Extended abstract:
A design for a tourist CF system

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1. Introduction

The use of computer supported travelling in the tourist industry has been steadily increasing and has recently attracted considerable interest. Tourism is in many ways the domain most closely connected with personal preferences and by definition connected to (physical) mobility. Hence, not surprisingly personalised location-based information systems are very suitable for this domain. The modern tourists do not only require general guidance and information but also information specifically tailored to their personal preferences. Local guides and guided tours cover many tourists’ needs by customising tours. Yet, a location-based personalised recommender systems offers a supplement to the available customised services. Recommender systems are designed to help users cope with vast amounts of information, and they do so by presenting only a certain subset of items that is believed to be relevant for the user. The typical tourist will not linger long in any location. Hence, a location-based information system will not be able to effectively learn the idiosyncrasies of any single tourist. This is a challenge when dealing with recommender systems, as they (most often) rely on a classification of the user and the information it is attempting to recommend. Not having sufficient information to give good recommendations to a new user is known as the \textit{cold-start-user} problem. The cold-start-user problem can to some degree be alleviated by employing user models. However, building user models requires (sufficient) knowledge about the specific user. Acquiring this knowledge is subject to the \textit{knowledge bottleneck} problem. That is, it is time consuming (for the user) and not necessarily easily accessible. A key question is therefore what \textit{type} of information to query from a user, to what \textit{extent} should information be collected, and how should the user information be \textit{exploited} when the system gives recommendations. In this abstract we give the conclusions of a structured literature review \cite{3} designed to answer these questions. The literature review focuses attention to CF models combining Bayesian networks with user modelling as a means of mitigating both the cold-start-user and knowledge bottleneck problem.

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2. State of the art

In this section we summarise the structured literature review presented in [3]. Our epitome is made with a focus on ways to solve the cold-start-user problem, and to this extent Lillegraven and Wolden structured information from a total of 375 relevant papers around nine different solution techniques:

- Demographic User Data
- Ask to Rate
- Trusted Users
- Specification of Feature Preferences
- External User History
- Tagging of Items
- Global Model
- Geographic Position Data
- Fast Learners

The solutions were compared and scored along numerous dimensions, including

- The quality of the papers measured using ten subcriteria
- Required user effort initially
- The system’s initial quality of service
- The system’s learning ability
- Applicability for the tourist domain

Based on this analysis (details can be found in [3]), it was chosen to build a system using demographic user data to enhance the recommendations, in the spirit of [2].

Our future work revolves around the integration of this model into an existing infrastructure in Wireless Trondheim [1] and integrate our model with a mobile information system developed on the Android platform [4].

Acknowledgements

This paper is based on [3], which is the MSc-thesis of Lillegraven and Wolden. Kofod-Petersen and Langseth were supervising the master thesis work.

References


