The CHI 2013 Interactive Schedule

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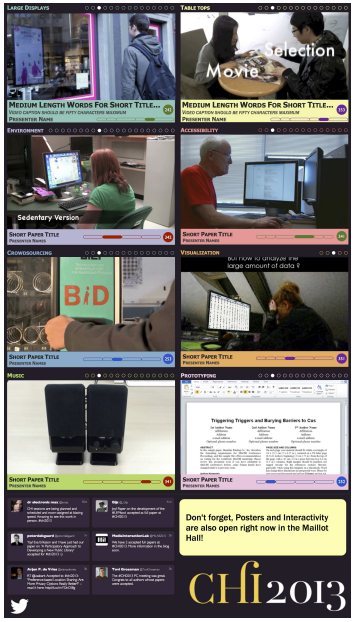

Figure 1: An early prototype of the interactive filtering mode with 8 tiles. Each tile features a video and title-card information for a playlist of items matching a filter applied to the conference schedule.

The CHI 2013 Interactive Schedule

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Abstract
CHI 2013 offers over 500 separate events including paper presentations, panels, courses, case studies and special interest groups. Given the size of the conference, it is no longer practical to host live summaries of these events. Instead, a 30-second *Video Preview* summary of each event is available. The CHI'13 Interactive Schedule helps attendees navigate this wealth of video content in order to identify events they would like to attend. It consists of a number of large display screens throughout the conference venue which cycle through a *video playlist* of events. Attendees can interact with these displays using their mobile devices by either constructing custom video playlists or adding on-screen content to their personal schedule.

Author Keywords
Large displays; multi-surface interaction; video content

ACM Classification Keywords
H.5.1 [Information interfaces and presentation (e.g., HCI)]: Multimedia Information Systems.

Introduction
The CHI'13 conference program includes 16 parallel sessions over a period of four days with a wide variety of content, including not only paper presentations but also

panels, courses, case studies and special interest groups. The main conference offers over 500 separate events that span a diverse set of topics that appeal to both research and industry. Our challenge is to support conference attendees so that they can easily identify the content that is most relevant to them. In the early days, the CHI conference hotels played all the conference videos on the hotel's television channel. More recently, CHI Madness offered a series of extremely short (25-45 seconds) live summaries of the upcoming talks for each day. However, the logistics of a live event are no longer practical.

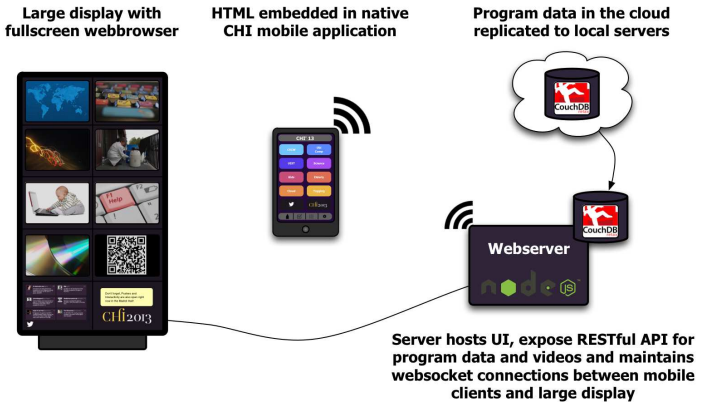

Figure 2: An overview of the system architecture.

Instead, CHI'13 is introducing Video Previews, 30-second summaries of every event in the main four-day program. These act as promotional material for the conference as well as offer conference attendees a glimpse of the conference before they arrive. We expect attendees to use these video previews, in addition to titles and abstracts, to help plan their days. We also expect attendees to create individual video playlists to exchange with students or colleagues or perhaps as their own personal "best-of-CHI".

The CHI'13 Interactive Schedule is designed to address a key problem: how can people at the conference identify the events they would like to attend. We accomplish this by placing large display screens throughout the conference area that display the video previews associated with each event, along with event metadata such as scheduled time and location on a map. These large displays are configured in one of two modes.

In the first mode, displays are dedicated to a video playlist of all the events in the upcoming session. During the break, or even during sessions, attendees can watch the video previews to get a quick overview and to help them decide what to see next. If they have a smart phone or tablet running the CHI'13 mobile app, they can also connect to these large displays and add on-screen events to their personal schedule.

The second type of display is even more interactive. Each event includes metadata such as title, abstract, authors and various keywords. Attendees can use the CHI'13 mobile app to filter the conference schedule based on this data, and create a custom video playlist of matching events to view on a large screen. As the display cycles through items in the playlist, attendees can continue interacting with on-screen content using their mobile devices such as adding it to their personal schedule.

Each deployment of the system, regardless of the mode, comprises three components: a large screen display; attendees' mobiles devices used to interact with these displays; and a server that coordinates displays and mobile devices, and caches content locally to increase system responsiveness. Fig. 2 offers an overview of how these components interact.

