

ACCESSIBLE MOVIES FOR DISABLED PEOPLE

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ABSTRACT

Throughout the years disabled people have been facing barriers when watching movies in theaters or at home due to the lack of tools providing sufficient level of accessibility. Accordingly, when it comes to improving accessibility of movies for the deaf and hard-of-hearing, as well as for the blind and the visually-impaired, there has been an important debate on which technological solutions are to be the most appropriate. Solutions, such as audio descriptions and captions, are widely adopted but they represent a higher cost that very few movie theaters want to support. In a different context, sign language interpreter videos are also an alternative, although it has not become widely adopted. Moreover, many websites contain video players with keyboard traps that may ruin the user experience. Nevertheless, recent advances in technology are now enabling the automatic generation of captions for movies as well as the price decrease in hardware parts. Plus, with the adoption of smartphones and mobile applications, new alternatives are appearing at a fraction of the cost (if any) to the consumer. In this paper, we present a broad overview of the topic, its status, and forecast to the future.

KEYWORDS

Accessibility, Movie, Disability, Technology, Inclusion

1. INTRODUCTION

Movies are an important part of society. Just as books, movies can improve a person's vocabulary, they demonstrate the different possible situations that people can be put in, while being an escape from reality for most of them. Movies are not just a form of entertainment but also a form of education, and to enhance the imagination of what is possible.

However, not everyone can fully enjoy them due to their disabilities. With around 70 million deaf people (Debevc M, et al., 2016) and 285 million blind or visually-impaired worldwide (World Health Organization, 2014), being able to access media content of any kind can deeply affect their quality of life. In Spain, for example, most broadcasted foreign-language movies, programs and documentaries are usually dubbed into Spanish (Ariza, 2004), making it harder for deaf people and the hard-of-hearing to fully enjoy the content.

Blind and visually-impaired also face similar challenges, with very few movie theaters worldwide providing audio description service (acb.org) and only a few of the movie studios distributing them in DVD's and Blu-ray discs.

In this work, made in the framework of the ERASMUS mobility scheme as well as the project Trans2Work, we introduce and point the importance of the current available tools, found from research in the project and literature review and present them as movie guidelines in Section 2 and give some best practices, as well as challenges and forecast to the future in Section 4. Finally, we give some conclusions in Section 5.

2. GENERAL MOVIE GUIDELINES

In the beginning of 1890s, the first motion picture cameras started to appear and movie companies started to be established. The first movies up until 1927 were silent, with no synchronized recorded sound but that changed with the release of Warner's *The Jazz Singer*, the first movie with synchronized dialogue. Although revolutionary, that marked the beginning of struggles for deaf people and hard of hearing.

By 1958, U.S.A President Dwight D. Eisenhower signed the *Captioned Films for the Deaf* program that later resulted in the first captioned movie (Norwood, et al, 1988). Captions are an advanced form of subtitles, with additional text on the visual display to provide more context and descriptive information about the environment and the actors involved. It can exist both as an open caption, by showing the text on the screen to all the spectators in the room, or as closed caption with an additional 3rd-party device to show only to an individual at a time.

Besides deaf people, difficulties to watch movies affect also the blind and the visually-impaired. Good storytelling and descriptive audio is important but not necessary since all they need is a service named audio description. Audio description is a narration track that is designed to fit in the natural pauses between the lines of dialog in a movie and describes the key visual elements of a movie, the set, the costume, location, facial expressions, etc. Therefore, the level of detail that goes into in audio description is determined by how much dialogue there is (Academy Originals, 2012). For example, in the movie theatre, the movie soundtrack will be heard through the theatre speakers and the audio description through a specialized set of headphones. In DVD's and Blu-ray's distribution, audio descriptions may also be available but a previous confirmation on the back cover is necessary.

2.1 Requirements and Needs of Deaf and Hard-of-Hearing for Movies

Deaf and hard of hearing people face daily problems due to their inability to hear. Not only it can be an obstacle to understand what other people want to communicate, but it can also result in other social problems, like isolation and loneliness, especially in older generations. This leads to the need to improve their visual sense to compensate for the lack of hearing. To be able to communicate, deaf people learn sign language as their first language (World Federation of the Deaf, 2012) but very few spoken language users know how to interpret it.

The hard-of-hearing on the other hand, depending on the severity of their condition, even though they are capable of hearing, can have problems to distinguish a person's speech from noise, a background sound from music, or simply the volume is not high enough for them to understand.

