AUTOMATED EMOTIONAL COMPOSITION SYSTEM GENERATED BY SOCIAL TAGS

Chin-Fang Huang
Department of Information Communication
Kainan University

Chi-Jung Li
Department of Information Communication
Yuan Ze University

ABSTRACT

With the rapid development and spread of music sharing and classification, the “social tags” is one of genre sorting method while re-organizing a considerable amount of online media into simple words; however, these simple social tags may indicate music emotions. Social tags for music emotions could be utilized to trigger automated emotional music generators quickly and precisely so that everyone would listen to randomly generated music that could imply “emotions” within social tags from the given information of classified online media.

KEYWORDS: social tags, music emotions, automatic music generators

1. PREFACE

1.1 backgrounds of the research

Composing our own music is quite difficult to ordinary people because they have little or no musical backgrounds or experiences. But however, copyright issues are the most concerned for ordinary people for fear that they would face allegations for plagiarism from these original composers or copyright claimers. To enjoy the joyfulness of making everyone’s own music and avoid copyright issues, the idea of “automated algorithmic music generators” has been appeared so that even the ordinary people can easily generate their own music with simple settings.

1**.2 motivations of the research**

Nowadays, some automated music generators added with “emotional features” options and settings, so these music generators could generate music which could reflect users’ individual emotions. With some keywords that symbolized various and unique emotions, it is the key to compose the music to express emotions easily.

In addition, with the help of the rapid development of “social tags” on the Internet, this way can easily categorize and classify some information and keywords for specified data on the Web. Also, these keywords (or social tags)indicate “emotions” could be utilized to assist generating musicefficiently with certain music emotional features.

1.3 purposes of the research

This topic is intended to improve automated music generators by adding with functions that are triggered by emotional “social tags” to generate music with proper emotions indicated these specific music emotions. Also, there are some points to do research for these issues related to social tags, music emotions and algorithmic composition.

2. REVIWS OF REFERENCES

2.1 social tags

The term “social tags” is widely seen on the Internet, which indicates brief information for online media like music clips, streaming

footages, and music videos. These “social tags” can easily categorize online media into various kinds of genres within short keywords, making these online media easily to be searched. Social tags are widely used in social-sharing websites such as YouTube, Picasa, Flickr, and so on, making these uploaded media indicate their unique attributes [1].

By the way, the way to generate “social tags” is based on a categorization method called folksonomy [2], which allows every user to “mark” some brief keywords indicate features of all uploaded media as a simple statement for these online media.

In the use of social tags for music data categorization, social tags are user-generated keywords associated with brief information online, and they have become an important component of“Web2.0” community, allowing users to generate playlists based on user-defined terms. Some social tags that indicate “music emotions” within these online media could be utilized to generate a playlist, even to trigger emotional music generating systems from the information that social tags provided. [3]

. Social tags indicating music emotions could be implemented into music information retrieval (MIR) systems to reorganize and categorize various media including keywords for music emotions, and then assist emotion-based automated algorithmic music generators to generate music with assigned music emotions accurately.Also, these emotional tags are used as analyzing standards while configuring parameters for automated emotional music composition.

2.2 automated emotional musicgenerators

Composing music is not only quite hard for ordinary people but also have a risk to commit plagiarism even if a short clip sounds alike other music copyright owners’ works. The concept of automated music generators based on algorithm has been appeared. With the help of automated music generators, even ordinary people can create their own music without having copyright issues.

In Herrera, Laurier, Serra and Sordo’s [4] experiment, they utilized social tags indicated music emotions and categorized these tags mapped to the 2D emotional (valence-arousal) plane. Their experimental results were shown as follows:

