

Exposing Profiles to Build Trust in a Recommender

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ABSTRACT

This paper describes a method for increasing trust in a TV show recommender. We look for people in common between programs users watch and new programs that are highly rated by our TV show recommender. We then present these to users in a conversational sentence, helping them decide if they want to try the new show. This method has been implemented in our current TV show recommender interface and will be tested in the near future.

Keywords

Trust, credibility, captology, persuasion, persuasive computing, conversational agent, user profile, profiling, recommender, TV, interface design, electronic program guide, EPG.

INTRODUCTION

During testing of our TV show recommender, we encountered a problem: users did not trust the recommender (for more details on the recommender, see [4]). When our system recommended programs users regularly watched, they thought the recommender worked great. However, when the system recommended TV programs they *did not know*, they felt the recommender had failed. Instead of feeling happy that the system had found a new program to watch, users suspected that the recommender had broken down. This paper documents a method for increasing users' trust in new content recommendations.

RELATED WORK

Related work includes Fogg [2] who suggests a framework for understanding computer credibility. He puts forward the model that $\text{Credibility} = \text{Trustworthiness} + \text{Expertise}$. He further defined trustworthiness as well-intentioned, truthful, and unbiased. Bickmore and Cassell [1] present a method for increasing trust using conversational agents. Their virtual reality realtor engages clients in small talk to gain trust. Reeves and Nash [6] investigate how people interact

with computers and media as if these things are real people. Wheelless and Grotz [7] explore how to measure the relationship between trust and self-disclosure with respect to people.

MOTIVATION

People usually do not want to be challenged when they select a TV show to watch. The majority of television viewing takes place in the evening [1], at a time when people want to relax after a hard day at work or school. People often choose to watch television at this time because it makes them *feel* relaxed [1]. In addition, much of television watching is nonselective [5]. Viewers *coast* from one show to another, watching whatever program that comes on after the program they are currently watching.

Selection of food offers a close analogy. People do not want to try new food at every meal or even everyday. They often want comfort food, particularly when they are stressed. And when they are ready to try a new food, they want to know the ingredients, to understand how this new food relates to foods they are familiar with.

Our goal was to create a device that would give users the activation energy to try a *new program* when the mood strikes. The new method is based on the following assumption: If users understood a little more about why new programs were recommended, they might trust the recommender a little more, and they might forgive it if they did not like one of the new programs it recommends.

REFLECTIVE HISTORY

The *reflective history* is an element in our TV show recommender interface. It displays a conversational sentence justifying highly rated, new TV shows (Figure. 2). The recommender generates a rating for all shows upcoming in the next week. The system then looks for highly rated, new programs--programs not already in a user's viewing history. Next, it searches for a common person between the new program and programs the user has seen. When it finds an appropriate match, the system generates a conversational sentence: `<NewProgram> <NewTask> <Person> who <OldTask> <OldProgram>`.

Example: *Boston Public* stars Jeri Ryan who plays Seven of Nine in *Star Trek: Voyager*.

Table 1: Text strings used in reflective history

Task	NewTask	OldTask
Director	is directed by	directed the TV show
Producer	is produced by	Produced the TV show
Writer	is written by	wrote
Actor	stars	plays <Character> in

The sentence uses a conversational structure, making it sound like something one friend might say to another. This builds on Reeves and Nash's theory [6] that people interact with computers as if they were people. It also builds on Bickmore and Cassell's theory [1] that conversation can make people feel at ease. Finally, the sentence reveals some of what the system knows about the user. This is a type of self-disclosure that can build trust [7]. In this case the only thing our system can share with the users is the information it has profiled about the user.

The short, conversational sentence works well with our TV recommender. The users' main task is to find a TV program to watch or record. They may browse hundreds of options from the 10,000+ shows on each week. The small sentence does not intrude on them, forcing them to consider watching something new. Instead, it waits unobtrusively to aid them if they want it.



Figure 1. Screen from our TV show recommender

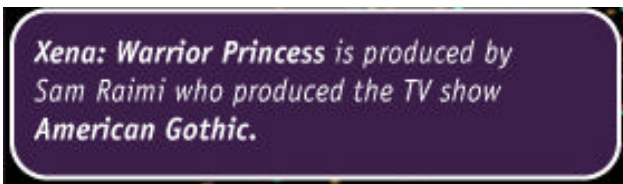


Figure 2. Detail from our TV show recommender displaying the reflective history.

Volume and Time

The system needs to compare the new program with an example users are likely to remember. To find a good match, the system considers both *volume* and *time*. Volume represents the number of times a person appears in the

viewing history. Time represents how recently a person appears in the viewing history. As users watch TV shows, metadata that describes the show such as actors, directors, genre, etc. gets added to the viewing history. As time passes, the *value* for an individual occurrence decreases. By correctly balancing the volume and time, the system can make an appropriate match, finding a program users are likely to remember and comparing it to the new program.

CONCLUSION

The reflective history user interface element helps build trust in our TV show recommender. It uses a conversational sentence, making a recommendation like one friend to another. The system discloses some of what it knows about an individual user, displaying common people such as actors or directors between highly rated, new programs, and programs users often watch. It provides the activation energy people need to try a new program when they are in the mood for something new.

The reflective history element has been implemented in our current TV show recommender interface. We plan to test it in the near future.

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REFERENCES

1. Bickmore, T., Cassell, J. Relational Agents: A Model and Implementation of Building User Trust, in *Proceedings of CHI '01* (Seattle WA, March 2001), ACM Press, 80-87.
2. Fogg, B.J. The Elements of Computer Credibility, in *Proceedings of CHI '99* (Pittsburgh PA, May 1999), ACM Press, 396-403.
3. Kubey, R., Csikszentmihalyi, M. *Television and the Quality of Life: How Viewing Shapes Everyday Experiences*. Lawrence Erlbaum Associates, Hillsdale NJ, USA, 1990.
4. Kurapati, K., Gutta, S., Schaffer, D., Martino, J., Zimmerman, J. A Multi-Agent TV Recommender, *User Modeling 2001: Personalization in Future TV Workshop* (Sonthofen, Germany, July 2001).
5. Lull, J. *Inside Family Viewing: Ethnographic Research on Television's Audiences*. Routledge, New York NY, USA, 1990.
6. Reeves, B., Nass, C. *The Media Equation: How People Treat Computers, Television, and New Media Like Real People and Places*. Cambridge University Press, New York, NY, 1999.
7. Wheelless, L., Grotz, J. The Measurement of Trust and Its Relationship to Self-disclosure, *Communication Research*, 3, 3, Spring 1977, 250-257.