

Accessible Videodescription On-Demand

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ABSTRACT

Providing blind and visually impaired people with the descriptions of key visual elements can greatly improve the accessibility of video, film and television. This project presents a Website platform for rendering videodescription (VD) using an adapted player. Our goal is to test the usability of an accessible player that provides end-users with various levels of VD, on-demand. This paper summarizes the user evaluations covering 1) the usability of the player and its controls, and 2) the quality and quantity of the VD selected. The complete results of these evaluations, including the accessibility of the Website, will be presented in the poster. Final results show that 90% of the participants agreed on the relevancy of a multi-level VD player. All of them rated the player easy to use. Some improvements were also identified. We found that there is a great need to provide blind and visually impaired people with more flexible tool to access rich media content.

Categories and Subject Descriptors

H.5.2 [User Interfaces]: Evaluation/methodology; K.4.2 [Social Issues]: Assistive technologies for persons with disabilities.

Keywords

Rich media, Web accessibility, audio description, blind and visual impairment.

1. INTRODUCTION

For the blind and visually impaired, the enjoyment of visual media can be largely improved by the addition of narrative descriptions corresponding to the relevant visual element. Videodescription (VD), also known as audio description or described video, is delivered through an audio channel that enables the blind and visually impaired to form a more accurate and vivid mental representation of what is shown on the screen. However, essential questions such as: what are the key elements to be conveyed, how can they be best described and how many can there be in the gaps between existing speech segments, are not fully answered when producing VD. Research on VD issues [1][2][3] and guidelines on production practices [4][5] are emerging. Yet, more research is needed in order for VD to be known and used as much as captioning is for the deaf and hearing impaired.

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This paper presents the accessibility analysis of a Website platform for rendering videodescription (VD) using an adapted player, called VDPlayer. It is an initiative to promote and improve the richness of the multimedia experience for people with vision impairments.

2. ACCESSIBLE VIDEO

The challenges of producing accessible video for the blind and visually impaired are numerous. Human issues relate to the usability of what should be described and how much is needed. While the accessibility issues are closely coupled with the rendering medium; we will focus mainly on the Web environment.

Human Issues. The blind and the visually impaired do not appraise their needs on VD at the same level. For example, some mentioned that in real life situation when no VD is available, they stop the DVD and ask questions to their sighted friends. For them, the perfect rendering of VD would be to have the same freedom without the constant need of a sighted friend. In recent user's consultation works [2], video with varying quantity and quality of VD were shown to 30 participants. The resulting discussions revealed that participants had preferences depending on his/her level of blindness, personal taste and experience. A challenge arises when a user desires more VD than the one delivered in the available time. Actually, the Web Content Accessibility Guidelines (WCAG) [6] proposes to offer extended VD when foreground audio is insufficient. But, how to implement an extended version of VD became one of the specifications of our project [7].

Accessibility Issues. Implementing an accessible Website without any rich media is a laborious task in itself, since each browser implemented the W3C recommendations [6] with its own flavor. It becomes a greater challenge when dealing with rich media objects even with the available resources [8]. Furthermore, problems are still too often part of the visually impaired users' browsing experiences [9][10][11][12]. It is a known fact that their interactions take much longer time than sighted users [13][14]; it can take up to three minutes to get to the main content of page with a screen reader. Solutions involved developing tool to measure a Website's conformance to the guidelines [15]. Many tools are available, see [16] for a compare study.

3. USERS EVALUATION

We developed an accessible Website that presented five short films that can be screened with our VDPlayer. We produced the VD descriptions with the rendering of a synthetic voice and provided two levels of VD: 1) the standard mode that gave the VD fitting in the available non-speech segment and 2) the

extended mode that offered all VD produced which exceeded the non-speech segments. In this later case, it required the player to stop, deliver the VD and restart. The VDPlayer was designed to 1) offer standard video controls such as play, pause, rewind, forward and volume change, and 2) provide controls specific to the VD. Such as, to allow users to select the level of VD they wanted, to personalize the item of VD that they could hear or to repeat the last item of VD that was said.

After each viewing, participants could fill up an evaluation questionnaire to provide feedback on the VD, their interaction with the player and the Website. Ten participants completed the questionnaire. The group was composed of seven men and three women and most of them were over 31 years old. All the participants navigated with a screen reader (9 with Jaws and 1 with Window Eye). All of them considered themselves an expert user of their tool. Most participants declared being frequent television viewers but infrequent users of VD mainly imputable to its low availability.

