Search in Audiovisual Broadcast Archives

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Documentary makers, journalists, news editors, and other media professionals routinely require previously recorded audiovisual material for new productions. For example, a news editor might wish to reuse footage shot by overseas services for the evening news, or a documentary maker might require shots of Christmas trees recorded over the decades. Important sources for reusable broadcasts are audiovisual broadcast archives, which preserve and manage audiovisual material. With digitization, media professional can be given online access to video. This increases ease of access, but increases the need for search capabilities tailored for the media professional. Search in audiovisual broadcast archives, then, is the subject of this thesis.

We begin by investigating the search behavior of media professionals in current daily practice. To this end we perform a large-scale log analysis of their search actions at a national audiovisual broadcast archive. Our analysis characterizes not only the searches of media professionals, but also their purchasing behavior. In order to model the observed behavior we follow our log analysis with a simulation experiment. Here we investigate simulation methods for recreating the searches and purchases recorded in the archive to create evaluation testbeds.

In the second half of the thesis we turn to investigate the use of state-of-art methods for retrieval with automatically generated content metadata from video, Specifically we focus on their application for improving audiovisual fragment search in the audiovisual broadcast archive. We use logged searches and purchases to define new test collections for retrieval evaluation. These are used as the basis for experiments aimed at solving specific problems that are faced when searching with automatically generated descriptions of video content. Finally, we combine state-of-the-art methods with the current daily practice of the archive, and investigate their potential combined impact on search in audiovisual broadcast archives.

The contributions of this thesis include the characterization of searching and purchasing behaviour of media professionals at a large audiovisual broadcast archive, and a framework for simulating their logged queries and purchases. Contributions in the second half of the thesis include an in-depth user study of how text queries should be mapped to visual concepts, a retrieval model that accounts for the temporal mismatch between the speech and visual tracks in audiovisual material, and a set of experiments demonstrating the effectiveness of automatically generated content metadata for improving retrieval in the audiovisual broadcast archive.

The thesis can be accessed at `http://dare.uva.nl/record/358972`