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Chapter 10

Multimedia Authoring: Human-Computer Partnership for Harvesting Metadata from the Right Sources

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ABSTRACT

This chapter takes a look at the task of creating multimedia authoring tools for the amateur media creator, and the problems unique to the undertaking. It argues that a deep understanding of both the media creation process, together with insight into the precise nature of the relative strengths of computers and users, given the domain of application, is needed before this gap can be bridged by software technology. These issues are further demonstrated within the context of a novel media collection environment, including a real- world example of an occasion filmed in order to automatically create two movies of distinctly different styles. The authors hope that such tools will enable amateur videographers to produce technically polished and aesthetically effective media, regardless of their level of expertise.

INTRODUCTION

Accessibility to the means of authoring multimedia artifacts has expanded to envelop the majority of desktops and homes of the industrialized world in the last decade. "Forrester Research predicts that by 2005, 92% of online consumers will create personal

multimedia content at least once a month" (Casares et al., 2002). To take the crude analogy of the written word, we all now have the paper and pencils at hand, the means to author our masterpieces or simply communicate. Or rather, we would do if only we knew how to write. Simply adding erasers, coloured pencils, sharpeners, scissors, and other such items to the writing desk doesn't help us write *War and Peace*, or a Goosebumps novel, nor even a friendly epistle. Similarly, software tools that allow us to cut, copy, and paste video do not address the overarching difficulty of forming multimedia artifacts that effectively (and affectively) achieve the desired communication or aesthetic integrity.

There is a large and diverse research community, utilizing techniques from a far flung variety of fields including human-computer interaction, signal processing, linguistic analysis, computer graphics, video and image databases, information sciences and knowledge representation, computational media aesthetics, and so forth, which has grown up around this problem, and offering solutions and identifying problems that are similarly varied. Issues and questions pertinent to the problem include, but are not limited to

- What are we trying to help the user do?
- What is the user's role in the multimedia authoring process?
- Who should carry the burden for which parts of the media creation process?
- The nature and choice of metadata.
- The purpose and power of that metadata – what does in enable?
- Computer-user roles in determining *what* to capture or generate.

The objective of this chapter is to emphasize the importance of clearly defining the domain and nature of the creative/authoring activities of the user that we are seeking to support with technology: The flow on effects of this decision are vitally important to the whole authoring endeavour and impact all consequent stages of the process. Simply put, definition of the domain of application for our technology — the user, audience, means, mood, and so forth of the authoring situation — enables us to more precisely define the lack our technology is seeking to supply, and in turn the nature and extent of metadata or semantic information necessary to achieve the result, as well as the best way of going about getting it. We will use our existing media creation framework, aimed at amateur videographers, to help demonstrate the principles and possible implementations.

The structure of the remainder of the chapter is as follows: We first explore related work with reference to the traditional three-part media creation process. This alerts us to the relative density and location of research efforts, notes the importance of a holistic approach to the media creation process, and helps define the questions we need to answer when building our own authoring systems. We next examine those questions arising in more detail. In particular, we note the importance of defining the domain of the technology, which has flow on implications regarding the nature of the gap that our technology is trying to close, and the best way of doing so. Finally, we present an example system in order to offer further insight into the issues discussed.

BACKGROUND

Computer technology, like any other technology, is applied to a problem in order to make the solution easier or possible. Questions that we should ask ourselves include: