

CollaboraTV – Making TV Social Again

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Abstract

With the increasing use of digital video recorders (DVRs), people are becoming less likely to watch shows simultaneously. Many social aspects of television have become troublesome or have been lost entirely. For example, traditionally, after a show aired, a group of friends might discuss the content the following day. However, this ability is lost if people do not watch the show for days or weeks, or out of order with other programming the group has recorded and watched. CollaboraTV provides an interactive and engaging way for users to participate in recorded shows, despite watching at different times. This is achieved primarily through the use of an interactive virtual audience, which captures events generated by viewers asynchronously. Preliminary usability evaluation results indicate users have a strong desire to communicate and that asynchronous interaction is practical and valuable.

Introduction

Television is undeniably a major component of modern society (Putnam, 2000). We consider it the most influential media form (TVB, 2006). Despite increasing competition from the Internet, TV usage continues to increase, consuming almost half of our leisure time (Bureau, 2006; Putnam, 2000). Television was once championed as the “electronic hearth”, which would bring families together (Tichi, 1991). However, people are increasingly watching TV without their families, with some studies suggesting at least half of Americans usually watch alone (Putnam, 2000).

Partly to blame is the increasing prevalence of Digital Video Recorders (DVRs), sales of which are expected to empower 250 million users by 2011 (ABI, 2006). Primetime shows used to bring families together. Now, and especially as more DVRs gain the ability to record multiple shows simultaneously, family members are opting to watch content based on their particular interests, often separating them from family. Compounding this problem is the volume of content catering to different interests and demographics on TV today. The number of channels available to the average household grew from 18.8 in 1985 to 100.3 by 2003 (Nielson, 2004). The sheer quantity of content makes it less likely for people to watch the same shows.

DVRs are not only impacting the time families spend together, but also the ability for friends, co-workers and extended family to discuss shows – the so called “water-cooler effect.” (Putnam, 2000) People may watch shows days or weeks after they first air and can watch newer shows before older ones. This complicates how groups of friends can discuss shows, with some people avoiding conversation entirely, fearing that they might learn details that could spoil yet-to-be-seen episodes. Furthermore, by the time everyone in the group has seen an episode, parts of the group might be one or more episodes ahead and thus have forgotten many discussion points, know new details that make earlier points less interesting, or are uninterested because too much time has elapsed.

This declining ability for people to interact is eroding once strong social ties. However, indications seem to point towards a lack of ability to communicate, not a lack of desire. If systems can be built to facilitate communication, this social capital need not be lost. However, in order to accommodate DVRs, a sophisticated asynchronous communication paradigm will have to be employed.

CollaboraTV is a simple, but powerful set of communication facilities, which support interaction between groups of people that watch shows independently. When individuals watch a show, they can generate events, such as text annotations and gestures, which are attached temporally to the media stream. When other users watch the same show at a later point, these events are replayed with the media stream, visualized using small avatars. The system also provides a show-recommendation system, powered by social data, which helps users find (potentially new) content that other users are watching and rating highly. This not only acts as a filter, but also pools people together, which increases opportunities for communication.

Related Work

TV-oriented communication has been the focus of substantial research. Several notable systems exist, including SocialTV (Oehlberg, 2006), AmigoTV (Coppens, 2004), and ChaTV (Fink, 2006). Using avatars to represent users in TV-based collaborative virtual environments is becoming increasingly popular (e.g. AmigoTV, SocialTV). Television is traditionally watched in groups, which makes avatars an obvious technique to simulate presence

for remote users. Avatars are ideal for both annotations and non-textual communication, allowing for gestures and postures that provide a dimension of expression that people are already familiar with. In addition to making interaction more interesting and natural, avatars also humanize users that are local or remote, or in the case of CollaboraTV, potentially teletemporal as well.

CollaboraTV's virtual audience extends ideas proposed by PARC's SocialTV, which uses avatars to provide presence cues to synchronous users. CollaboraTV's virtual audience uses interactive avatars to represent both synchronous and asynchronous users and more importantly, as a conduit for user communication, both for text annotations and emotion (via gestures).

CollaboraTV

CollaboraTV supports asynchronous annotation of shows, currently limited to text. These comments can be generated at any point while watching a show. All future viewers will see these comments at the equivalent time they were created, and can leave their own. Users can also generate temporally linked interest points in order to indicate a positive or negative response to a show's content. No meaning is associated with the action to avoid biasing the user; users are free to associate positive/negative to any characteristics they wish, i.e., witty/cheesy, thrilling/dull and suspenseful/predictable. This continuous interest data is used and visualized in several novel and powerful ways, which, unfortunately, is beyond the scope of this paper.

In CollaboraTV, the virtual audience simulates the effect of a movie theatre, where avatars are seated and shown as silhouettes against the show (Fig. 1). The simple black figures are unobtrusive, immediately recognizable, and work well at a variety of scales. Each avatar is named and has a static location throughout the show, which assists the user in associating events with particular individuals. Annotations are shown in translucent comic-book-like speech bubbles, which appear above avatars. Avatars raise and lower their arms to make thumbs up and thumbs down gestures, which correspond to positive and negative interest feedback respectively. All actions are smoothly animated and avatars subtly shift in their seats and look around. This effect increases the perceived interactivity and realism. The virtual audience supports asynchronous and synchronous viewers, as well as mixed audiences.

A comprehensive usability study was recently conducted; a detailed analysis of the results will be presented in a future paper. Initial findings indicate

users both understood and appreciated the value of asynchronous communication, with over half of the participants noting CollaboraTV made television more engaging and enjoyable.



Figure 1. CollaboraTV's Virtual Audience & Interest Profile

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