

# An Analysis of Animated Character Dubbing as Voice Acting Using Audio and Video Signal Processing

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## Abstract

Analyzing the characteristics between the facial expressions and selfishness of various animation directors gives important transfer effects in countries and regions where languages are different. Therefore, this research is an important part of bringing about the characteristics of the work. In order to make the best use of these features, this study has been studied as a part of speech analysis. It is delightful, sad, angry, and love to classify and analyze the characteristics of the characters effectively. Among the most common animations, Kung Fu Panda was analyzed and analyzed to make it possible to apply various characters. This feature will have a great effect on maximizing the effects of dubbing by applying various types of directors.

**Keywords:** frequency analysis, low-pass filter, pleasure, Kung Fu Panda, animation

## INTRODUCTION

Animation is linked with the cultural industry, and the age of use is getting wider, and various industries related to animation are developing. In addition, animation plays a role of creating a new culture in each age, and characters represented in animation are actively studied according to the object and field of use. In particular, anime characters are the main medium for expressing the overall plot of an animation as well as the shape of a character in a movie, which is generally played by a movie

actor. Animation character settings are captured by external features such as physical characteristics, vocabulary, tone, and motion. In other words, the external features of characters can be divided into visual elements and auditory elements. The acting of the character not only influences the audience with the visual element smoke acting and the auditory element voice act, but also acts on the likeness and community consciousness of the shaped character <sup>[1][2][5][9][10]</sup>.

In particular, entertainment is an important factor in animated films and in most cases it is tailored to the viewpoint of the audience. In the case of full-length foreign animated films, subtitles are inserted on the screen or dubbed to be re-recorded in the local language. However, there is no quantitative study on the dubbing of local movies on the voice acting of animated films. In this study, we analyze the emotion expression of 'Poo', the main character of 'Kung Fu Panda 2', by dividing the emotion expression into four joys, sorrows, surprises and anger, do. There are various methods for dubbing, but there is a lack of detailed research on the expression of emotions and various applications can be possible by analyzing voice signal processing in particular.

Therefore, in this paper, we analyze the characteristics of the characters in the animation and the characteristics of the subtitles and study various dubbing about the emotion. Chapter 2 introduces the analysis of animated characters and explains the process of applying them to voice signal processing techniques. Experiment of various emotional expressions presented in this paper. It concludes.

## MEANING AND KIND OF ANIMATION CHARACTER

### Meaning of animated characters

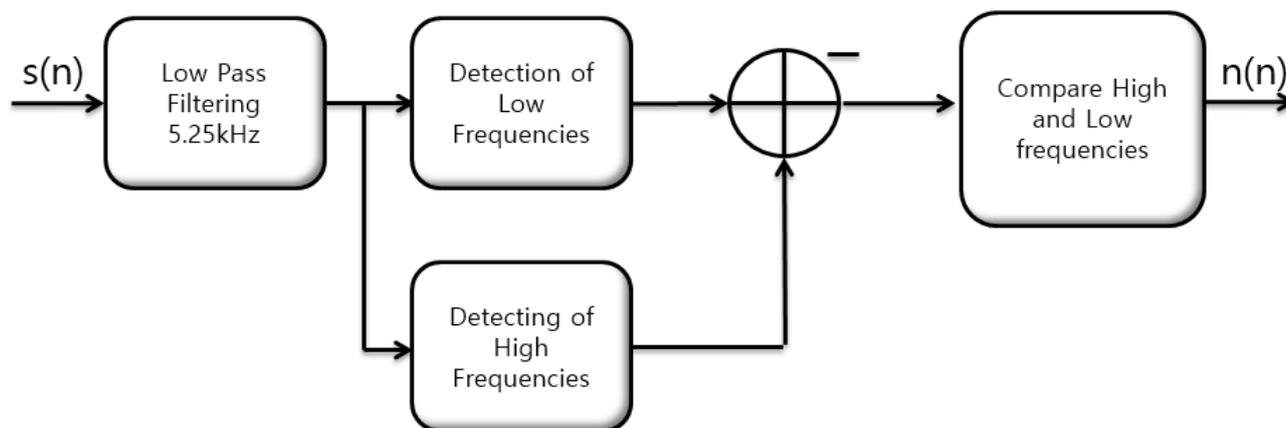


Figure 1: is a block diagram for frequency analysis.

