Chapter III

A Hybrid Strategy to Personalize the Digital Television by Semantic Inference

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Abstract

The digital TV (DTV) will bring a significant increase in the number of channels and programs available to end users, with many more difficulties for them to find interesting programs among a myriad of irrelevant contents. So, automatic content recommenders should receive special attention in the following years to improve the assistance to users. However, current techniques of content recommenders have important well-known deficiencies, which complicates their wide acceptance. In this paper, a new hybrid approach for automatic TV content recommendation is proposed based on the so-called Semantic Web technologies, that significantly reduces those deficiencies. The strategy uses ontology data structures as a formal representa-
tion both for contents and users’ profiles. The approach has been implemented in the AdVAnced Telematics search of Audiovisual contents by semantic Reasoning (AVATAR) tool, a new TV recommender system that makes extensive use of well-known standards, such as TV-Anytime and Web ontology language (OWL). Also, an illustrative example of the kind of reasoning carried out by AVATAR is included, as well as an experimental evaluation of the performance achieved.

Introduction

The denomination of DTV has been traditionally linked to greater quality of audio and video, which led many people to confuse DTV technology with high definition television (HDTV). But DTV has a unique strength that lies within its capability to broadcast data and telematics applications along with the audiovisual contents. Those applications, running on the users’ receivers, are envisaged to cause a revolution in the very conception of the television.

To enable the execution of telematics applications, the new DTV receivers will be endowed with interactive and computational capabilities that will turn them into vehicles to access the information society. This way, it will be possible to fight the worrisome digital divide that is starting to show up in the developed countries, due to the limited penetration of the Internet in homes: nowadays, the information society is mostly accessed through Internet-enabled personal computers, and, as proved by data from InternetWorld Stats (http://web.archive.org), the penetration figures in homes seem to be reaching their peak (around 35% in Europe and 67% in the U.S.) as the growing rate is slowing down (from 29% in 2001 to 19% in 2004 in Europe, and from 14% to 7% in the U.S.). Knowing this, the fact that television is present in nearly every household in developed countries—being a familiar device for everyone—leads to thinking of DTV as the most likely means to overcome the commented barrier.

Additionally, after the establishment of the digital video broadcasting (DVB) solutions as the broadcasting standards, it is foreseeable that the normalization in the DTV field will focus on the telematics applications to overcome the current incompatibility problems between software and receivers from different providers. Thus, the market should progressively evolve into a truly horizontal model with well-defined roles (content providers, service providers, digital platforms, network operators, receiver manufacturers, and users) contributing to reducing costs and attaining greater acceptance of these technologies.

In this new scenario, the users will have access from their homes to a great number of channels and services from different providers. Resembling what happened with the growth of the Internet, this huge number of channels will cause the users to be
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