Collaborative personalized TV programming

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14th December 2005

Abstract

The intent with the system presented here is to allow the users to get on-demand TV adapted to their personal preferences. The design is created as to limit the need of the scarce resource of *broadcast* bandwidth. The critical element in the system is the *preference engines*, which have to be able to learn to identify which preferences of other users (and publishers) corresponds with the user's preferences.

1 How does the system look?

Some scenes from the daily use of the system.

1.1 Teenager bedroom, early morning

The TV and stereo starts playing a quiet music video – the favourite wake-up music of the resident. Once the song is over, the TV fades to a completely new music video selected from a large collection by the TV, based on what other listeners say they think about it. After the video has played for a while, the teenager rolls out of bed; reaches for the remote, and pushes the buttons "cool" and "save for later". The next video selected by the TV is quickly skipped by a press on the "junk" button on the remote. . . .

1.2 Kitchen, still morning

The TV is showing a feature on Kalashnikov (it's his birthday), when somebody presses the "not for kids" button on the remote on the table. This makes the TV switch to a local traffic forecast. After the traffic forecast, there's a story about the new UN secretary general. A friendly hand tags the story as "international news" and "interesting" with the buttons on the remote while the story is still running. Then the TV runs a classical cartoon, followed by a short LEGO stop-motion sequence and a story about the great apes, before everybody leaves for work and school. . . .

1.3 In an office

A woman enters and logs on the computer. The first tasks of the day pop up on the screen; Doonesbury (which is just read and removed) and the front-page cartoon from Corriere Della Sera (with an English translation). The latter is

unfortunately tagged "not good", when the woman removes it from the screen. Next comes an interview with the author of the front-page article in this week's edition of Nature. Before it is over, it has been tagged with "the Oslo group" and "Affymetrix", and the woman has added a written note to the interview. . . .

2   How does the system work?

The examples above may represent a *high* level of interaction with the system. Whenever a user tags some content, that information is distributed (according to the privacy policy of the user), so other users' preference engines can make use of the tags for evaluating the appropriateness of the content. Once the preference engines have learned the relations of the users' preferences, it is likely that they will only need a few users' indications of (dis)like of a bit of content, before they can accurately discern if it is appropriate for their respective owners.

Before the use of the system can be as easy and personalised as presented in section 1, each user will have to create a number of *channels*. Each channel will consist of a number of announcement sources (for example BBC World, www.forskning.no, the local DVD index and some cartoon review newsgroups) and a number of button configurations (for example "Nice parody" increasing the rating of the content, and sending a RSS message to the cartoon review newsgroup). It is probably worthwhile to preseed the button configurations, so people don't have to worry too much up front about creating their personal channels. Some messages may be distributed only in-house, or only be used as feedback to the preference engine, while others may be distributed world-wide.

It is worthwhile to notice that it is unique that this system does not **require** viewers to share their preferences with others. The system still depends on **some** viewers sharing their reviews with other viewers. It may in practice be enough to have access to a few professional reviewers' comments to get the preference engines to work acceptably.

The system is based on the proven technology of *podcasting*. Podcasting is basically the announcement of downloadable content using RSS formatted messages. The user then selects some of the announced content and downloads it onto an iPod (thus the name of the technology) or a similar device. Later the user can enjoy the content, even while being without Internet connection.

The RSS formatted messages are typically distributed by HTTP from the website of the person making the announcement, but nothing prevents the use of other distribution mechanisms, such as NNTP (newsgroups) or SMTP (e-mail).

Although podcasting usually refers to audio content downloadable through the HTTP protocol, nothing prevents us from letting the announcements refer to video or static content. Similarly it can also just as well refer to live TV or radio broadcast over the air or the Internet or to locally stored content such as a CD or DVD collection.

[ideas for implementing preference engines]

[set-top boxes/remotes: look out for the problems with giving people even more remotes]

3 Economic impact

The design of preference engines for the system is clearly an area, where there is space for several different providers. One can imagine that the competitive edge of a future TV is based on the quality of its preference engine.

Opening up for increased user choice in TV programming, will limit how intruding stand-alone commercials inserted in the content can get away with being, so advertisement funded TV producers will be forced to adapt their financing model for the content distributed through the presented system. The adaption may be anything from a slight adjustment of how annoying the viewers perceive the commercials to be, through pay-per-view, to a completely revolutionary financing model.

Pay-per-view delivery of content is likely to be impacted by the presented system, since it will introduce the possibility of the payment for the content being considered by the preference engine and not by the viewer. It is not certain in which direction this impact will tend.

4 Conclusion

Most of the technology for this project is already available and proven. Similarly there is already lots of content available for use through this technology. What we still lack to have the presented mode of collaborative personalised TV programming is:

- Implementation of a preference engine.

- A user interface for showing the selections of the preference engine and for feeding the user selections to the rest of the world and back to the preference engine.

Both of these tasks are manageable within a relatively limited budget, even if the design of user-friendly hardware is included in the project.

Given the large impact personalised TV programming is likely to have on the satisfaction and knowledge people get out of the available TV content, and the benefits of getting a competitive edge in the development of preference engines, [it is a good idea to fund the project].

Nomenclature

channel A channel is the result of the selection of some review sources for and the training of a preference engine. A user will typically have configures several channels to choose from depening on his/her mood/needs. The introdutory scenarios might represent channels titled "Wake-up music", "Breakfast" and "Work news".

podcasting Announcement of downloadable content using RSS formatted messages.

preference engine A system which based on feedback from the viewer and the available reviews of the shown programme learns to predict if the viewer will like a programme or not based on reviews by others.

programme A complete unit of information to be played on the TV or radio.

review A distributed (not necessarily **published**), (partially) software-interpretable comment on a programme. The intent of the project is to use RSS as the distribution format for reviews.

review source A review source is a mean of accessing a collection of reviews. This can for example be the URL of a RSS feed, a newsgroup used for distributing reviews in RSS format, or a mailing list which distributes reviews in RSS format.