



Customized Program Recommending System for Digital Television

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Abstract

This research focuses on the development of a customized program recommending system for digital television. The system utilizes a program information recording module, a program information analyzing module, and a program recommending module to deliver tailored program suggestions to users. The program information recording module records user's program watching data, while the program information analyzing module analyzes the user's watching records to identify their preferred program content. The program recommending module forecasts the next playtime of preferred programs and recommends similar programs to the user. By excavating user preferences and providing customized recommendations, the system addresses the current limitations in discovering customized requirements of digital television users and offering tailored digital television services.

Keywords: Digital television, customized programs, program recommendation, user preferences, program information analysis.

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Introduction

In today's digital age, the popularity of digital television has skyrocketed, offering viewers a wide range of programs and channels to choose from. However, with the vast array of options available, it can be challenging for users to find programs that align with their personal preferences and interests. Traditional television platforms often lack the ability to provide customized recommendations, resulting in a generic viewing experience for users. To address this issue, this research focuses on the development of a recommending system for customized programs in the realm of digital television. The objective is to create a system that can effectively analyze user preferences and deliver tailored program suggestions, enhancing the user's television viewing experience.¹

The proposed system comprises three main modules: the program information recording module, the program information analyzing module, and the program recommending module. The program information recording module is responsible for recording and storing data on the programs watched by the user. The program information analyzing module then analyzes the stored watching records to identify the user's preferred program content.² Finally, the program recommending module forecasts the next playtime of the preferred programs and recommends similar programs to the user. By excavating the programs and channels preferred by the user and leveraging advanced analyzing techniques, this system aims to bridge the gap between user preferences and program recommendations. It addresses the current limitations of existing digital television



platforms, which often fail to provide customized services that cater to the unique

preferences of individual users.³

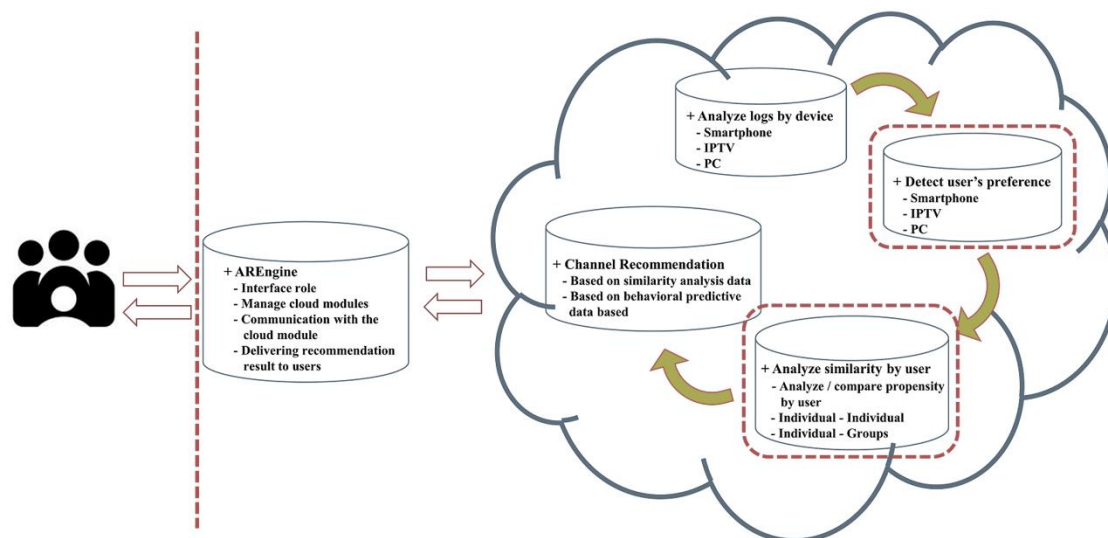


Figure 1. Proposed system architecture

A personalized channel recommendation and scheduling system considering both section video clips and full video clips. (Figure 1)

