
AIRMobile: Accelerated Instant Replay for In-Meeting Review by Mobile Users

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Abstract

Videoconference participants attending from mobile devices often miss parts of meetings, either because they are running late to the meeting or because of network service interruptions. Thus, they may need to catch up on the content they missed. Asking other attendees for a recap is often disruptive. We present AIRMobile, an Accelerated Instant Replay system for mobile videoconferencing that enables mobile attendees to privately catch up on an ongoing meeting.

Keywords

Videoconferencing, mobile, DVR, TiVo, replay.

ACM Classification Keywords

H5.1. Multimedia Information Systems: Audio input/output, video; H5.2. User Interfaces.

General Terms

Design, Human Factors.

Introduction

A recent study found that 95% of people missed parts of meetings because they were running late, distracted, or multi-tasking [2]. Participating in a videoconference while mobile adds other issues, such as network jitter and service interruptions. Asking other attendees for a

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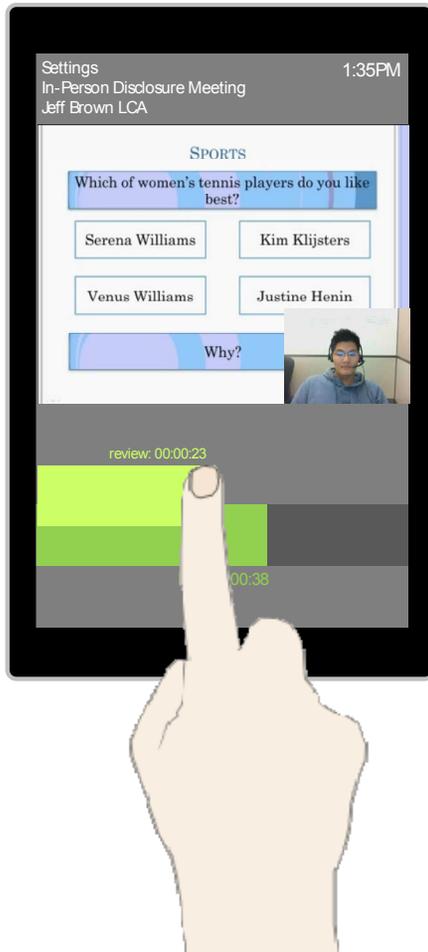


Figure 1. AIRMobile UI: User has toggled the picture-in-picture view to show a large workspace and small video window while replaying past content of an ongoing meeting.

recap is often disruptive. Thus, we present AIRMobile, an Accelerated Instant Replay conferencing system for Mobile videoconferencing that enables mobile attendees to privately catch up on an ongoing meeting.

Previously, we developed AIR [1], an accelerated instant replay system for in-meeting review for non-mobile devices. It can replay four modalities: participant's audio, video, speech-to-text conversation transcript, and shared workspace. While viewing the live video, transcript, and workspace along with hearing live audio, users can choose one of three replay modes: manual, muted, and full. In manual replay, users can browse the transcript. In muted accelerated replay, users also see the past video, transcript, and workspace, and in full accelerated replay, they also hear audio from the past instead of live audio. A preliminary evaluation found that users liked AIR and that they preferred full replay to catch up on missed parts of meetings.

The positive feedback for AIR led us to investigate how to provide replay functionality for mobile attendees. In our initial investigation, we focused on audio, video, and workspace modalities. We excluded transcripts because the speech-to-text system inaccuracies were found to be problematic in our evaluation.

Research Questions

Our work focused on two important research questions. First, is it possible to support accelerated in-meeting review on mobile devices? Mobile devices typically have low processing and network speeds; can they handle switching at run-time between live and past content? Second, how is the limited screen space on mobile devices used to replay both the video and workspace?

Both require high resolutions to convey enough information, and a mobile device does not have as much real-estate as a desktop or a laptop.

Demonstration

We have developed a system that supports accelerated in-meeting review on mobile devices. We solve the issue of limited screen space through a toggle-enabled picture-in-picture display shown in Figure 1. As Figure 1 shows, the video window is shown in picture-in-picture mode on top of the workspace window. The user can swap the contents of the picture-in-picture windows by tapping on the smaller one. The video window shows the currently active speaker. The replay controls below the picture-in-picture display provide a scrubbing timeline through which a user can select a point in time for accelerated replay or return to live viewing.

We will show the system at work during our live demo. Specifically, attendees will experience the accelerated replay capabilities of AIRMobile including how it catches up to the live discussion. In the future, we plan to investigate 1) how well the system supports catching up on missed content, 2) other window layouts and displaying videos of all participants instead of just the video of the current speaker, and 3) the usefulness of AIRMobile when users must divide their attention between the replayed content and live discussion.

References

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