Interactive Reality System (IRiS): Interactive 3D Video Playback in Multimedia Applications

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Abstract

This paper presents a novel interactive video recording and playback technique originally developed for biomedical multimedia training purposes but with applications in other areas of multimedia as well. The Interactive Reality System (IRiS) was developed in order to improve on existing video playback approaches as used in most multimedia applications by providing control over not only time, as in conventional video playback, but also space. A prototype demonstrating this technology is currently being tested and evaluated on a breast self-examination (BSE) multimedia training application. The benefits of IRiS are presented and the approach is compared with other similar approaches, such as QuickTime and iPIX. The design, development, refinement and final implementation, along with the evaluation plan of the IRiS system are presented. The paper also discusses future plans and the use of the system in other biomedical and other multimedia training scenarios.

Key Words - Virtual Reality, interactive video, biomedical applications.

1 INTRODUCTION

The improvement of visual information communication and presentation has been an area of research within the field of multimedia for many years. This could be attributed to the fact that visual communication of facts and ideas is probably one of the best ways of communication for human beings. In fact we remember more of what we see than of what we hear and we understand faster and better ideas communicated in the form of diagrams than textual descriptions [1,2]. Since visual communication of information has clear benefits over other ways of communication for both memory and speed of processing the information reasons, it has been heavily utilised by multimedia applications. Especially in cases where critical information have to be communicated to diverse audiences and where time constraints are an issue. The recording of visual information has been advancing steadily through the last few years with the introduction of stereoscopic cameras, high definition playback equipment and the introduction of digital recording media for the better capture and preservation of it. Research has also been conducted in 3D recording and representation of visual information in addition to the very popular 2D recording techniques widely available today. Although 3D recording or multi angle recording of video information could potentially provide a better way of collecting, storing, processing and communicating such information today's technology makes it inefficient to record 3D visual information. The IRiS technique, attempts to provide for a way to make available to end users such 3D visual information in a cheap and easy way. This way will be discussed in the rest of this paper through its application to a biomedical multimedia application for Breast Self Examination (BSE) training.