, markets, and customer behaviour, it is inefficient and very expensive to manually process user feedbacks. These shortcomings are aimed to be solved with an automated, adaptive system by combining the use of a domain ontology with the processing of implicit user feedbacks to give better recommendations to the user of the e-commerce recommender from time to time.

The main research question is how the given feedback can lead to a self-improvement of the ontology.

Hence, the feedback has to be transformed by an improvement strategy into input information that can be processed by the system. As the product categories used by the recommender are represented in ontologies, the research to be done is in the field of ontology reorganisation, evolution, and versioning. In favour, ontology label management and ABox axioms will be introduced for effectively reorganising the ontology, which is the basis for achieving various customer interactions. According to the respective results and reported feedbacks the ontology gets reorganised, and adapted recommendations are presented to the customer.

For validating this research a “real world” conversational content-based e-commerce recommender system is used, the domain modelled is the product category “digital cameras”, and two feedback channels – from the web application and from user-generated content – are utilised. After each to be defined number of accomplished recommendation processes the impact of the ontology reorganisation on the success criterion (e.g. the conversion rate) is analysed and evaluated at the application level and reported to the ontology.