A DEMONSTRATION OF A HIERARCHICAL MULTI-LAYOUT 3D VIDEO BROWSER

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ABSTRACT

This paper demonstrates a novel 3D Video Browser (3VB) that enables interactive search within a single video as well as video collections by utilizing 3D projection and an intuitive interaction. The browsing approach is based on hierarchical search, which means that the user can split a video into several segments. The 3VB disposes a convenient interface that allows flexible arrangement of video segments in the 3D space. It allows for concurrent playback of video segments and flexible inspection of these segments at any desired level of detail through convenient user interaction.

Index Terms— Video search and browsing; 3D visualization

1. INTRODUCTION

Video browsing is an interactive search approach that is used to browse through video content and to search for specific segments. Video browsing tools are typically used in situations where no video retrieval tool is available (e.g., for novice users) or where no concrete query can be specified by the user. Examples for the latter case are browsing tasks, where users simply want to get an overview of the collection, or search tasks, where the user knows how the desired scene looks like but is not able to describe it by a query or sketch. In this demo we present a hierarchical video browsing tool that makes use of real 3D graphics in order to provide convenient interactive search. Our tool provides several different views on the video collection and hierarchical refinement for inspection of specific segments.

2. RELATED WORK

To the best of our knowledge only a few approaches have been proposed in the literature, which utilize a 3D user interface for video browsing. Divakaran et al. [1] proposed a 3D interface for fast-forward and rewind navigation. This interface is not designed for hierarchical video search. Snoek et al. [2] used a 3D-like visualization in the CrossBrowser interface, but it is limited to one specific layout and does not provide hierarchical refinement. Schoeffmann et al. [3] [4] have proposed hierarchical video browsing with a 3D carousel. However, their approach is also limited to one layout, i.e. a carousel that cannot be changed by the user due to its preferences.

3. 3D VIDEO BROWSER

Figure 1 depicts some major features of our 3D Video Browser (3VB). The top two images and the bottom left one show three layouts out of 8 that could be dynamically changed by the user. Each layout is a hierarchical arrangement of the video where the video has been split into segments of equal length. Furthermore, each segment could be divided into sub segments that can be arranged due to the user's choice through our intuitive menu. Several segments can also be played concurrently and each layout has a rotate option which means that instead of the common approach where the user flies through the 3D space to the segments, the segments of the layout will rotate chronologically. At this point, due to page count limits, the interested reader is guided to our supplemental material which contains a demonstration video of our 3VB.

4. REFERENCES

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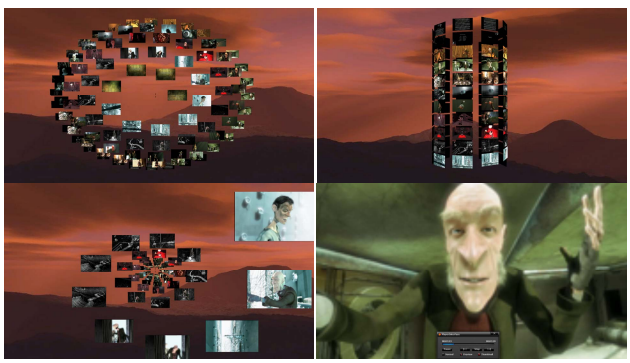

Figure 1. 3D Video Browser