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MP3 FILE RETRIEVAL

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1. ABSTRACT

Music is traditionally retrieved by title, composer or subject classification. It is possible, with current technology, to retrieve music from database on the basis of a few notes sung or hummed. In this paper the "query", a part of song sung by the user, is used to match a database of soundtracks to find the entry that is best matched with database. Finally some experimentally obtained result is given.

In this system is planned to extract pitch contour information from starting line of song.Extractmelody from each song and then we will be specifying the tone in our own voice and match.We extract melody from this song and then retrieve the corresponding songs.

2. Introduction

This paper introduced retrieval system based on melody, of the music. While the Melody consist of one or more musical phrases and are usually repeated throughout a song or piece in various forms. Melodies may also be described by their melodic motion or the pitches or the intervals between pitches.

A melody Retrieval system allow a user to hum or sing or whistled a short part of a song and then search and retrieve the matched song from the database created by user.

Query which is typically a few notes ('la' or 'da') sung by the user is processed to identify its melody features. The database is match with query. If the database is matched with query then song is retrieve. Here the database of fifty Hindi songs is created. In this database first pitch contour is found for the some part of the song and then this pitch contour is represent using some symbol like "U","D","S" and "*".Where "U" represent up pitch contour, "D" represent down pitch contour, "S" represent same or repeated pitch contour, '*'represent starting pitch contour.

3. Melody Extraction

Melody is an important descriptor of music, so melody-based searching (query by melody) is a very natural way of interacting with music collections. Melody can be defined as an auditory object that maintains its identity under certain transformations along the dimensions of pitch, tempo, timbre, loudness, spatial location, and reverberant environment; sometimes with changes in rhythm; but rarely with changes in contour. As with other cognitive percepts, it is very difficult to extract melody from real-world signals.

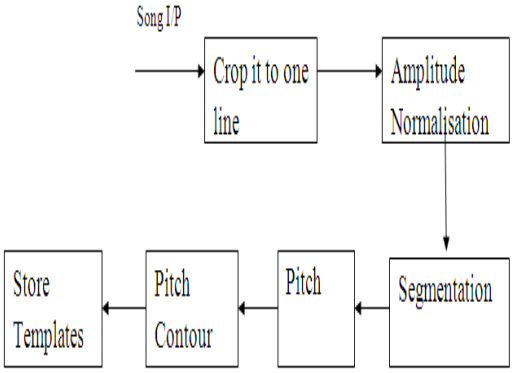
Melody extraction is:

(1) Estimating when the melody is present and when it is not (also referred to as voicing detection).
(2) Estimating the correct pitch of the melody when it is present.

Variety of methods, to find pitch period such as autocorrelation, average magnitude difference function (AMDF),etc. In this paper autocorrelation method is used.

Autocorrelation refers to the correlation of a time series with its own past and future values. Autocorrelation is also sometimes called "lagged correlation" or "serial correlation", which refers to the correlation between members of a series of numbers arranged in time.

4.Proposed Block diagram of Song Retrieval



In proposed system Fifty Hindi song is used which is crop into one line then find the autocorrelation and pre emphasised energy ratio depend upon this find pitch and pitch contour. If we find the pitch contour replaced this pitch contour by symbol called as 'Notes' like 'U', 'D', 'S','*'. This note stored as a Templates. Same work is done with query. Query is song which is sung by user in only 'la-la' or 'da-da' but in rhythm. Now compare note of query with the store templates which is notes of MP3 song. Find the best match and song is retrieve.

5. Work Done

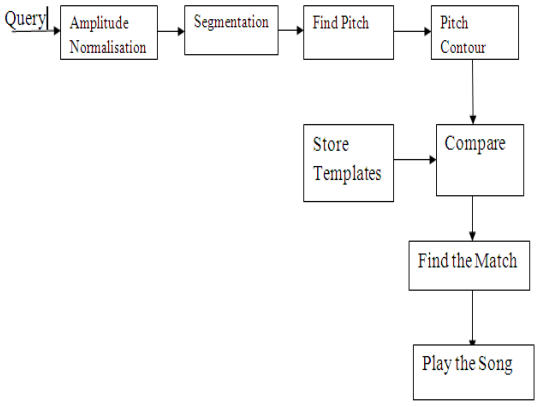


Fig: Block Diagram of Work Done

5.1 Database Used:

In this work own created database used. For creating database First take 25 Hindi MP3 songs and crop into one line i.e. cut the song in limited time period (07sec.). When we cut the all song in specified limit then convert all song into mono form because MP3 song is in stereo mode. And store these MP3 songs as templates. Selected MP3 song is sung in own voice with syllable "la-la" and then this query is cut into 7 sec. using MP3 cutter software and store this Query as templates.

5.2 Amplitude Normalization:

Do amplitude normalization process on mono song. Amplitude normalization means maximum value of amplitude divide by every sample. Amplitude normalization is the application of gain to an audio recording to bring the average or peak amplitude to a target level. Because the same amount of gain is applied across the given range, the signal to noise ratio and relative dynamic are generally unchanged.