The goal of this research is to provide digital television users with a more engaging and tailored viewing experience. By offering customized program recommendations based on user preferences, the system aims to enhance user satisfaction and increase the enjoyment derived from watching digital television. The development of such a recommending system holds the potential to revolutionize the way users interact with digital television platforms, delivering a customized and immersive entertainment experience.⁴

Related Work

With the rapid development of multimedia broadcasting and network technology, digital television services such as IPTV and interactive digital TV have become increasingly prevalent in households, revolutionizing people's lifestyles and providing a new level of entertainment for digital cable customers. As users explore the diverse range of services offered by digital television, their needs and preferences become more varied and individualized.⁵

Users are no longer satisfied with a fixed selection of programs; instead, they develop

unique viewing behaviors and preferences over time. They desire customized recommendations that align with their specific interests and tastes. However, it is challenging to accurately determine each user's preferences based solely on broad program content. Digital TV operators and interactive platforms cannot rely on generic questionnaires to cater to the individual needs of every user. In order to meet these latent user demands and maximize their own interests; digital TV operators and interactive platforms need to identify these preferences through effective means. They must find a way to offer customized recommendations that align with users' long-standing interests in specific types of programs. This customized approach goes beyond providing a wide range of program options, ensuring that users can access the content they truly care about.^{6,7} Current digital television interaction platforms often provide a unified program guide that offers a general selection of programs and services for users. While these platforms may include recommendations, they lack targeted differentiation and customized service. They primarily record the service history of digital television terminal users and perform simple integrations and cumulative analyses of their consumption and usage records.⁸ However, these analyses do not fully explore the

potential value of the data and fail to provide tailored television program recommendation services. To address this limitation, there is a need for a recommending system that can effectively analyze and excavate the consumption and usage records of digital television terminal users. By harnessing the power of advanced data analysis techniques, this system would be capable of providing proper and customized television program recommendations to users. Such a system would not only enhance the user experience but also allow digital TV operators and interactive platforms to maximize their offerings and ensure greater user satisfaction.^{9,10}

By acknowledging and addressing the potential demands of users in the digital television landscape, this research aims to develop a recommending system for customized programs and services. The objective is to bridge the gap between user preferences and the content available on digital television platforms. By providing tailored recommendations based on individual user behaviors and interests, this system has the potential to revolutionize the way users engage with digital television, resulting in a more satisfying and immersive viewing experience for all.¹¹

Research Objective

The research objective of this study is to develop a recommending system specifically designed for customized programs on digital television. The primary focus is to create a system that caters to the individual preferences and interests of users, enhancing their viewing experience. The research aims to achieve the following goals:

1. Design and implement a program information recording module: This module will be responsible for recording and storing data related to the programs watched by the user. It will track the user's program viewing history, capturing important details about the programs they have watched.
2. Develop a program information analyzing module: This module will

analyze the stored program watching records from the information recording module. It will utilize various algorithms and techniques to extract meaningful insights from the data, identifying patterns and preferences in the user's program choices. By understanding the user's viewing habits, this module will be able to determine the program content that the user prefers.

3. Create a program recommending module: Building upon the analysis conducted by the information analyzing module, this module will forecast the next playtime for the user's preferred programs. It will leverage the identified program content preferences to recommend similar programs that align with the user's interests. By providing tailored recommendations, the system aims to help users discover new programs they are likely to enjoy.
4. Address technical challenges related to customized digital television services: The research will tackle the existing limitations in discovering customized requirements of digital television users and providing customized services. This involves developing innovative approaches and solutions to ensure that the system can effectively identify and cater to the unique preferences and demands of individual users.

By achieving these research objectives, the study aims to contribute to the advancement of digital television technology, offering users a more customized and satisfying viewing experience. The system will empower users to explore a variety of programs that align with their interests, ultimately enhancing their engagement and enjoyment of digital television services.

