Abstract

There exist number of musical instruments in the world; each has its own melody and recognition techniques. The purpose of this paper is to propose a hypothesis for extraction of melodic pattern from the polyphonic audio recording of North Indian Classical Music files related to Mohan Veena. The paper discusses about the useful algorithm, application and techniques for extraction and evaluation. The five stages procedure: first, stream separation by Non-negative Matrix Factorization (NMF). Second, instrument recognition – extracting stream
related to Mohan Veena using spectrogram and autocorrelation technique. Third, extracting methods which comprises of Sinusoid extraction, system analyzes the audio signal and extract spectral peaks for constructing the salience function where the spectral peaks could be used to compute representation of pitch salience over time, followed by pitch counter technique. Fourth, melody extraction from the extracted pitches counter and finally about the evaluation technique with some discussion.

References

- J. Salamon and J. Urbano, "Current challenges in the evaluation of predominant melody extraction algorithms.
- J. Salamon and E. Gomez, "Melody extraction from polyphonic music signals using pitch counter characteristics," IEEE Transaction on Audio, Speech and Language
Extracting Melodic Pattern of ‘Mohan Veena’ from Polyphonic Audio Signal of North Indian Classical Music

Processing. 2010.
- P. Cancela, &quot;Tracking melody in polyphonic audio,&quot; in 4th Music Information Retrieval Evaluation eXchange (MIREX), 2008.
- Karin Dressler, &quot;Audio melody extraction for mirex 2009,&quot; in 5th Music Information Retrieval Evaluation eXchange (MIREX), 2009.
- J. Salamon and E. Gómez, &quot;Melody extraction from polyphonic music audio,&quot; in 6th Music Information Retrieval Evaluation eXchange (MIREX), extended abstract, 2010.
- B. Wang and M. D. Plumbley, &quot;Musical audio separation by Non-negative matrix Factorization,&quot;
- J. Salamon, E. Gomez and J. Bonada, &quot;Sinusoid extraction and salience function design for predominant melody estimation,&quot; Proc. Of the 14th Int. Conference on Digital Audio Effects (DAFx-11), Paris, France, September 19-23, 2011.
- P. Smaragdis and J. C. Brown, &quot;Non negative matrix factorization for polyphonic music transcription,&quot; In IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA’03), pp. 177–180, October 2003.
- Equal loudness filter, July 2011.
- K. Dressler, &quot;Sinusoidal Extraction using an Efficient Implementation of a Multi-resolution FFT,&quot; In Proc. of the Int. Conf. on Digital Audio Effects (DAFx-06), pages 247–252, Montreal, Quebec, Canada, Sept. 2006.
- J. Salamon and E. G´omez, &quot;Melody extraction from polyphonic music signals using pitch contour characteristics,&quot; IEEE Transactions on Audio Speech, and Language Processing, In Press (2012).

Index Terms

Computer Science

Signal Processing
Keywords
Polyphonic Audio  Mohan Veena  Non-negative Matrix Factorization  Spectrogram
Autocorrelation Sinusoid Extraction
Salience Function
Pitch Counter