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## Chapter 14

# Personalisation of Advertisements in the Digital TV Context

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## Abstract

*In this chapter, we discuss personalisation of advertisements in the digital TV environment and propose an effective personalisation approach, taking into account unique domain requirements. The proposed approach combines the widely used Pearson-based collaborative filtering technique, applied on numerical ratings with the user's lifestyle, a stable characteristic drawn from consumer behaviour theory. We claim that users with similar lifestyles are reliable neighbours and can be utilised for the recommendation of advertisements for any member of their lifestyle neighbourhood. We focus on an inherent limitation of collaborative filtering methods that occurs when few ratings are available for each user and demonstrate that the proposed approach effectively manages this problem. Indeed, the hybrid approach combines the ability of the Pearson-based approach to accommodate rapid changes in user needs and make predictions upon one-click interactions and the advantage of the lifestyle-based approach to handle sparse data, which significantly affects the performance of collaborative filtering prediction methods.*

## Introduction

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The aim of this chapter is to investigate personalisation of advertisements in the digital TV environment, taking into account domain requirements and characteristics. Personalisation of advertisements refers to the selection (filtering) of 30-second advertising messages relevant to viewers' information needs. Delivering messages that viewers are most likely to be interested in offers marketers the opportunity to increase the accuracy of their targeting. Furthermore, reducing TV viewers' information overload — caused by the reception of a great volume of irrelevant messages — results in an increase in viewer satisfaction with respect to the advertising messages. Indeed, studies (Hawkins, Best, & Coney, 1998; iMedia, 2001) have shown that more than 75% of TV viewers are not happy with the broadcasted advertisements.

Despite the admittedly great potential of the one-to-one marketing paradigm in the domain of TV advertisements, it is only recently that the emergence of digital TV platforms enabled the collection of user data and the delivery of personalised advertisements — mainly due to the storage, processing, and data transferring capabilities of contemporary set-top boxes. The installation of such devices in the living room provides the technological means for the application of adaptation and personalisation techniques in this context drawn from the experience of 'established' interactive environments such as the Web.

Indeed, adaptive hypermedia and adaptive Web-based systems provide a solid framework for personalisation in order to identify which of the current approaches are suitable for our domain. This research path leads us to recommender systems, a sub-class of user-adaptive systems which has proved to work well in real-world applications and matches the domain characteristics as they will be described in this chapter. Then we proceed to an algorithmic level and investigate personalisation algorithms in terms of their efficiency. Drawbacks of these approaches are discussed and addressed through the exploitation of lifestyle user characteristics, which currently provide efficient means of advertisement targeting traditional marketing activities. Finally we present empirical results in the form of a laboratory experiment which demonstrate the feasibility of our claims.

## Context and Background Work

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### Domain Characteristics

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In order to decide upon the applicability of personalisation techniques in the TV advertising domain, we briefly describe the most important characteristics of the TV viewing context. TV viewing is a low-involvement, passive activity (Belch & Belch, 1995) taking place in the (usually) relaxing home atmosphere, possibly surrounded by other noisy factors such as discussions or other parallel activities. The physical position of

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