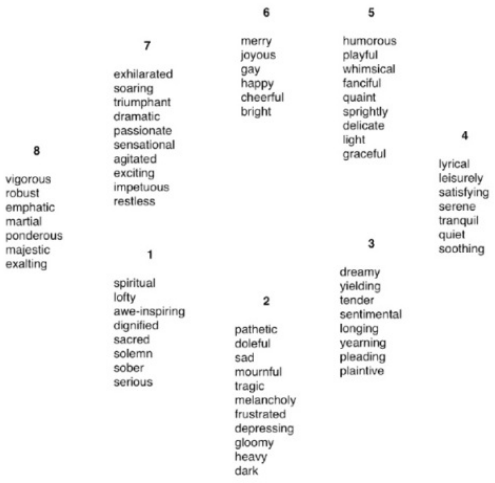

Figure 1. Emotion tags mapping

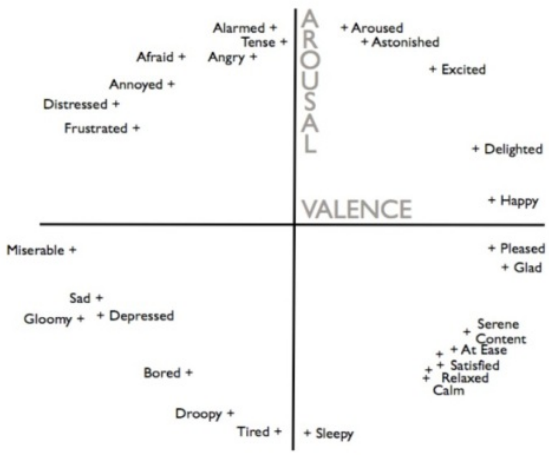

Figure 2. Valence-arousal plane in combinations of implementing emotion tags

Also, in Huang and Lin's [5] experiment for automated sonification systems, they also utilized 2D emotional plane and algorithmic music generators to generate music clips with proper music emotions and assist comforting people's minds, then leading to positive emotions after listening to the generated music clips.

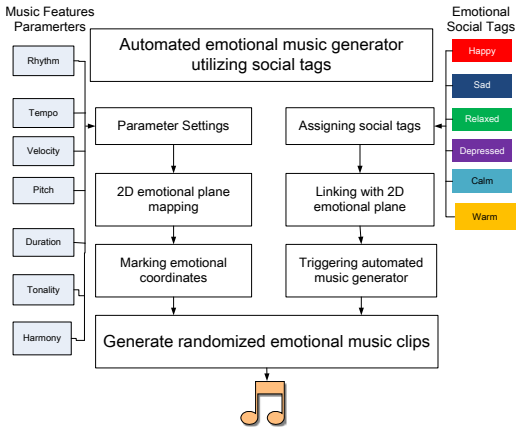

Figure 3. Working structure for emotional music generators

Furthermore, Huang and Lin analyzed the emotional features in generating randomized music clips,including rhythmic roughness, temp, articulation, mode brightness, harmony complexity, and pitch register.

Table 1. The mapping relation between music features and emotion valence/arousal

Valence	Low←Valence→High
Music features	Smooth←Rhythmic roughness→ Rough
	Slow←Tempo→Fast
	Legato←Articulation→Staccato
Arousal	Low←Arousal→High
Music features	Low←Mode brightness→High
	Low←Harmony complexity→High
	Low←Pitch Register→High

3. RESEARCH METHODS

According to the above reference reviews, this study attempted to combine with social tagging and automated emotional music generator. At first, there were some emotional tags within specified online media to be collected, and categorize these online media into several emotional genres as the social tags that will be implemented in emotional music generators..

Meanwhile, the emotional music generators could adjust detailed settings based on 2D emotional plane, and the blink point would appear on the 2D plane on the generator's interface. After completing the detailed settings to the emotional music generator, it could randomly generate a short music clip with proper music emotions that mapped onto the both axes on the 2D emotional plane.

Later, using the emotional social tag that had collected and categorized before, and configuring the settings according to these emotional social tags to trigger the emotional music generator, and it could generate the music to express emotions within these social tags.

4.CONCLUSIONS

4.1 results and discussions

The experimental results of this prototype structure has been currently simulated and obtained by the mapping from emotional social tags, and the emotion data mapping. Also, social tags could efficiently assist emotional music generators generate randomized music clips quickly and precisely which mapped onto the right position on the 2D emotional plane.

Table 2. Experimental statistics

Coordinates	Major features of samples
1st quadrant (high-valence, high-arousal)	Tempo fast (24), Articulation staccato (15), Loudness medium (11)
2nd quadrant (low-valence, high-arousal)	Loudness loud (18), Tempo fast (17), Articulation staccato (15)
3rd quadrant (low-valence, low-arousal)	Tempo slow (18), Loudness low (17), Articulation legato (15)
4th quadrant (high-valence, low-arousal)	Loudness low (20), Tempo slow (17), Articulation legato (13)

4.2 future works

With the efficiency of using social tags generating randomized emotional music clips, it would also be used in combination pictures and text-based stories that marked with emotional social tags. So the simple texts or pictures could “generate” the music clips which could properly express emotions in the pictures or text-based stories.

5. REFERENCES

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6. AUTHOR’S PROFILE

Chih-Fang Huang

Born in 1965, graduated at National Chiao Tung University in Taiwan, and acquired engineering doctor and music composition master degree. He studied knowledge for computer music from Prof. Phil Winsor for a decade and specialized in algorithmic music composition. He is the assistant professor of the Department of Information Communication in Kainan University in Taiwan; also, he is the chief conductor of Taoyuan Yuan Ze Orchestra.

Chi-Jung Li

Born in 1989, graduated at the Department of Information Communication ofYuan Ze University in Taiwan, and now is serve as the research assistant of the Gerontechnology Research Center in YZU and having great enthusiasm to do with computer music technology and sound engineering.