3.1 VDPlayer Evaluation

The VDPlayer evaluation aimed at establishing the perceived relevancy and ease of use of the video player controls related to VD.

Relevancy. Selecting various VD levels was found relevant to some degree (strongly and fairly) by 90% of the participants. None of them found it to be irrelevant. Many participants mentioned that they listened to more than one version and appreciated more the extended version. This high score suggests there is a need for this type of functionality.

Ease of use was evaluated for the player in general and for each of the VD controls. In general, the player was judged fairly easy to use by 90% of the participants. Individual controls were rated ease to use by 90% to 100% of the participants. One participant who rated the player fairly difficult to use commented that the sound level was very low and that he was unable to augment it. After verification, we found the related technical problem and corrected it.

3.2 VD Evaluation

The evaluation of VD itself was done through a series of nine statements either having a positive or negative tone. Participants had to choose the level of agreement or disagreement for each of them. The produced VD was greatly appreciated by the participants. Indeed, 92% agreed (strongly or fairly agreed) with the positive statements. While, only 15% agreed with the negative statements. The weakest scores were related to 1) the quality of the synthetic voice for which three participants judged it to be moderately unacceptable, 2) most participants had the impression the VD covered relevant audio information and one participant found the VD frustrating at times. In conclusion, global results indicate that VD is good and corresponds to a need but some improvements could be implemented to better convey VD to the listeners.

4. DISCUSSIONS

The goals of our project were reached since video with its different levels of VD were made available and were screened by

blind or visually impaired users. Further, the user evaluation proved that our approach was accessible and corresponded to their needs. More recently, we have integrated a keyboard logging algorithm into our VDplayer to better analyses how navigating in the player is done by blind and visually impaired users in order to better measure ease of use. In the future, more user testing is planned to evaluate the robustness and usability of an interactive accessible VDPlayer.

5. REFERENCES

- [1] Piety, P.J. 2004. The language system of audio description: an investigation as a discursive process. *JVIB* 98, no 8: 1-36.
- [2] Turner, J.M. and Colinet, E. 2004. Using audio description for indexing moving images. *Knowledge organization* 31, no 4: 222-230.
- [3] Salway, A. 2007. A corpus-based analysis of audio description. In *Media for all*. Edited by Cintas, J.D., Orero P. and Remael A. *Approaches to Translation Studies*, New York, NY. 151-174.
- [4] Henry, S.L. 2006. Introduction to Web accessibility. www.w3.org/WAI/intro/accessibility.php.
- [5] Office of Communication. 2000. ITC Guidance On Standards for Audio Description: www.ofcom.org.uk/
- [6] Web Content Accessibility Guidelines (WCAG). 2008. <http://www.w3.org/TR/WCAG20/>
- [7] Gagnon, L. & als. 2009. Towards computer-vision software tools to increase production and accessibility of video description for people with vision loss. *UAIS*. (published online 5 February). Springer Verlag.
- [8] Flash and accessibility, <http://www.usability.com.au>
- [9] Petrie, H. and Kheir, O. 2007. The relationship between accessibility and usability of websites. In *Proc. CHI*, pages 397-406, San Jose, CA, ACM.
- [10] Takagi, H., Saito, S., Fukuda, K. and Asakawa, C. 2007. Analysis of navigability of web applications for improving blind usability. *TOCHI*.
- [11] Miyashita, H., Sato, D., Takagi, H. and Asakawa, C. 2007. Making multimedia accessible for screen reader users. In *proceedings of W4A'07*, ACM, pp. 126-127.
- [12] Smillie, D. 2005. Instant Accessibility: does it work?, RNIB, Web Access Center, <http://www.rnib.org.uk/>
- [13] Bigam, J., Cavender, A.C., Brudvik, J.T., Wobbrock, J.O. and Ladner, R.E. 2007. WebinSitu: A comparative Analysis of Blind and Sighted Browsing Behavior, In *ASSETS 2007*.
- [14] Takagi, H., Asakawa, C., Fukuda, K. and Maeda, J. 2004. Accessibility designer: visualizing usability for the blind. In *ASSETS '04*.
- [15] W3C/WAI. 2008. Conformance evaluation of web sites for accessibilities. www.w3.org/WAI/eval/conformance.html.
- [16] Brajnik, G. 2008. A comparative Test of Web Accessibility Evaluation Methods, p 113. In *ASSETS 2008*.