Collaborative Personalised TV Programming

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Jacob Sparre Andersen Collaborative Personalised TV Programming

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Outline



Automating the Selection of TV Programmes

- Distributing the Workload
- A Standardised Review Format
- Easy Writing of Reviews
- Automated Distribution and Interpretation
- 2 System Architecture
 - Preference Engine
 - On-Demand Cache
 - User Interface

Distributing the Workload A Standardised Review Format Easy Writing of Reviews Automated Distribution and Interpretation

Automating the Selection of TV Programmes

 It should be easier to get to watch TV programmes you find interesting.

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But how?

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Distributing the Workload A Standardised Review Format Easy Writing of Reviews Automated Distribution and Interpretation

Distributing the Workload

We introduce:

A standardised review format.

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- A standardised review format.
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Distributing the Workload

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- A standardised review format.
- Easy writing of reviews.
- Automated distribution and interpretation of reviews.

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Distributing the Workload A Standardised Review Format Easy Writing of Reviews Automated Distribution and Interpretation

A Standardised Review Format

We already have a standardised review format:

 RSS; known from podcasting and other WWW announcement systems.

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If we want to use automated interpretation of reviews, we have to make some limitations in how we interpret reviews in RSS format.

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A Standardised Review Format

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My proposal for the meaning of a review:

 Presence/absence of a RSS entry with a specific keyword by a specific reviewer.

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Distributing the Workload A Standardised Review Format Easy Writing of Reviews Automated Distribution and Interpretation

Easy Writing of Reviews

Reviews "written" by the push of a single button on the TV remote controller:

- Minimal workload involved in creating reviews.
- Everybody can contribute information.
- Automated creation of reviews can be integrated in ordinary operations of the TV remote controller.

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Distributing the Workload A Standardised Review Format Easy Writing of Reviews Automated Distribution and Interpretation

Automated Distribution and Interpretation Preference Engines

- Once we have identified a number of possible review values, we can train a preference engine to correlate the present reviews for each presented programme with the user's feedback on the programme quality.
- A preference engine can for example be an artificial neural network (ANN) trained with the traditional back-propagation algorithm.

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Preference Engine On-Demand Cache Jser Interface

System Architecture

- Reviewer network.
- TV programme sources.
- On-demand cache.
- Preference engine.
- User interface.

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- Preference engine. The filtering and selection software.
- User interface. The TV remote controller is used for giving feedback about the shown programmes.

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Preference Engine On-Demand Cache User Interface

Preference Engine

• The core of the system.

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Preference Engine On-Demand Cache User Interface

Preference Engine

- The core of the system.
- Identifies which reviews are significant in deciding which programmes the user (dis)likes.

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- Ranks and filters the available programmes based on the available reviews.

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Preference Engine

- The core of the system.
- Identifies which reviews are significant in deciding which programmes the user (dis)likes.
- Ranks and filters the available programmes based on the available reviews.
- Helps the on-demand cache deciding which programmes to store.

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Preference Engine On-Demand Cache User Interface

Preference Engine Implementation

- The ranking and filtering could be implemented as an artificial neural network (ANN).
- Introducing decaying weights in the training of the ANN, eases the removal of irrelevant reviews from the input set.

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- Features of TV programmes which can be presented as keywords (categorisation, director, actors, etc.) can be fed to the preference engine in the same form as reviews.
- Internal data (such as if the viewer already has seen the programme) should also be considered as input to the ANN.

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Preference Engine On-Demand Cache User Interface

Preference Engine Input

For ranking and filtering:

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For training:

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For training:

 User feedback. – In the form of relative ratings of pairs of programmes.

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Preference Engine On-Demand Cache User Interface

Interaction with the on-demand cache

The preference engines should interact with the cache in three important ways:

 Keeping track of which programmes are currently available for on-demand viewing.

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Interaction with the on-demand cache

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- Through requests to have specific programmes downloaded to the cache.
- Answering queries from the cache system about the likelihood that there is interest in watching a programme.

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Preference Engine On-Demand Cache User Interface

Feedback and Generating Reviews

The TV remote controller has slightly different functions:

 Skip programme. – Register and distribute a review saying the viewer doesn't like the programme.

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- Prefer programme. Register and distribute a review saying that the viewer likes the current programme better than the previous one.

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- Approve of programme. Distribute a review saying the viewer likes the programme.
- Prefer programme. Register and distribute a review saying that the viewer likes the current programme better than the previous one.
- Label programme. Distribute a review assigning a keyword to the current programme.

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- We have seen how existing collaboration technologies can be put together to generate personalised TV channels.
- We have seen how this can be done without a centralised database.
- Outlook
 - A prototype preference engine should be developed and tested on real users.
 - The dynamics of the reviewer network and rules for generating an optimal reviewer network should be studied.

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