2.2 Requirements and Needs of Blind and Visually-Impaired for Movies

Both the blind and the visually-impaired face different issues than deaf people, due to the different lacking sense but they experience the same problems when it comes to the unavailability of the right tools.

Even though not every visually-impaired face such difficulties, some of them only need a few adjustments in their viewing experience to watch movies in a very good condition, like a higher contrast, a lower brightness, a bigger font or even a different font color. This can seem to be a small adjustment but it can make a difference between a watchable movie and a great viewing experience to the individual.

3. BEST PRACTICES

Current best practices indicate that to lower the cost of product and its development, each company should actively include persons with disabilities across all the stages of development as well as at decision-making levels, by incorporating their personal experiences and insights from the beginning of the project. This would significantly reduce the cost, compared to its addition after design or after the product's completion.

It is also important to use an accessible video player, that follows the accessible web guidelines, as WCAG 2.0 (W3C, 2008) and WAI-ARIA (W3C, 2006), because most of them are inaccessible to some groups of people with disabilities, since they usually contain keyboard traps or the keyboard users can't use them at all. Therefore, all functions should be available via keyboard and labeled appropriately for screen reader users.

Auto-play functionality should also be disabled by default because it can be extremely disorienting to some group of users, as they often cannot hear their screen reader over the video or even tracking the sound's origin.

Alongside the video, the player should enable the use of captions to help deaf people and hard-of-hearing to enjoy the content. A sign language interpreter in a small picture-in-picture window is the preferred solution but it may not be possible in all situations. Moreover, a transcript of video is also valuable and not only to the disabled, since it allows people who want to quickly scan or search a video's content.

Finally, audio description should also be provided along the video for the blind and visually-impaired.

4. GUIDELINES AND FORECAST TO THE FUTURE

In this section, we provide a few guidelines to help anyone to distribute their movies to as much people as possible:

- Audio description service (ADS) (Acb.org, n.d.) should be available in movie theaters so that the blind and the visually-impaired can benefit from the content. As a moviegoer, we highly recommend asking the staff in movie theaters about the device before purchasing the ticket.
- With digital television sets, open captions are becoming more easily accessible in every household as well as in DVDs and Blu-ray's and should be taken into consideration.
- Since sign language is for some deaf people their first language, a picture-in-picture with a sign language interpreter in movies is preferred.
- As an alternative movie theaters could also provide closed captions tools for deaf people through Rear Window Captioning (Motion Picture Access, n.d.) as shown in Figure 1, 3rd-party devices (ex: Sony Entertainment Access Glasses) or other similar tools.
- Since not every hard-of-hearing person needs a full closed caption device, an assistive listening device might be enough to fully enjoy the movie.

Even though some of the technologies mentioned before are still sold and rented at a high price, technology is evolving at a fast pace and it is expected that in the course of time, more alternatives and more affordable solutions will be available to the consumer.

Audio description service has ways to go in terms of recognition, since it is not available everywhere and only specific movie theaters have it. However, new devices, as well as new mobile applications that are focused on making movies accessible to everyone, are quickly appearing in the market to counter these constraints, such as applications like *Greta* and *Starks* (Figure 2) (Greta & Starks Apps UG, 2013), that provide downloadable audio descriptions and subtitles respectively to watch in the movie theater or at home with a smartphone or even *MovieReading* that allows both but mainly in Italian language.

Platforms like Youtube.com, a website that allows its users to upload and share digital videos, already provides an automatic captioning service since 2009 (Liao, H. et al. 2013) and although its results weren't the best in the beginning, with the improvements in speech recognition technology throughout the years, its service is producing better and more accurate captions in the recent years.

Besides technology, on November 23rd, the European Parliament voted on a resolution on sign language and sign language interpreters (Hay D., 2016), to provide accessibility for deaf people through sign language interpretation as well as which measures need to be taken to improve the provision of sign language interpretation at all national levels.



Figure 1. Rear window captioning



Figure 2. Starks mobile application

5. CONCLUSION

In this paper, we discussed some insights about the topic, and what we consider are the main concerns, and the main challenges for the future. With constant improvements in technology, tools like Rear Window Captioning and Audio Description Service have become available but only to those who could afford or access them. However, with the rise of mobile technology, new, more affordable and widespread tools are emerging for everyone. Hence, with the decrease of prices, high costs can no longer be an excuse and we, as a society, should make an effort for inclusion and equality, so that every single person can enjoy their human rights and fundamental freedoms.

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