ePresence Interactive Media: An Open Source eLearning Infrastructure and Web Portal for Interactive Webcasting, Videoconferencing, & Rich Media Archiving

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Abstract. This poster introduces a portal to the ePresence Interactive Media webcasting, conferencing, and rich media archiving infrastructure that enables access to a large and growing worldwide collection of "rich media recordings" of the presentations, slides, videos, and web demonstrations that constitute the media artifacts of lectures, seminars, and other learning events.

Keywords: webcasting, streaming media, eLearning, digital media, rich media, digital video, videoconferencing, web portal.

1 Introduction

The ePresence Interactive Media system (http://epresence.tv) creates a media space that allows distributed groups of individuals to participate and interact in webcast events such as lectures, and to do so before, during, and after the event [1-4]. ePresence incorporates a modular Web services architecture and XML-based data structures to facilitate interfacing with other eLearning, collaboration, and content management applications. The system currently being distributed supports the broadcasting of video, audio, slides, and screen captures; concurrent slide review; integrated moderated chat and voice communications support for questions and discussion; tailorable skins; the automated creation of embeddable, structured, navigable, and searchable event archives; and the bookmarking and tagging of points in archived presentations. Speakers are not forced to use Powerpoint — ePresence transmits several rich media presentation formats. The system is highly cross-platform, supports audio-only viewing at bandwidths as low as 56K, and is being distributed via open source and community source strategies.

Two papers at this conference focus on current research designed to enhance the capabilities of ePresence. Baecker, Birnholtz, et al. (2007) [5, see also 6-8] demonstrates that videoconferencing can be smoothly integrated within the ePresence

architecture to allow “videoconferencing for the few” (for example, those wishing to ask questions of the speaker) to exist concurrently with “webcasting to the many.”

Baecker, Fono, et al. (2007) [9, see also 10] illustrates how a persistent chat system enables viewers of a webcast to engage in dialogue about the content of the learning event, and how this can happen in real-time during the event, and also retrospectively after the event, while viewing a rich media archive of what transpired.

Our poster will focus in more detail on the world-wide ePresence archives, and the portal that enables access to a large and growing collection of “rich media recordings” of the presentations, slides, videos, and web demonstrations of lectures, seminars, and other learning events.

2 Background and Previous Work

The incredible success of YouTube [11] has illustrated the power of user-contributed video content that is available to viewers all over the world via the Internet. Less well known are the Internet Archive [12], an archive of famous speeches [13], the Steven Spielberg Film and Video Archive about the Holocaust [14], and the Open Video Project created by the University of North Carolina [15]. A Google search of the Internet indicates that there are dozens or hundreds of other smaller Internet video archives.

Yet all of these seem to provide access to pure video content, and not to rich media consisting of synchronized video, slides, and web pages. As usage of ePresence has grown, it seemed important to address this need.

3 The Portal

Novel methods are required to organize archived rich media presentations, and make them more accessible to the general public. We are currently developing and will release in the summer of 2007 (with ePresence 4.0) a portal to accomplish these goals; this section introduces major features of this system (see Figure 1).

3.1 Content Organization

Systems that compile large amounts of data must have ways to organize this data in ways that are natural to the user. We utilize a number of methods to bring order to the data, including categorization, tagging, and the ability for users to “praise” presentations that they enjoy.

Categories are general, pre-defined, descriptors. We use this categorization to allow users to control which presentations they are shown when viewing the site (Figure 1a). Users coming from the health field, for instance, could choose to view only health-related presentations. In this way, the content of the site can contextually adapt to the preferences of each visitor.

Tags are keywords that contributors apply to presentations in order to allow for a finer-grained classification. These are often much more informal than categories (for instance, they are not chosen from a pre-determined list), and more than one may be associated with a presentation. We utilize a tag cloud (Figure 1e), popularized by sites such as Flickr [16] and del.icio.us [17], to provide a visualization of recently used tags on the site. In addition to the traditional usage of font size to represent overall tag popularity, we also utilize colour to represent recent popularity, in order to emphasize current or emerging trends.

We also give users the ability to "praise" presentations. We use this information, along with the other meta-data we gather, to dynamically find presentations that other users might find enjoyable. When a user gives "praise" to a presentation, the presentation is automatically added to a list of the user's favourite presentations; with this, users are easily able to "bookmark" content for future reference.