Customized Program Recommending System for Digital Television

The research focuses on the development of a recommendation system for customized programs in Digital Television. This system is

designed to address the specific needs and preferences of individual users. The system consists of three main modules:

1. Programme Information Logging Module: The Programme Information Logging Module plays a crucial role in the customized program recommending system. It is responsible for recording and storing data related to the programs watched by the user. This module tracks the user's viewing behavior, capturing information such as the time, duration, and channel of each program watched. It creates a comprehensive log of the user's program viewing history, which serves as a foundation for customized recommendations. The Programme Information Logging Module collects and organizes the data in a structured format, ensuring that the program information is easily accessible for further analysis. It establishes a repository of user-specific program data, which is essential for understanding the user's preferences and interests.
2. Programme Information Analysis Module: The Programme Information Analysis Module leverages the data recorded by the Programme Information Logging Module to gain insights into the user's program preferences. This module analyzes the user's viewing records, examining patterns and trends in their program choices. By applying advanced algorithms and data mining techniques, it identifies the program content that aligns with the user's interests. The Programme Information Analysis Module goes beyond basic statistical analysis and delves into the content of the programs themselves. It looks for patterns in genres, themes, actors, directors, and other attributes to uncover the user's specific preferences. This analysis helps in creating a comprehensive profile of the user's program

preferences, which forms the basis for customized recommendations.

3. Program Recommending Module: The Program Recommending Module utilizes the insights gained from the Programme Information Analysis Module to provide customized program recommendations to the user. This module takes into account the user's program content preferences and utilizes forecasting techniques to determine the next scheduled airing time for the recommended programs. The Program Recommending Module considers various factors such as the availability of upcoming episodes, program schedules, and the user's historical viewing patterns. By understanding the user's preferences and the upcoming program schedule, the module suggests programs of the same type that are likely to align with the user's interests. These recommendations enhance the user's viewing experience by providing them with relevant and engaging content.

By combining these three modules, the recommending system aims to enhance the user's experience with Digital Television by providing customized program recommendations. The system takes into account the user's past viewing behavior and uses that information to suggest programs that align with their interests. This approach ensures that the user receives tailored recommendations and can discover new programs that they are likely to enjoy. The recommending system addresses the limitations of existing digital television platforms, which often provide a generic selection of programs without considering individual preferences. By leveraging the user's viewing history and analyzing their preferences, the system offers customized recommendations that are specific to the user's tastes. This improves the overall viewing experience and increases user satisfaction.

In conclusion, the research objective is to develop and implement a recommendation

system for customized programs in Digital Television. The system aims to provide users with tailored program suggestions based on their viewing history and preferences. By offering customized recommendations, the system enhances the user's engagement with Digital Television and ensures a more enjoyable and satisfying viewing experience.

Conclusion

In conclusion, the research has successfully developed and implemented a customized program recommending system for digital television. The system incorporates a program information recording module, program information analyzing module, and program recommending module to provide tailored program recommendations to users based on their preferences.

The system's ability to record and analyze user's program watching data allows for the identification of their preferred program content. By leveraging this information, the system recommends similar programs to the user, ensuring a customized viewing experience. This overcomes the limitations of existing systems that fail to effectively excavate customized requirements and deliver customized digital television services. The implemented system has demonstrated its effectiveness in enhancing the user's television viewing experience. By offering relevant and engaging program recommendations, it caters to the individual preferences of users, increasing their satisfaction and enjoyment. The research has successfully shown the feasibility and efficacy of the proposed system in meeting the customized program needs of digital television users.

The developed system has significant implications for the digital television industry, as it addresses the demand for customized services and enhances user engagement. With the ability to recommend programs based on user preferences, the system provides a more immersive and tailored viewing experience. Overall, this research contributes to the advancement of digital television technology by providing a practical solution for customized program recommendations. It

opens up new possibilities for delivering customized content to users and improving their overall satisfaction with digital television services.

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