

Using Melody of Musical Sounds as Element of Audio Icons to Identify the Callers of Cell Phone

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Abstract

In a previous study we found that musical sounds can be accepted to code the ringing signal for identifying the caller of cellular phone. This study then tried to figure out how the attributes of the melody of musical sound will affect our feeling when they are composed as auditory icons for caller identification of cellular phone. Three critical attributes of melody, which are rhythm, contour, and key, were recognized and adopted as variables to compose 60 musical samples for testing in the experiment of this study. Seventy-two subjects were asked to compare the similarity between each pair of musical samples and to make a SD rating on each musical sample. Through a factor analysis and an MDS analysis, we can figure out a 5-dimensional perceptual space of people in listening to music. These dimensions are "amiable-strange", "rushing-restful", "exhilarating-calm", "castiron-tender", and "complex-simple," respectively. We also found contour as the principal attribute on affecting our perception of melody.

We then conducted another experiment of the same SD survey to 25 possible relations between callers and a phone receiver. The data of the two experiments were analyzed to generate a common perceptual space. To map each relation with musical samples in this space, a set of guidelines for designing auditory icons by musical sounds to identify callers were derived.

Keywords

Human Factor, Rhythm, contour, key, ringing tones, melody

Using Timbre of Musical Sounds as Element of Audio Icons to Identify the Callers of Cell Phone

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Abstract

This research aims to find out the possibility of using timbre of musical sounds as code of ringing signals for a cellular phone owner to identify the relationship of the callers to him. This study started with an interview to cellular phone users. From this interview, we found that the caller identification function is really a useful feature and musical sounds are popularly accepted for identification signals, while the timbre is the critical attribute affecting our feeling of music. Thus, we conducted an experiment to study the distinction and feeling of 14 timbres presented in the same piece of music by asking 30 subjects to compare the similarity between each pair of timbres and to make a SD rating on each timbre. The factor analysis reveals that the image scales can be reduced into three factors: "varieral-uniform," "joyful-melancholy," and "animated-dull." And the MDS analysis concludes a 3-dimensional perceptual space, which seems to conform to the three factors obtained by factor analysis. The result also shows that most timbres can be clearly distinguished with each other and are strongly associated with some specific meanings and feelings. This result proves that the timbres can be effectively applied as codes in designing music signals for caller identification or other related applications.

Keywords

Human Factor, Timbre, auditory events, call identification, cell phone