A Machine Learning Approach for Emotion Classification of Sri Lankan Folk Melodies

J. Charles and S. Lekamge

Department of Computing and Information Systems, Sabaragamuwa University of Sri Lanka, Belihuloya, Sri Lanka

Music plays a vital role in our day-to-day life and considerably more in the current digital age. It can convey and evoke powerful emotions, owing to various musical characteristics such as rhythm, melody, and orchestration. This amazing ability has motivated the researchers worldwide to discover relationships between music and emotion. As a result, various data mining tasks have been carried out where state-of-the-art machine learning techniques are utilized in music emotion classification. However, the literature reveals that these studies frequently utilize western or western classical music. Since the emotional expression in music is carried out through various ensembles of musical characteristics which are cultural-specific, generalizability of classification models trained using different ground-truth data in a new context is problematic. This demands the development of emotion classifiers for cultural-specific music which are been less explored. As an example, no considerable effort is reported in computational modeling of Sri Lankan folk melodies, despite being an abundant source of emotion expression. Therefore, we propose a machine learning approach for their emotion classification, supported by a comparison among different standard classification algorithms, further identifying a set of acoustic features contributing for improved classification accuracy. A systematic literature review has been carried out which revealed the use of classical machine learning algorithms e.g., Artificial Neural Networks, Support Vector Machines and Bayesian networks, frequently employing timbral, rhythmic, and pitch features. In the proposed study, an emotion-annotated dataset comprising of 76 music stimuli (30s; 44100Hz; stereo; 32bit; .wav) is to be utilized with MATLAB MIRToolbox for acoustic feature extraction. It is believed that the findings of the study would mark a promising start, introducing machine learning for emotion analysis in Sri Lankan folk melodies.

Keywords: Music emotion classification, Machine learning, Sri Lankan folk melodies