After normalized the amplitude we find the pitch period using autocorrelation method. Pitch is auditory sensation in which listener assign a musical tone to relative position on musical scale.

5.3 Energy Measurement:

Various methods are given for energy measurement of the signal segment such as Zero crossing rate (ZCR), Short Time Energy (STE), or Pre-Emphasized Energy Ratio. I'll use here pre-emphasized energy ratio. Generally, the logarithm of energy is computed for a short segment having duration of about 20 ms in length. The logarithm of energy for a voiced segment is found to be much higher than that of the silence part and the logarithm of energy of the voiced data is usually lower than that of voiced sounds but higher than that of silence.

5.4 Presence or Absence of Pitch:-

Different methods of estimation of pitch period can be used to see if the speech has a periodic nature or not. In the case of a voiced segment, if one tracks the pitch value continuously, one will find that it is almost constant, this is the pitch information. For an unvoiced segment, the pitch value obtained will be quite low and it will vary by a large amount. In this case pitch information is absent. If pitch information is absent, it must be unvoiced speech. If respective pitch is found, the segment is voiced.

Voiced and unvoiced can be discriminated using the normalized pre-emphasized energy ratio defined by equation.

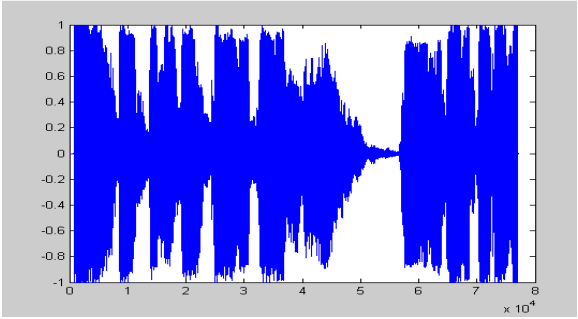
The variance of the difference between adjacent samples for voiced speech will be very small, and that for unvoiced speech will be higher.

5.5Pitch Contour and Note Segmentation:

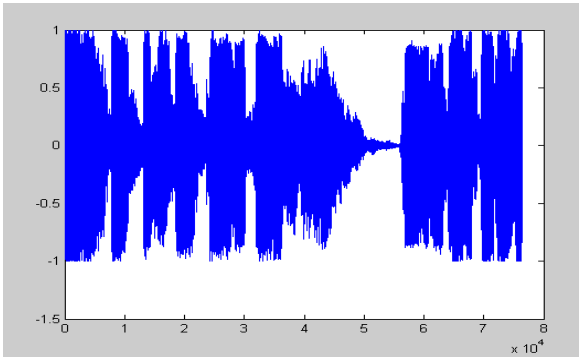
After Normalization find Pitch Period of MP3 cut song. From this Pitch Period find Pitch Contour of that Song. Also find the Notation for this Pitch Period. The relative variation in pitch in time is known as the pitch 'Contour.' Apart from the pitch contour, the only other information Thus constitutes the two most significant attributes of the melody feature of music. Instead of representing each pitch interval exactly, the direction of change is the more important element in melody recognition. In this representation, the symbol "U","D","S", is used to indicate whether a note is higher (up), lower (Down) or Same(S) in pitch as the previous note.

5. Results

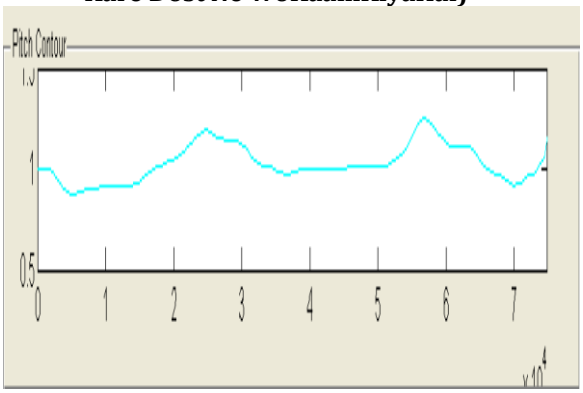
a) Read MP3 Song (Dushman Na Kare Dost Ne WoKaamKiyaHai)



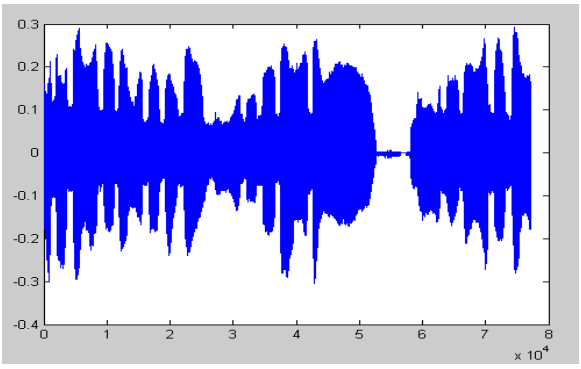
b) Remove Silence Part of MP3 Song (Dushman Na Kare Dost Ne WoKaamKiyaHai)



