

WEB RECOMMENDATIONS FOR E-COMMERCE WEBSITES

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Abstract

In recent years we see the continuing growth of the Internet. Not only is the number of internet users and websites increasing, but also the amount of information on the individual websites. Many websites are concerned with presenting their often very semantically versatile information in a concise and efficient way. This is especially true for large E-Commerce websites with large amount of product information. A frequently used technique to improve the presentation of data and navigation in these data is web recommendations. Web recommendations are hyperlinks, often augmented with short descriptive text and/or picture, which are shown on the website in addition to the usual content in order to lead users to potentially interesting information. The motivation for the use of web recommendations comes from both internet users and website owners. Internet users want to see interesting information; the website owners want their information to reach users quickly and to the full extent. Owners of commercial websites also employ web recommendations in order to sell additional products or services to the users and thus increase the sales turnover of their websites.

Many algorithms have been developed in order to generate such potentially interesting web recommendations automatically. These approaches are based on different intuitions about what might be interesting for the given user in a given situation. In this dissertation we study these approaches and show that each of them has its own specific drawbacks. To overcome these drawbacks, we present a combined adaptive algorithm, which gathers potential recommendations from different recommendation algorithms, presents them to users and refines them based on whether the users accept them or not. We employ ontology graphs as a convenient way of storing highly diverse information about the website which is required to make a decision on which recommendations should be presented. We have implemented and evaluated our architecture on two real-world websites, one of which is commercial and another non-commercial. In this dissertation we further present a comparative analysis of our approach and several other recommendation approaches using these real-world evaluations and show, that our algorithm is more successful in attracting user interest in form of additional clicks and purchases.

Based on the gained experience, we extend our approach to the case, when the data presented on a website are integrated from several data sources. This is a common case for large E-Commerce websites. In this setting we recognize an additional problem – the problem of data integration: we need to integrate both product data and additional semantic information, which we also represent as ontology graphs. We give special attention to the matching of the ontology graphs, since this problem needs to be solved for in order to present web recommendations. The integrated setting also gives us the possibility to explore some new types of recommendations. As a proof of concept, we have implemented an integrated E-Commerce web portal, which gathers data from several internet shops, represents them in integrated form and helps the web users to navigate through these data by presenting web recommendations.

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