Perceptions of Quality in Digital Moving Image Surrogates

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ABSTRACT

This poster reports on the development of a research project to document and analyze how humanities and social sciences scholars perceive the quality of analog moving images and their digitized surrogates. The study’s hypothesis is that user perceptions of image quality may impact researchers’ ability to incorporate moving images as research data in their work. To assess researchers’ perceptions, a mixed-methods approach will be taken that includes a content analysis of study participants and a user-experience survey. The study will also examine how users experience different moving images, which will be matched to the needs of humanities and social sciences researchers. The ultimate goal is to help shape guidelines for the creation and delivery of digital surrogates that will be well matched to the needs of humanities and social sciences researchers. Currently, no such guidelines exist that take into account user expectations or requirements.

INTRODUCTION AND CONTEXT FOR STUDY

The challenges relating to the production of high-quality digital moving image surrogates for legacy audiovisual materials are significant. Factors such as compression, transmission errors, frame size, and mismatch of aspect ratios when digitizing or transcoding can impact users’ ability to view, comprehend, and ultimately incorporate moving images as data or evidence in research projects. While it is given that poor image quality may negatively impact the ability of users to gather and analyze data about the phenomena they are studying, few studies have actually examined user definitions of image quality and its effect on research activities.

The field of image and video processing has focused on issues of quality assessment for digital moving images for decades. With the introduction of high-definition television, and the various methods of transmitting video over the Internet and through closed circuit television (CCTV), researchers have examined perceptions of video quality to determine ways of optimizing speed of transmission and degree of compression while still satisfying expectations of quality. Most recently, this work on video quality has turned to quality assessment in relation to the completion of particular tasks, such as license plate recognition and monitoring of public urban areas. This research uses the Quality of Experience (QoE) concept as a framework for assessing video quality for digital moving images in their work (i.e., their expectations, feelings, perceptions, cognition, and satisfaction). The research proposed for this study will use the QoE concept as a way of framing video quality assessment in select researcher communities.

Hypothesis:
The study’s hypothesis is that user perceptions of image quality may impact researchers’ ability to incorporate moving images as research data in their work.

In order to test this hypothesis, the researcher aims to develop and field a research instrument and protocol to document and analyze how humanities and social sciences scholars perceive the quality of analog moving image works and their digitized surrogates. User communities that will be studied will be scholars who have been identified as frequently using legacy moving image materials in their research for purposes of documenting and analyzing phenomena.

METHODS

The general approach of the study will be to examine the use of digital moving images by particular communities of researchers to accomplish certain common tasks. The communities to be examined will include: 1) psychologists; 2) anthropologists; 2) media studies scholars; and 3) historians.

The study will require three phases:

1) Creation of profile for each community to be studied based on review of relevant literature, observations, and interviewing of researchers, in order to determine common uses of moving images in research tasks and expectations for quality in moving images used for research.

2) Quasi-experimental protocol for subjective assessment of typical sequences that might be used in specific research tasks by individual researchers. Single- and multiple-stimulus tests will be used. The protocol will employ absolute and continuous scales, and participants will be asked to rate their experiences in accordance to QoE satisfaction factors as part of overall success in achieving tasks.

3) Subjective assessment via crowdsourcing (within selected members of scholar communities) of moving image sequences in which scholars would be asked if they can complete a particular task using sequences of differing image quality.

RESEARCH COMMUNITIES TO BE USED AS CASE STUDIES

Communities to be studied as part of this research project, with examples of tasks that may employ use of archival moving images:

1) Psychologists
Sample tasks: looking at facial expressions to determine reactions to various stimuli; examining behavior in social situations.

2) Visual anthropologists
Sample tasks: studying movement in ritual, dance, and other social interactions; recording and analyzing cultural objects and their uses by individuals and the community.

3) Media studies scholars
Sample tasks: looking at uses of color in a particular director’s films; analyzing uses of techniques such as deep focus or looking at how processing decisions such as dissolves and wipes were employed.

4) Historians
Sample tasks: examining details in news footage such as how people are dressed, location information such as shop and street signs, and various interactions and activities in which those depicted are engaged.

POTENTIAL APPLICATIONS AND IMPLICATIONS OF RESEARCH FINDINGS

This new study will attempt to bridge the gap between moving image archivists’ conceptions of image quality and perceived image quality of digital surrogates by users of those materials.

The ultimate goal is to help shape guidelines for the creation and delivery of digital surrogates that are well matched to the needs of humanities and social sciences researchers. Currently, no such guidelines exist that take into account user expectations or requirements.

REFERENCES


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