

NONVERBAL COMMUNICATION TOOL VIA USE OF PERCUSSION PERFORMANCES AND ITS EFFECTIVENESS

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ABSTRACT

In general people communicate their feelings to others via language. In some cases, however, nonverbal communication can be more suitable for conveying their feelings than verbal communication. This research proposes a tool that be used in communication via the sound produced by percussion instruments when people find it difficult to verbally express their feelings. Some cognitive psychology research supports the idea that feelings can be expressed via rhythms. With the method proposed here users can select the color that best matches their current feeling from a palette, and cases where the current feeling was best conveyed in the past are then searched and proposed. The system can be improved upon via use of the color palette. The effectiveness of the system was then verified in experiments, which revealed that users were able to choose an appropriate percussion performance that matched the way they felt. Moreover, people listening to the performance were able to understand the user's feeling. This system was thus proved capable of revealing the effectiveness of nonverbal communication made via percussion performance.

KEYWORDS

Nonverbal communication, emotional communication, music, percussion

1. INTRODUCTION

Communication is essential in the daily lives of humans. In general people communicate their feelings to others via language. However, nonverbal communication can sometimes be more suitable for conveying feelings or thoughts than verbal communication. Congenital language disorders also do not pose a problem to communication. This then means that the common feelings to all can be conceived [1]. The need also therefore exists for non-verbal types of communication.

One of the issues in this study is supporting the needs of people who wish to convey their feelings non-verbally using the computer. A variety of methods of communicating non-verbally exist that include as gestures, facial expressions, painting, music, and so on. If it can be assumed that some people cannot verbally describe their feelings or situations it stands to reason that the need exists for them to be able to convey their feelings to others via use of other media. Moreover, it would also possibly be of support of any person who cannot express themselves very well.

This research proposes a tool that can be used to communicate via the sound of a percussion instrument what people may feel difficult to verbally express. Sounds produced by percussion instrument are linked to the feelings of users, thus resulting in a new type of communication tool. After the relationship between SOUNDS and FEELINGS are clarified, however, the mechanism in which SOUNDS and FEELINGS can be linked together is needed.

2. METHOD OF SELECTIONG SOUND FROM COLOR

The present study aims at communicating feelings using a percussion instrument, being based on the above findings, ensuring the user's feelings are adequately expressed, and identifying a method of confirming both the aforementioned [1][2][3]. The user's feelings are specified and music from a data base that expresses the feelings best then retrieved, which is then presented to the user. The user then transmits the best fitting performance to the other party.

Feelings were first specified using color. This is actually used in daily life, and it has been widely acknowledged that different colors provide certain meanings to people at both the cultural and emotional levels [4]. A method of selecting two colors to express a user's feelings at that time was used due to people's feelings tending to be very complex. People generally do not feel only "A little more lonely than happy", "Angry but slowly feeling better", etc. or any one particular feeling.

A ratio is then applied to the two selected colors. For example "Red is 9 and blue is 1," and the sound source then extracted using that ratio. Colors and percussion instrument performances are located in the same "sensibility space" calculated by using the semantic differential method and the factor analysis. A sensibility score was then calculated using the two selected colors. An input ratio is used to divide the distance of the two colors. The nearest percussion instrument performances to the divided position is selected and proposed to the user.

Moreover, this research also takes user's individual variations into consideration as the results obtained from the questionnaire cannot be asserted to positively identify user's feelings, although nor a gap. Moreover, it is insignificant, even if a system that takes a user's individual variations into consideration is recommended. If a sound obtained from a color being selected or an adjective approximates the user's feeling it closes in on the position the user showed. The user can then customize it to the sound, if not suitably opposite. The method of customization is carried out using same content of sound as the extraction, with the position shown then becoming the new position of the sound. Naturally the sound source is updated with that factor. A concrete image is provided in Figure 1.

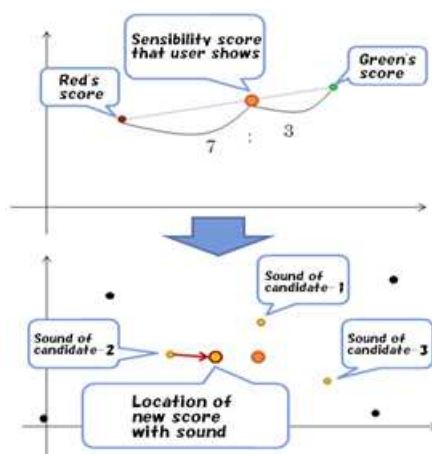


Figure 1. Image of proposal

There is a possibility that a gap between the user's personal feelings can result because the factor score of the music and the color is based on the result of a questionnaire provided to only two or more testers. If the sound obtained from selecting a color roughly suits the user's feelings the position and factor score for the user are brought closer, and updated by the music. A system that appropriately extracts feelings that each user wishes to express using music can thus be expected by repeating this method.

3. EVALUATION

The expectation is that this method can be used express feelings in detail and accurately very well, even in the case of the user understanding their own feelings, from the feature included in the proposed method,

along with non-verbal expressions. Moreover, it will become easier to select the music from user's inputs because the sensibility score to be selected is updated when expressing the music. The following two hypotheses were set for use in experiments.

1. The listener can actually understand user's feelings from the tune the user chose.
2. Whenever the system is gradually used music matching the user's feelings is expressed.

An evaluation for the sake of comparison took place a total of two times after it had used it for one week from when the music database had been initialized. It treats as 2 and 6 evaluations with the values of 1 and 7, respectively.

The first hypothesis was then verified. The question "Did you feel that the expressed music applied to your current feelings?" was put to the user. Moreover, the questionnaire was made available to the listener at the same time, "Were the user's feelings imaginable via listening to the music?" The listener's evaluations were comparatively high, with the evaluation exceeding 4 in the results being 75%. However, the listener resulted in high appraisals opposing those seen when evaluating music in that it did not match the current feelings of a certain user.

The second hypothesis was finally verified. It was similarly evaluated using a question the user was presented with in the questionnaire, "Was the music that agreed with the feelings after it had been used before expressed?". It can be seen that music which expressed the feelings of user, at 67% or 5.0 on average, as in the results, resulted from a one week long case. However, one person did evaluate it quite low along with one that evaluated it as not having changed very much, too.

4. CONCLUSION

This paper proposed a sensibility communication system utilizing percussion instrument performances, which it appears to have achieved. The system is composed of two parts: a "Search engine" and a "Sensibility score updater". The colors are then assumed to be part of the decision making involved in feelings, be related to music, and expressible. Moreover, the expressed music uses a "Sensibility score updater" to take individual variations into consideration, thus making the score close to where the user wants to express the sensibility score of the music used. Individual variations are thereby taken into consideration using this technique.

Listeners were also able to take the user's feelings into consideration. Moreover, it became easier for the music used for the user's feelings to be expressed by updating the sensibility score of that music, with the effectiveness of the appropriate method of that having been revealed above. However, all the testers were not as successful. There were gaps in what the user's feelings actually were and feelings the music invoked in listeners.

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