Émotions dans la musique : approche basée sur le contenu

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07 Novembre 2016

Motivations

A Circumplex Model of Affect

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Factor-analytic evidence has led most psychologists to describe affect as a set of dimensions, such as displeasure, distress, depression, excitement, and so on, with each dimension varying independently of the others. However, there is other evidence that rather than being independent, these affective dimensions are inter-related in a highly systematic fashion. The evidence suggests that these inter-relationships can be represented by a spatial model in which affective concepts fall in a circle in the following order: pleasure (0°), excitement (45°), arousal (90°), distress (135°), displeasure (180°), depression (225°), sleepiness (270°), and relaxation (315°). This model was offered both as a way psychologists can represent the structure of affective experience, as assessed through self-report, and as a representation of the cognitive structure that laymen utilize in conceptualizing affect. Supportive evidence was obtained by scaling 28 emotion-denoting adjectives in four different ways: Ross' technique for a circular ordering of variables, a multidimensional scaling procedure based on perceived similarity among the terms, a unidimensional scaling on hypothesized pleasure–displeasure and degree-of-arousal dimensions, and a principal-components analysis of 343 subjects' self-reports of their current affective states.

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[1] J. A. Russell. "A circumplex model of affect". In: *Journal of Personality and Social Psychology* 39 (1980), pp. 1161–1178.
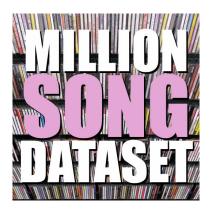
Valence en psychologie

En psychologie, le terme valence est utilisé pour désigner la qualité intrinsèquement agréable ou désagréable d'un stimulus ou d'une situation. Dans le contexte de la psychologie des émotions, le concept de valence renvoie aussi au caractère plaisant de certains états émotionnels (comme la joie ou la contemplation du beau) auxquels on attribue une valence positive par opposition aux émotions à valence négative (comme la peur ou la tristesse) généralement associées à un mal-être, un désagrément ou une souffrance

Arousal

In the context of psychology, arousal is the state of being physiologically alert, awake, and attentive. Cet état correspond à quels émotions dans le modèle de Russell?

The Million Song Dataset

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[2]Thierry Bertin-Mahieux et al. "The Million Song Dataset". In: *Proceedings of the 12th International Conference on Music Information Retrieval (ISMIR 2011)*. 2011.

Comment circonvenir ces limitations?

The dataset does however not provide an easy download possibility for the audio files, thus researchers are basically limited to the features provided with the dataset. Using a content provider, for which links with unique IDs to the internal database existed in the MSD, we downloaded audio samples, mostly in the form of 30 or 60 second snippets. Subsequently, we provide a multitude of features extracted from these samples, to allow comparison between them.
les détails de[3]

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[3]Alexander Schindler, Rudolf Mayer, and Andreas Rauber. "Facilitating Comprehensive Benchmarking Experiments on the Million Song Dataset." In: *ISMIR*. 2012, pp. 469–474.

Caractéristiques extraites à partir du MSD

Table 2: Overview on features extracted from the MSD samples. *Dim.* denotes the dimensionality, *Deriv.* derivatives computed from the base features

#	Feature Set	Extractor	Dim	Deriv.
1	MFCCs [12]	MARSYAS	52	
2	Chroma [6]	MARSYAS	48	
3	timbral [13]	MARSYAS	124	
4	MFCCs [12]	jAudio	26	156
5	Low-level spectral features [11] (Spectral Centroid, Spectral Rolloff Point, Spectral Flux, Compactness, and Spectral Variability, Root Mean Square, Zero Crossings, and Fraction of Low Energy Windows)	jAudio	16	96
6	Method of Moments [11]	jAudio	10	60
7	Area Method of Moments [11]	jAudio	20	120
8	Linear Predictive Coding [11]	jAudio	20	120
9	Rhythm Patterns [9]	rp.extract	1440	
10	Statistical Spectrum Descriptors [9]	rp.extract	168	
11	Rhythm Histograms [9]	rp.extract	60	
12	Modulation Frequency Variance Descriptor [10]	rp.extract	420	
13	Temporal Statistical Spectrum Descriptors [10]	rp.extract	1176	
14	Temporal Rhythm Histograms [10]	rp.extract	420	

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jAudio: Software for extracting low and high-level features from audio recordings. Marsyas (Music Analysis, Retrieval and Synthesis for Audio Signals) is an open source software framework for audio processing with specific emphasis on Music Information Retrieval applications

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[4] Thierry Bertin-Mahieux et al. "The Million Song Dataset". In: *Proceedings of the 12th International Conference on Music Information Retrieval (ISMIR 2011)*. 2011.

Croisement des données de lastfm

- c'est quoi déja? The Last.fm dataset is similar to the beaTunes database, in that it also contains multiple user-submitted labels per song which are each associated with a weight.
- qui a fait les annotations?
- ont elles été vérifiées?
- quelle valeur peut on donner à ces annotations?
- ont elles déja été utilisées dans des études?
- comment est-ce fait?
- quelles mots clés ont été selectionnés et comment?

Questions