Figure 1 is a block diagram for frequency analysis. A low-pass filter was used to compare the input frequencies and the low and high frequencies were compared for each frequency [1][2][3][4][7][8]. In the dictionary definition of a character, it consists of the character, personality, and characteristics of the first person or object, second character such as graphic mark or alphabet, third person such as novel or theater, fourth reputation, fifth identity, qualification. One of the most important factors in animation production is character creation and analysis. Animation, like other genres of films, is based on a narrative structure with stories. It is the characters that lead the plays in the center of the narrative structure of such narrative structures. In this way, the character in an animation is the main medium that expresses the overall plot of the animation like the character figure that the actors in the movie generally play. So the first thing that matters when evaluating a successful animation is, of course, the main character. We rarely remember any particular story, but instead remember the external features and unique personality that the character has. We develop these characters and set up extra characters around them. Keeping the set characters for a certain amount of time is to insert a characteristic character inherent in them [3][4][11][12].

The performance of such a character is recognized and preferred by the audience. It is most important how well the character plays his role and gets empathy from the crowd. It is no exaggeration to say that, as in movies, the character in the movie depends on how loyal the appearance and intrinsic performance are in the given role. Particularly, the external acting includes the first impression of the character, the tone, the characteristic, the color, the gesture, the expression, etc. It can be summarized into two areas of visual acting and voice acting. Particularly, as the main factor that determines personality, personality, intelligence, emotion, which is acting as an inner self, outward acting plays an important role in

animation characters. Such a character's character is used as a way of communicating with and interacting with the viewer by showing the character of the character created in the animation story. In the end, the character of anime is defined as making the appearance, personality and appearance of the figure to be used as commodity performance service to make it friendly to consumers.

### Animated dubbing and emotional expression

When a movie is screened in a foreign country, it is displayed in a dubbing manner in which subtitles are inserted on the screen in a local language for the audience to read or recorded in a voice language of a local country. Contrary to dubbing, subtitles can maintain the original soundtrack and can convey the original style and voice acting through the voice or intonation of the character's original performer. In addition, it maintains the original utterance and habits of the producing country and maintains the overall integrity, allowing viewers to experience local culture directly. Since dubbing is an editing process that changes the original script to the language of the service country, it is advantageous to make the audience feel the sense of security by properly applying the culture and language of the accepting country. However, It has become possible to match characters such as voice, voice, and breath of vocal and voice actors. If they are dubbed in a foreign language, the character and emotional expression of these characters may be damaged.

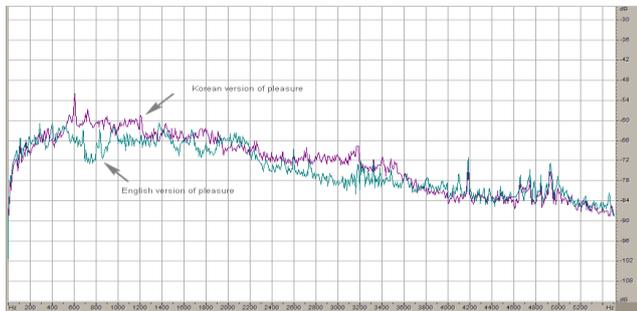
However, it is difficult to transmit the expression of the sound such as expressions of the omniscience due to the limitation of the character to be displayed in the caption. When the subtitles synchronized with the voice are provided, parallax may occur. And the immersion level is low. In particular, the emotional expression of an animated film character naturally shows the

value relationship and story of the other person and enables to identify the psychological state with others. Emotional expressions represent emotional characteristics and emotional changes in the form of facial expressions, talking tones, and gestures.

As a primary method of expressing emotions, there is a language delivery method through voice. When expressing emotions by adding expressions here, it becomes a more sure way of communication. The voice of the character also forms an internal image centered on narration and dialogue, and helps to understand animation films more easily. Convey narrative narratives in narratives, and convey various emotions. Depending on what voice acting is done, audiences sometimes draw more intense emotions than visual expressions.

### EXPERIMENTS AND RESULTS

Dubbing is the work of putting Korean into the dialogue recorded in a foreign language and is also called spoken language. Thus, audiovisual balance is maintained because dubbing is the conversion of conversation in a foreign language into conversation in the native language. Because you do not have to fix your gaze to read the subtitles, you listen and understand with your ears, so your eyes and ears play a part in understanding the story as a whole. However, in the dubbing work, it is necessary to adjust the translation text in accordance with the mouth shape of the characters, and sometimes there may be a phenomenon of stretching through breathing.

