Music App for Smartphone Users in India (FP2-14)

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Project Overview

In this project we implemented a method to give artist recommendations for a music app that features bollywood music. No current app or online platform provides a robust feature for providing artist recommendations for bollywood artists and since there is a very large section of the global population that listens to bollywood music, implementing this feature in a music app has a huge market potential. We implemented our method using text mining on a corpus of articles about bollywood artists and combining the text mining results with results from acoustic feature classification of all the songs by those artists. After combining text mining and acoustic feature results we compared our results with the artist recommendation features from last.fm, which is currently the market leader for providing artist recommendations for bollywood music. Our results were significantly better. While last.fm has an average accuracy score of 28%, our method provided a score of 68%. With further enhancement of our results we even reached an average accuracy in the 90th percentile.

Methodology

As the system block diagram shows, our method was based on a combination of results from text mining and audio feature classification.

**Step 1:** We performed a co-occurrence analysis on a corpus of articles about bollywood artists. The idea is that if two artists occur together in an article, they have a high chance to be related to each other.

**Step 2:** We defined a feature called Artist’s Degree of Relatability as the number of people that connect to an artist. The higher the degree, the higher the artist’s popularity. This step helped us to filter the co-occurrence results from step 1. In the case where two artists had the same co-occurrence score, the one with bigger degree was given preference.

**Step 3:** We combined the results from step1 and step2 with results from acoustic feature classification of the songs by all the artists in our corpus. The acoustic feature classification is based on extraction of audio features of songs, representing them in a spectrum of normalized vectors and finding the spectral mean of these features. We performed this combination of results (in order to give a maximum similarity score of artists) by dividing our target set of artists into two groups, one of which was a training set, training the set using logistic regression, and applying the training data to the other artist in our target set.

Results

We tested our results with those from last.fm which uses collaborative filtering to give related artist recommendations. The results show that the text mining method plus the acoustic features surpass the results from last.fm. The table shows that the precision, recall and F-1 score are higher than our baseline (last.fm) whether we combine the text mining results with the spectral mean results or combine the spectral mean results to the text mining results.