
Predicting musical emotions from low-level acoustic and physiological measurements

Eduardo Coutinho

Imperial College London, UK

The focus of this talk is to evaluate the automatic estimation of the intensity and valence of perceived emotions in music and speech using acoustic/psychoacoustic descriptors and information about the physiological states induced in the listeners. In a behavioural study collected time-continuous ratings of emotions perceived in full music pieces and long speech excerpts, using a computer interface which modelled emotion on two dimensions (arousal and valence). Additionally, we measured several physiological parameters (respiration, heart rate, skin conductance, skin temperature, and blood pressure) while listening to each stimulus. Regression experiments with Recurrent Neural Networks were then conducted to model multiple relationships between self-reported emotions, physiological activity and psychoacoustic features. Results show that psychoacoustic features alone are generally better predictors of arousal and valence compared to physiological indicators. Furthermore, most physiological indicators analyzed can be predicted with good accuracy from acoustic/psychoacoustic features. Taken together the results suggest that music and speech signals can trigger physiological activity related to emotional processing.