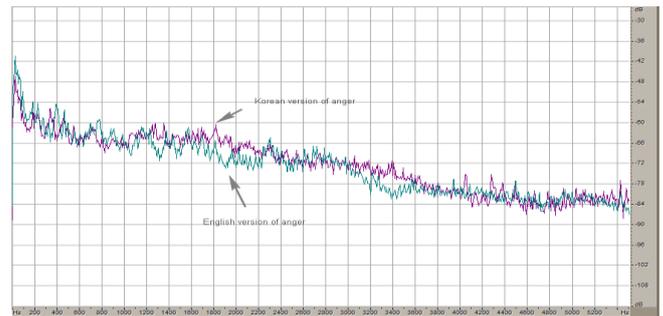


**Figure 2:** Comparison of English version and Korean version in frequency for pleasure

Figure 2 compares the state of joy on frequency. It can be seen that there is a difference at frequencies between 400 Hz and 600 Hz, which shows that the low frequencies appearing in Korean are more emphasized. The part corresponding to the high frequency between the frequency of 2000Hz and 3000Hz is also emphasized by emphasizing emotional expression in the Korean version. Therefore, it can be seen that the effect of dubbing indicating joy is very good [4][5][8].

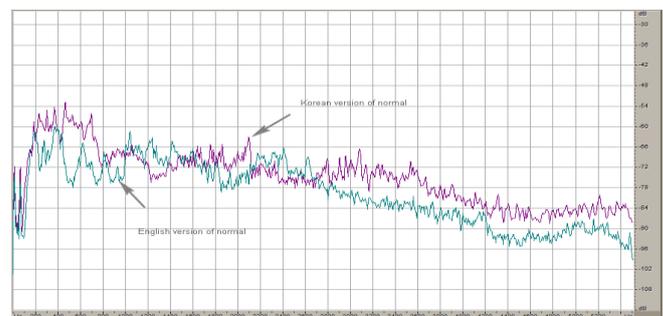
Since the main audiences in animation films are children and children, dubbing is more likely to be chosen than subtitles in

movie selection. Recently, popular dubbing of entertainers in popular culture is more prominent than ever. Celebrity dubbing animated films can be used as a way to borrow images of entertainers as a way for the public to enjoy entertainers. Casting an entertainer simply because the images are consistent can motivate children to choose animated films, but the completeness of the emotions that keep the original habits and habits may be reduced. Especially, it is important to choose a voice actor who can easily relate the image by listening to the voice of the familiar character, which can be a strong motivation for film selection. We compared the voice of the original and the voice of the dubbing to perform voice analysis and image analysis.



**Figure 3:** Comparison of English version and Korean version in frequency for anger

Figure 3 compares the state of anger in frequency. It can be seen that there is a difference at frequencies between 1500 and 2200 Hz, and this phenomenon shows that the low frequencies appearing in Korean are more emphasized. The high frequency between 2800Hz and 3500Hz frequency is also emphasized in the Korean version. Therefore, it can be seen that the dubbing effect indicating joy is generally excellent. As can be seen in Figures 2 and 3, the expression in dubbing about anger and pleasure is generally expressed well. However, this can be regarded as a difference in the vocalization of the language, so it is important to introduce the Korean Wave culture. It is possible to switch effectively even when the Korean version is expressed in the English version.



**Figure 4:** Comparison of English version and Korean version in frequency for normal

Figure 4 compares the English version with the Korean version in a normal conversation. At 2200Hz and below, Korean is emphasized, whereas at 2200Hz and above, English version emphasizes frequency components. This is a phenomenon that appears in the accent, which is a characteristic of the English language, and it is also a part that should be taken into consideration especially when dubbing. We have analyzed these changes by using frequency analysis.

## CONCLUSION

In this paper, we compare and analyze the dubbing voice of animated movies. The voice of the character includes not only the morphological depiction of the character but also the psychological depiction, and it also suggests the specific place, the hierarchy, the character and the movement, and the race. In other words, it is possible to express various areas, imagination, and internal conflict situations that the image cannot express through voice acting. For this reason, it is aimed to express the emotional representation relatively accurately by analyzing the frequency and dB for the original voice actuation. This method can be used to maximize the delicate look and appearance of character by applying it to various animated movies with untried analysis and application method. In this paper, we use kung-fu fenders which are various and important in expressions during animation. Especially, expressing the joy, anger, obedience and pleasure, the emotional element necessary for voice dubbing is analyzed through voice and an example of proper dubbing is shown.

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