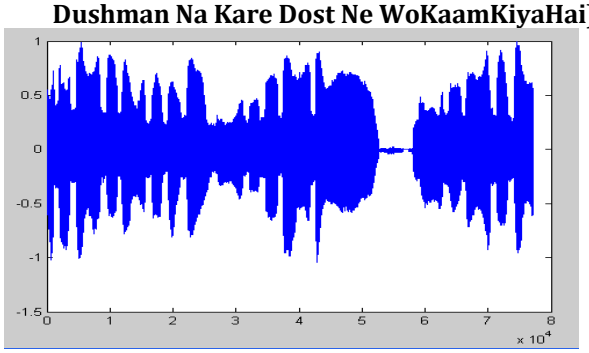
a) Pitch Contour of MP3 Song (Dushman Na Kare Dost Ne WoKaamKiyaHai)



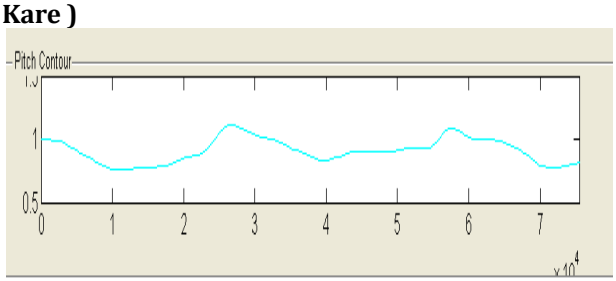
b) Read Query Song (Dushman Na Kare Dost Ne WoKaamKiyaHai)



c) Remove Silence Part of Query Song (Dushman Na Kare Dost Ne WoKaamKiyaHai)



d) Pitch Contour of Query Song (Dushman Na Kare)



6. Result Matching Song:

:- Not Matched Song

Sr. No.	Query Songs	Matching MP3 Songs
1	1	23
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	13
9	9	9
10	10	10
11	11	11
12	12	12
13	13	13
14	14	14
15	15	15
16	16	14
17	17	17
18	18	14
19	19	19
20	20	20
21	21	21
22	22	22
23	23	23
24	24	5
25	25	25

7. Challenges related to music file retrieval

In this paper result shown for notation of query song is not perfectly matched with the notation of MP3 song reason behind that the query song is not sung by professional singer and not in recording room,

Like MP3 song. This query song is sung by author itself who is not professional singer and recording of query song is recorded with surrounding noise. Hence retrieval of the song is very difficult because the notation is not perfectly match.

It is great challenge in front of author to retrieve the song depend upon the query, the query song is recorded in recording room without noise and this query song is sung by professional singer.

One more main problem for retrieve the song is that MP3 song is contain music part also hence there is no silence part in between song where as if we sung query there may be silence part in between song hence pitch contour and note segmentation is not matched perfectly.

8. References

1) M.AnandRaju and Preetirao 'Bilding a Melody Retrieval System' Procedings Eighth National Conference on Communication, PP 369-373
2) McNab.R.J, Smith.L.A, Witten.I.H, Henderson.C.L, Cunningham.S.J, "Towards the Digital Music Library: Tune Retrieval from Acoustic Input",Proceeding ACM Digital Libraries,Bethesda, 1996.
3) VishweshwaraRao and PreetiRao 'Vocal Melody Extraction in the Presence of PitchedAccompaniment in Polyphonic Music' IEEE transactions on audio, speech, and language processing, vol. 18, no. 8, 132 February 2010, PP 2145-2154.
4) Yongwei Zhu and Mohan S. Kankanhalli 'Precise Pitch Profile Feature Extraction From Musical Audio for Key Detection' IEEE transactions on multimedia, vol. 8, no. 3, june 2006, PP 575- 584.
5) MatijaMarolt ' A Mid-Level Representation for Melody-Based Retrieval in Audio Collections'IEEE transactions on multimedia, vol. 10, no. 8, December 2008, PP 1617- 1625.
6) Jean-Louis Durrieu, Gaël Richard, Bertrand David, and CédricFévotte 'Source/Filter Model for Unsupervised Main Melody Extraction From Polyphonic Audio Signals' IEEE transactions on audio, speech, and language processing, vol. 18, no. 3, march 2010, PP 564- 575.
7) Sachin Pant, VishweshwaraRao, and PreetiRao 'A Melody Detection User Interface forPolyphonic Music.
8) Yi-Hsuan Yang, Yu-Ching Lin, Ya-Fan Su, and Homer H. Chen, 'A Regression Approach to Music Emotion Recognition' IEEE transactions on audio, speech, and language processing, vol. 16, no. 2, February 2008, PP 448- 457.
9) Trisiladevi C. Nagavi, Nagappa U. Bhajantri 'Overview of Automatic Indian Music Information Recognition, Classification and Retrieval Systems'2011 International Conference on Recent Trends in Information Systems, pp 111-116.