Besides aiding the CHI audience in navigating events at the conference, we will study usage patterns of multi-surface private and shared displays to inform interaction design. For example, do attendees value the

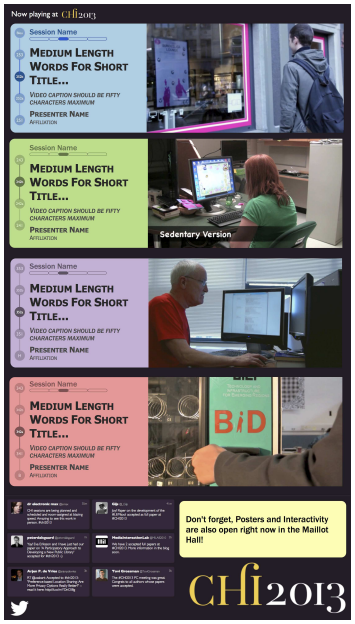

Figure 3: An early prototype of the upcoming mode which features each corridor of the conference venus as a line on a metro system.

affordances of private-view mobile controllers over having a shared controller tethered to the large display? How do attendees compete for real estate on shared displays? Do they collaborate, physically wait in line, or expect the system to enforce an ordering? Our data collection will consist of anonymized activity logs and in situ observations.

Implementation

The Server

The server is the backbone of the system. Implemented as a node.js server, it hosts the large display and mobile client interfaces, and exposes a RESTful API that allows them to communicate with each other or query the conference schedule database. Every connected client maintains an open socket connection to the server. When a video playlist is initialized, or completes, the server notifies all connected clients through these sockets. Every 30 seconds, the server sends a *tick* through these sockets, which contains indices that reference particular positions in corresponding video playlists (described below). In this way, barring any connectivity issues, and with minimal cross-communication, all connected clients remain in sync.

This year, to facilitate last-minute room changes, the conference schedule will be hosted in the cloud. To mitigate any networking issues, the server maintains a local cache of this database and periodically polls the database-in-the-cloud and downloads any updates. Similarly, the server also stores a local copy of all video data, thereby minimizing any load latency and buffering for the large display interfaces.

Large Display Interfaces

The large display interface, implemented as a modular HTML5 web application, is one of the clients connected to the server. As previously mentioned, the system contains two modes – upcoming and interactive filtering – and each implements a specific interface.

Fig. 3 shows an early prototype of the upcoming mode interface. It features a stylized map of the conference venue, which depicts each corridor as a metro line (akin to Paris metro system). Each metro line serves as a video playlist of the current or upcoming sessions. On every *tick* from the server, the four video playlists advance and display the video and title-card information for the new event. Thus, this display cycles through every event within every session individually. With 16 parallel sessions, and at most 6 events per session, these playlists should take 10-15 minutes to complete one loop. We believe this mode serves as a low-pressure guide to the conference: attendees are not required to directly interact with the large displays and can just stand and watch for new content. As a result, this mode is particularly suited for breaks to help attendees determine where to go next.

Fig. 1 shows an early prototype of the interface filtering interface. It features eight tiles, each containing a custom video playlist built by an attendee using the CHI'13 mobile application. These video playlists display events that match a particular filter (e.g. items tagged with "visualization" that are currently playing, or items from the "design" community in the next sessions). On every *tick* from the server, each video playlist advances – title-card information is updated, and the new video preview begins to play. Once all events in a playlist have been viewed, the tile fades to black. If all tiles are currently empty, 2-3 "sponsored playlists" are shown to ensure that the displays are always engaging and content-filled. These playlists are created by conference sponsors to promote their events.

In both modes, the title cards also contain a short three character code. If an attendee does not have easy access to a mobile device, or if their device is unable to connect to the large display, they can note this code down and add it to their schedule later, or use it to look up the item on the paper schedule. A portion of the interfaces also feature a Twitter feed for the #chi2013 hashtag, and an announcements box. Together, these can help highlight areas of the conference that attendees or organizers respectively want to draw attention to.

Mobile Application

Figure 4: An early prototype of the mobile interface. (a) (left) Choosing to filter the conference by session, room, community or keyword. (b) (right) The main mobile interface which maps to the interactive filtering tiles view.

The CHI'13 mobile application is attendees' primary mechanism for interacting with the large displays. Implemented as an HTML5 web application embedded in the larger CHI'13 mobile application, attendees begin by selecting which large display they would like to connect to. If the chosen screen is setup for interactive filtering, an attendee can select a particular time context (now, next sessions, or the entire conference) and then begin to define a filter (e.g. by community, keyword, or session) – Fig. 4(a). Once a filter has been chosen, the interface POSTs this data, via the servers RESTful API, which initializes a new video playlist and notifies all connected clients.

The main mobile interface, Fig. 4(b), mirrors the layout of the large displays to minimize any interface mapping issues. Here, attendees can tap to interact with items shown on the large displays – they can either choose to view more information about the item, or add it to their personal schedule. The latter triggers a call to the parent native application which adds the selected item to the attendees schedule.

The mobile interface also maintains a timer, which resets on every tick, to detect any connectivity issues. In the event the mobile controller loses its connection to the server, it exposes a textbox through which the attendee can type an items 3-character code to either view more information, or add the item to their schedule.

Conclusion

The CHI'13 Interactive Schedule is designed to help CHI'13 conference attendees identify what is happening now, where and when specific events will occur and what sets of events are relevant to a particular topic or keyword. We are exploring different strategies for browsing video previews and creating video playlists, which are being tested at this conference.

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