

Cultural Remix

Song transformation based on percussive segmentation
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EECS 352

Introduction

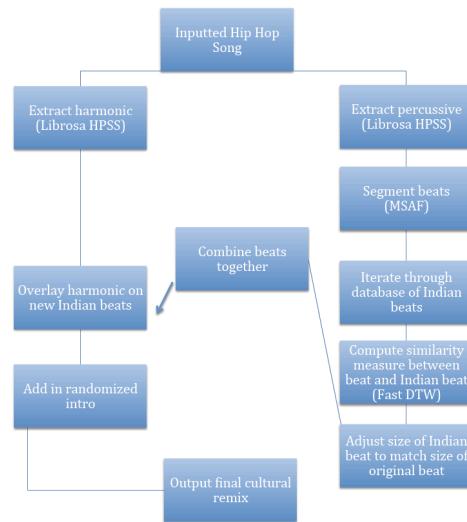
Our project focuses on transforming hip-hop songs into Indian remixes by incorporating prominent elements of South Asian music. The program analyzes a given hip-hop song's percussive composition, and then generates a compatible South Asian background to overlay the original harmonics. The goal of Cultural Remix is to create a desirable remix by meshing the art of two cultures.

Motivation

Within the last two decades, South Asian music has greatly influenced leading artists in the American hip-hop genre. Rappers such as Jay-Z and Missy Elliot have notably utilized Hindi film music and Punjabi bhangra to enhance their art, and create transnational pieces. As such, we thought it would be interesting to explore the intricacies of creating a cultural mashup and contribute to this niche genre.

Data Set

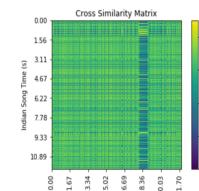
We use **24 songs** that produce **104 beat segments**, ranging from traditional Hindi film music to upbeat, modern bhangra. We pulled instrumentals from popular Indian songs and separated their beats into several tracks using segmentation.



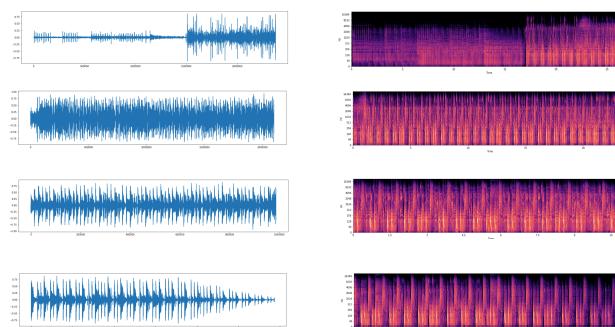
Methodology

Similarity Measures:

We tried **CSM** and then **Fast DTW**. Using the CSM trace was not accurate because the segments had different tempos (see example matrix below).



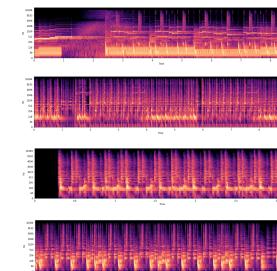
We exemplify our segmentation with Eminem's '*Till I Collapse*'. The song has 8 segments (2nd/3rd repeat): beat trackers and spectrograms below.



Acknowledgments

We would like to thank Vissagan Gopalakrishnan (VGo) for contributing several instrumentals to our data set. We would also like to thank Prem for guiding us in our methodology.

Results



Here are the 4 distinct Indian segments for '*Till I Collapse*'. These were matched using FastDTW.

Listen to our remixes at: <https://sonianigam.github.io/culturalRemix/>

Improvements

1. Improve vocal extraction: harmonic separation produced superior results to repet, but we still experience a drop in vocal quality compared to Audacity
2. Develop an intuitive interface: expand our Jupyter notebook to have a user-facing front end
3. Enable customization: allow users to substitute certain beats for the next most similar beat if they aren't happy with the initial remix

Conclusion

Based on a random survey, **80%** of users said our results are comparable to current DJs' mixes, aside from the vocal quality. Moreover, sampled NU dance team captains **unanimously** agreed that they could use this tool for their soundtracks.