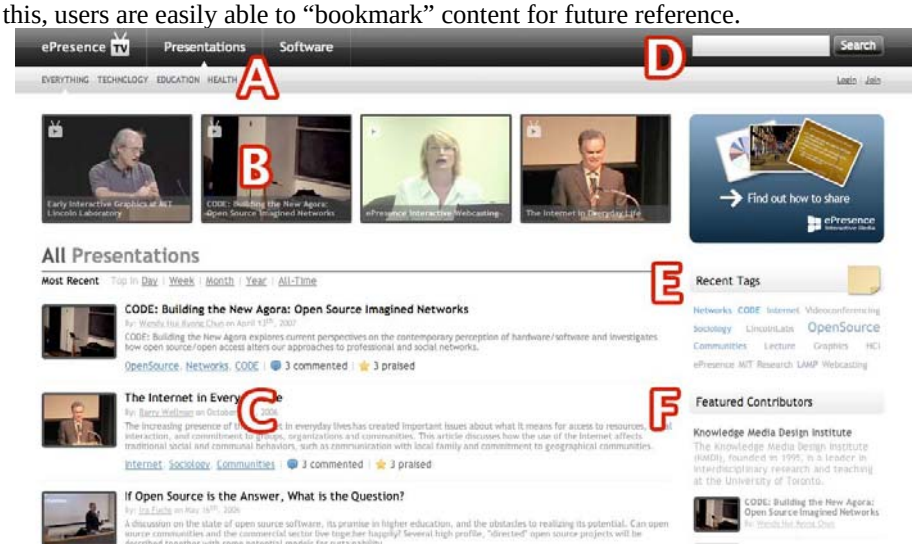

Fig. 1. The main portal interface. (a) Categories; (b) Featured presentations; (c) List of presentations – presentations are viewable by most recent, or by popularity in a given time period; (d) Search; (e) Tag cloud; (f) Featured contributors.

3.2 Finding Presentations

In order to help users find presentations that might interest them, we have made it possible for site administrators to manually feature specific presentations and contributors. We also utilize a full-text indexed open source search engine, and give users the ability to view the most popular presentations in different time periods.

Presentations and contributors that are manually featured are given emphasis on the front page of the site. Featured presentations (Figure 1b) are specific items that we feel users might enjoy, while featured contributors (Figure 1f) are users that we feel are contributing especially exciting and interesting content.

While manually featuring is without a doubt very useful, it is, by its very nature, subject to bias, and it requires a lot of work to maintain. Thus, in addition to manually featured presentations, we also give users the ability to view dynamically generated lists of popular presentations (Figure 1c), within different time periods (for instance, within the last day, the last week, or all-time). Popularity is based on a number of different factors, including the number of users that have praised or viewed the presentation, and more general qualities, such as the popularity of its applied tags.

A powerful search tool is also important to assist users in finding presentations that they would enjoy. In order to provide both power and efficiency, we utilize the open source Lucene.Net search engine framework [18]. Lucene.Net is a full-text indexing search engine that allows us to rank presentations based on a search query, or a number of different parameters. This tool is used both to support traditional search functionality (where the user enters a search phrase, and the site outputs potential matches), and also to find presentations that are similar, or in some way related, to any given presentation (by simply building a query based on that presentation's metainformation). In the case of traditional search (Figure 1d), we can search through any number of different fields (e.g, tags, titles, event names, descriptions), and even distribute weight un-evenly amongst the fields. Thus, for instance, if a user searches for the term *HCI*, the system might perform the search with more weight on the 'tag' field, rather than the 'description' field, since tags are more likely to provide meaningful keywords than a paragraph-long description.

3.3 Viewing Presentations

The latest version of ePresence (version 3.3) allows viewers to embed presentations into their website or blog. Rather than create an entirely new interface for viewing presentations, we leverage this feature, and simply embed hosted presentations into our portal interface. Embedding the presentation gives the impression that the content is hosted on our site, and allows us to provide features (for instance, the ability to view a list of similar presentations) that are not possible with independent external presentations.

We also retrieve thumbnails of each presentation that is submitted to the site using a background process on the server. In addition to the obvious benefit of giving users the ability to preview a presentation before watching it, this also helps ensure that the presentations being added are active (and valid) ePresence presentations, since presentations are not enabled on the site until thumbnails are retrieved successfully.

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