

An Approach towards the Exploration of User Preference Adaptation for Cross Device, Cross Context Video Content Recommenders in Web 2.0 Environments

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Abstract. Video content recommenders are becoming wide spread in the age of ubiquitous access to the internet and web 2.0. But how does the context of video consumption effect content preference? This paper argues for a greater understanding of the impact of viewing context upon preference adaptation in the new age of multi platform, mobile video entertainment. This paper advocates an approach which investigates preference adaptation from the perspective of users self moderating content choices in response to perceptions of the current viewing context. The author suggests ethnographic study of naturalistic content consumption behaviours as a possible methodology to uncover insight into this area, which could inform design requirements for future video recommenders operating in cross context environments.

Key words: Video, Recommenders, User, Experience, Context.

1 Introduction

Video content recommenders have been with us for some time. Popularised by TiVo¹ on the set top box and MovieLens² and Netflix³ on the internet we have seen video content recommender engines, (as well as peer recommendations) propagate onto many of the worlds most popular web 2.0 video, movie and TV web sites, see [1], [2], [3]. This has offered benefits to both commercial content providers as well as end users by enabling the promotion, discovery and enjoyment of long tail [4], video content.

Web 2.0 applications are at the forefront of an increasing trend towards video content aggregation and personalised recommendations. The technology has established itself at a time when mainstream ubiquitous access to high speed

¹ TiVo:<http://www.Tivo.com>

² MovieLens movie recommendations:<http://www.movielens.org/>

³ Netflix:<http://www.netflix.com/>

internet has exploded. This has fueled an entertainment revolution with access to video services and long tail content over a multiplicity of mobile devices in addition to more traditional content delivery routes such as broadcast television. The next step in the enhancement of these systems (which is well underway) is the joining up of services across devices and networks in order to enable a consistent brand message and user experience. There are many examples of evidence for this trend in the marketplace with content providers and service operators alike offering singular branded video content delivery propositions across all of their television, internet and mobile services, [5], [6].

2 The Challenge

A user utilising a video content service across a range of devices and viewing contexts may have expectations regarding the types of content they wish to consume within each of those situations. We can imagine a member of a family when home alone, taking the opportunity to watch one piece of preferred content over another purely because they know it is of interest only to themselves. They do so under the rational that the other content whilst of equal interest is also enjoyed by the family as a whole. Therefore further opportunities to watch that item are more likely to present themselves at some other time with the family group. Another example could be a user choosing not to watch a movie to their preference on a train commute. The reasons being that the time available, mobile device screen size, and context of sitting on a train surrounded by strangers would (from their perspective) spoil the experience in contrast to watching the same content at home on the settee in front of their wide screen television.

As operators and broadcasters look to unify video content services across devices and environments, several fundamental theoretical questions are raised in relation to the contexts of video consumption which impact upon content selection decisions and therefore the role of recommenders. In order to provide a good experience to the user, a video recommender acting as part of such a service would need to take consideration of the nuances of context. This raises a number of issues surrounding not only if recommender outputs can be filtered to provide the best utility to a user within a given viewing context, but also if the construction of a single user model is valid for a system collecting information from many different viewing situations.

We must therefore ask, do the contextual factors which surround use in different socio-technical environments influence the video content selections users make at any given time? If this is the case, how can video content selections collected from within a specific context be usefully applied within a user model with the intention of providing recommendations across a landscape of ever changing contexts of use? Finally, even with an efficient recommender system in place how can recommendation selection and presentation be optimised to cope with the conditions imposed on a viewing experience by those same contextual factors? These questions need to be answered to ensure the success of future video content recommenders operating across devices within ubiquitous mobile environments.

3 Unraveling Perceived Context

Addressing research problems in this area requires a consideration of what context actually is. This short overview is not the place to delve deeply into the literature in relation to definitions of context, however many researchers agree that there still remains considerable confusion surrounding the notion of what context is [7], and many competing view points [8], [9], [10]. In terms of content recommenders the author advocates an approach which supports the following two viewpoints. Firstly Winograd [11], argues context is only that information which is useful to convey and act upon. Therefore developing a system to understand more than is needed in order to support the user activities is a source of wasted time, money and added complexity. Secondly is the argument of Bellotti and Edwards [12], that systems should not seek to act on behalf of the user, but should instead support a users actions and defer to them in efficient and non-obtrusive manners. This second point is pertinent to content recommenders if we approach viewing preference selections within given situations as self moderated action. The author defines this as selections made by a user in response to their own subjective perceptions of the current context and related predictions for the viewing experience to follow. The author would argue that these factors lead users to moderate absolute content preferences when choosing things to watch. This is a subtlety different approach to considering content selections purely in terms of video content preferences made within a specific context. The important factors for a recommendation system to focus upon now become the users own perception of the viewing context rather than any notion of context as a set of technical, geographical or temporal constraints.

This as a useful way in which to consider context in future video recommenders as historic restrictions on access to content due to the constraints of broadcast schedules and device connectivity are being rapidly eroded through technological and commercial advances. This approach addresses a world where we could view any video content anywhere. Choices are made in response to users own perceptions of the viewing context and predictions for the experience to follow, which in turn are based on past viewing experiences in others contexts perceived as similar.

Approaching the problem of context from the perspective of user perceptions has many precedents in the literature. As example the concepts of situatedness [13], and re-place-ing space [14], demonstrate that higher level notions of perceived context can provide a general approach to the identification of relevant aspects of a situation through which video consumption experiences may be characterised. A focus for contextual investigations following this research approach should therefore be to attempt to identify differences in viewing situations by the same inter-contextual cues [15], perceived by the users when they build their own mental models of the current context.

The hypothesis under consideration is that inter-contextual cues manifest within a consumption situation are used by the user in the formulation of their own perceptions of context, upon which they then base decisions to mediate their own content selection and consumption behaviours.

4 Next Steps and About this Research

The research direction advocated in this paper relates to user research activities currently underway aimed at identifying those aspects of context which influence video consumption behaviours and content selection. An ethnographic study is currently being conducted which is following a range of individual users through a two week period. An array of qualitative and quantitative data collection methods are being employed in an attempt to capture a picture of each users video content selection behaviours across the range of sources they consume video content from. In parallel the study will describe the setting (physical, social and technical) within which they consume. The goal is to attempt to identify self moderated patterns of content preference adaption and the important factors within each viewing situation which may signify the inter-contextual cues (upon perception of which) the user has responded by adapting their content choices.

This study is being carried out as part of a PhD project investigating the wider issue of user experience optimisation for future video content recommenders. The overall goal of the research is to investigate the possibility of a framework for a video content personalisation and presentation system which can operate across devices and consumption contexts whilst providing the best possible experiences for users.

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