

Master Thesis Defense

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Title:	Automatic Non-linear Video Editing for Home Video Collections
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ABSTRACT

The video editing process consists of deciding what elements to retain, delete, or combine from various video sources so that they come together in an organized, logical, and visually pleasing manner. Before the digital era, non-linear editing involved the arduous process of physically cutting and splicing video tapes, and was restricted to the movie industry and a few video enthusiasts. Today, when digital cameras and camcorders have made large personal video collections commonplace, non-linear video editing has gained renewed importance and relevance. Almost all available video editing systems today are dependent on considerable user interaction to produce coherent edited videos. In this work, we describe an automatic non-linear video editing system for generating coherent movies from a collection of unedited personal videos. Our thesis is that computing image-level visual similarity in an appropriate manner forms a good basis for automatic non-linear video editing. To our knowledge, this is a novel approach to solving this problem.

The generation of output video from the system is guided by one or more input keyframes from the user, which guide the content of the output video. The output video is generated in a manner such that it is non-repetitive and follows the dynamics of the input videos. When no input keyframes are provided, our system generates “video textures” with the content of the output chosen at random. Our system demonstrates promising results on large video collections and is a first step towards increased automation in non-linear video editing.