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PhD Student, Department of Photonics Engineering
24/11/2004 → 04/09/2015 Former
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External Lecturer, Department of Informatics and Mathematical Modeling
09/01/2007 → 04/09/2015 Former
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Publications:

Enhancing Media Personalization by Extracting Similarity Knowledge from Metadata
The world of media today can be characterized by us being exposed to vast amounts of content, both produced professionally and user generated. Ever since the digital technologies in the form of computers and video cameras have diminished the production costs and the Internet has significantly lowered the costs of distribution, we became more and more overwhelmed with the choice of media. In such conditions the focus falls on the available mechanisms to filter and recommend media to users, thus resulting in the growing need for personalization. Media personalization is a complex process with many interrelated parts – recommendation engines, content metadata, contextual information and user profiles. In the center of any type of recommendation lies the notion of similarity. The most popular way to approach similarity is to look for the feature overlaps. This results often in recommending only “more of the same” type of content which does not necessarily lead to the meaningful personalization. Another way to approach similarity is to find a similar underlying meaning in the content. Aspects of meaning in media can be represented using Gardenfors Conceptual Spaces theory, which can be seen as a cognitive foundation for modeling concepts. Conceptual Spaces is applied in this thesis to analyze media in terms of its dimensions and knowledge domains, which in return defines properties and concepts. One of the most important domains in terms of describing media is the emotional one, especially when we talk about the contents of music. Therefore the main focus in the thesis is how to extract such emotional information from media, and how to use it to enhance media personalization. This dissertation proposes a novel method to extract emotional information from text (unstructured metadata) using Latent Semantic Analysis (one of the unsupervised machine learning techniques). It presents three separate cases to illustrate the similarity knowledge extraction from the metadata, where the emotional components in each case represents different abstraction levels – genres, synopsis and lyrics. The emotional value is extracted by first creating a conceptual space for emotions based on a semantic differential which divides the underlying plane along two psychological dimensions – arousal and valence. Then the space is divided into regions serving as emotional markers – a selection of affective terms. After that LSA is used to calculate the cosine similarity between the text (synopsis or lyrics) and each of the chosen affective terms. As a result we can plot emotional correlation in the content as patterns, which we can then use to find emotional similarity among media items. By being able to compare media items on the basis of their emotional patterns, we add a new level to how we can evaluate the similarity between two media items. Which in return might improve media recommendation since it provides a novel approach to recommendation that goes beyond traditional genre boundaries, and thereby improves media personalization.
Semantic Contours in Tracks Based on Emotional Tags

Outlining a high level cognitive approach to how we select media based on affective user preferences, we model the latent semantics of lyrics as patterns of emotional components. Using a selection of affective last.fm tags as top-down emotional buoys, we apply LSA latent semantic analysis to bottom-up represent the correlation of terms and song lyrics in a vector space that reflects the emotional context. Analyzing the resulting patterns of affective components, by comparing them against last.fm tag clouds describing the corresponding songs, we propose that it might be feasible to automatically generate affective user preferences based on song lyrics.

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Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Petersen, M. K. (Intern), Hansen, L. K. (Intern), Butkus, A. (Intern)
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Extracting moods from songs and BBC programs based on emotional context

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Extracting patterns from tracks using emotional tags

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Publication date: 2008

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Modeling emotional context from latent semantics

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Modeling moods in BBC programs based on emotional context

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Authors: Petersen, M. K. (Intern), Butkus, A. (Intern)
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BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 0.67 SJR 0.315 SNIP 0.552
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.328 SNIP 0.618 CiteScore 0.37
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.325 SNIP 0.678 CiteScore 0.42
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.329 SNIP 0.699 CiteScore 0.49
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Scopus rating (2012): SJR 0.323 SNIP 0.708 CiteScore 0.49
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Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
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BFI (2009): BFI-level 1
Scopus rating (2009): SJR 0.305 SNIP 0.548
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Web of Science (2007): Indexed yes
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Semantic Modelling Using TV-Anytime Metadata in DVB-H mobile broadcast

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Organisations: Department of Informatics and Mathematical Modeling
Authors: Butkus, A. (Intern), Petersen, M. K. (Intern)
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Host publication information
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Series: Lecture Notes in Computer Science
Number: 4471
Main Research Area: Technical/natural sciences
Source: orbit
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Publication: Research - peer-review › Book chapter – Annual report year: 2007

Media Personalization using TV-Anytime phase 2

General information
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Organisations: Department of Photonics Engineering
Authors: Butkus, A. (Intern)
Publication date: 2006

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ISBN (Print): 87-90288-48-3

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Source-ID: 198633
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Value creation and new business opportunities by means of personalization in future converged services

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- **Authors:** Butkus, A. (Intern), Olesen, H. (Intern)
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Access control to user profiles for Personal Network (PN) services

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- **Organisations:** Department of Photonics Engineering
- **Authors:** Jiang, B. (Intern), Butkus, A. (Intern), Olesen, H. (Intern)
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- **Publication date:** 2005

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- **Main Research Area:** Technical/natural sciences
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New Business opportunities for DVB-H personalized services using CRID

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- **Organisations:** Department of Photonics Engineering
- **Authors:** Butkus, A. (Intern)
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- **Title of host publication:** Proceedings of CICT International Conference 2005: Next Generation Broadband; Content and User Perspectives
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- **Conference:** Next Generation Broadband; Content and User Perspectives, Kongens Lyngby, Denmark, 01/01/2005
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User-centric factors of context aware services

**General information**