

Acoustic variables in the communication of composer emotional intent

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ABSTRACT

Background

Music emotion recognition algorithms seek to automatically classify analysed music in terms of the emotion it expresses. Typically these approaches utilise low level acoustical features extracted from the digital music waveform. Research in this area concentrates on the perception of expressed emotion from the user perspective. This approach has received some criticism in that it is limited in terms of unpicking the many facets of emotional communication between the composer and the listener (Miell, MacDonald & Hargreaves 2005), defined in e.g. the lens model of Juslin (2001). The use of acoustical analysis and classification processes can be expanded to include aspects of the musical communication model. This has the potential to shed light on how the composer conveys emotion, and how this is reflected in the acoustical characteristics of the music.

Aims

This research aims to examine the communication of music emotion from the point of view of the composer's manipulation of variables which have a direct bearing on acoustical properties of the music being created. This approach will allow the acoustical analysis approach, usually studied from the listener perspective, to be examined from the opposite end of the musical communication process.

Method

A pilot study was carried out in which a composer was tasked with composing music for a video game. The composer kept a video diary of his thoughts and qualitative descriptions of his intentions as he composed music for the game. Music from each stage of the composition process was recorded. The resulting music, and the comments from the composer were analysed in order to examine how the acoustical characteristics of the music correlate with his stated intent as regards communication of emotion.

Results

The music was analysed and a large number of structural features extracted which describe the intensity and dynamics, tempo and rhythm and timbral/spectral characteristics of the music. These structural parameters were analysed in relation to the qualitative descriptions provided by the composer, using a series of analyses including ANOVAs, multiple regressions and correlations. The results shed light on the links between the actions and intentions of the composer and the resulting acoustical characteristics of their music.

Conclusions

This study contributes to the growing body of knowledge relating to the communication of music emotion and the automatic recognition of emotion through signal analysis. It takes a novel viewpoint in examining the communication process from the point of the view of the composer, and highlights the relationship between the composer's actions and the resulting acoustic characteristics of the music.

Keywords

Emotion, acoustic analysis, composition

REFERENCES

- Miell D., MacDonald R.A.R., and Hargreaves, D.J. (eds.) (2005). *Musical Communication*. (Oxford University Press, Oxford, U.K.), 352.
- Juslin, P. (2001). "Communicating Emotion in Music Performance: a review and a theoretical framework". In *Music and Emotion: Theory and Research*, edited by P. Juslin and J. Sloboda, (Oxford University Press, Oxford, U.K.), pp. 309-340.