Personal Past Experiences Seen Through the Panopticon

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ABSTRACT
The relevance of longitudinal user experience (UX) studies has become increasingly acknowledged within the CHI community, however not without questioning the practical implications for design and facing the challenge to handle a huge amount of data, such as video content collected over a longer period of time. Within this paper we aim to discuss this challenges based on an ongoing long-term case study involving the exchange of video messages between family members (parents and daughter), which are physically separated from each other (living in Italy and UK) over one year. We introduce Panopticon, a visualization method we used to represent the collected video data of this study in a compact but still accessible way to researchers and users. The technique offers a novel approach for rapid video browsing and has the potential to be used as basis for new forms of interaction with video data and as reflection tool in experience research exploring UX over time.

Author Keywords
User experience; long-term UX; temporal representation; video content; novel visualization method.

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

General Terms
Human Factors; Design.

INTRODUCTION AND MOTIVATION
User Experience (UX) has a temporal character and includes the experience before, during and after an interaction. The temporality of UX, i.e. how the quality of a UX develops over time, is an aspect that is still largely neglected due to practical arguments (e.g., time consuming) and needs further empirical studies. There are relatively few studies published on the temporal changes and paths of the development of UX (e.g., [2,3]). That leads to other research gaps related to the lack of appropriate methods for long-term user studies [5], the study of UX retrospectively (e.g. [1]), the implications for design based on memories of experiences [4] and most relevant for this paper, the representation of past personal experiences.

In this paper we want to draw the attention of the workshop discussion on the temporal aspects in user experience research. Thereby we are particular (1) looking at ways for representing time or more precisely the temporal trajectory of users interacting with technology over a longer time period, (2) discussing the usefulness of new visualization techniques, such as the Panopticon we are introducing, and (3) reflecting further on the value of using such novel techniques for reflecting on personal past experiences.

As case example for introducing Panopticon we refer to an ongoing long-term user study, in which we collected over individual video messages between two parties, parents and daughter, throughout one year. Living apart from each other (Italy and UK) personal moments and experiences were exchanged via a video exchange system over a Tablet PC. The study following an auto-ethnographic approach and involves the first author as participant. Facing a huge amount of video content collected over one year (523 video messages, 6.5 hours of video footage), we were exploring possibilities to support the visualization and analysis of this data. The single videos were merged into one single Panopticon video (see Figure 1), which enables the visualization of one year’s worth of exchanges of video messages in 3.5 minutes.

Figure 1. Screenshot of a one-year exchange of video messages (523 in total), visualized in a 3.5 minute Panopticon video.

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video is provided additionally to this paper to demonstrate the features and functionalities of Panopticon. Moreover we will provide a live demonstration at the workshop itself in order to stimulate further discussion on the usefulness and value of Panopticon for UX research.

**PANOPTICON**

Panopticon is a novel moving video overview technique that renders an entire video as a moving grid of thumbnails, displaying every frame of a video over the course of a short (a few seconds) animation loop. The technique offers a novel approach for rapid video browsing and has the potential to be used as the basis for new forms of interaction with video data. The technique provides a new form of video visualization with a consistent spatio-temporal layout. Panopticon presents a rapid overview of the entire video sequence to the user in a way that allows any sub-sequence to be followed without interruption (see Figure 2).

Panopticon presents multiple parts of a video sequence in parallel while overcoming the limitations of static parallel video layouts (see Figure 3). The key concept lies in recognizing that the spatial layout that gives context to these animated storyboards can be applied as a continuous function of time – mapping each frame index from the video to a displayed position and, potentially, other rendering attributes. At each spatial point on the rendered video, the thumbnail video displays a frame at that point in time relative to the number of cells. All of the cells then animate sideways, so that watching a single frame as it moves gives you the entire piece of footage, whilst watching a specific spatial point on the rendered video will show you the same 10 second piece of footage in a loop.

Panopticon is implemented as a cross platform C application. Source video files are processed by this tool which produces a ~10 second rendered Panopticon (priority is given to variable grid size rather than clip length). A 1-minute source videos takes approximately 10 seconds to convert. The Panopticon application has recently been wrapped in a Web API\(^1\), which enables uploading of any video file, and the viewing and download of the Panopticon version.

**INPUT FOR DISCUSSION**

Within the workshop we would like to focus on the need for appropriate representation techniques for visualizing large amount of user data, such as video footage, collected in long-term UX studies. We would be like to engage in a discussion around

- the relevance of time when talking about past personal experiences and how the meaning of time changes when reflecting on this experiences retrospectively.
- the value of Panopticon for UX researchers, supporting them in their data analysis process and engaging users in a reflective process.

Apart from the above issues, we would like to explore the topic further suggesting the following discussion points:

- How do users experiences change over time, and in particular how does the meaning of a captured experience (such as captured through Panopticon) change through novel ways reflection?
- What are the main characteristics and qualities that make a user experience with and through digital technologies memorable for people and how does Panopticon support the identification of memorable moments from the past (one year seen in 3.5 minutes)?
- How can we improve the understanding of the main strategies and practices of people seeking to structure their experiences for others so that they are sharable and memorable (beyond Panopticon)?

\(^1\) [http://panopticonize.com](http://panopticonize.com)
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REFERENCES