Human and automated judgements of musical similarity in a global sample

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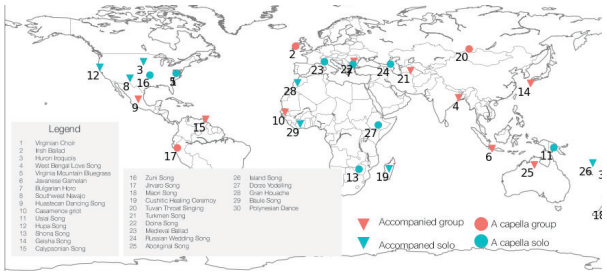
Background

Few prior studies have tested **automated similarity algorithms** with **pereptual ratings** for **cross-cultural** music samples.
There is a need for **reliable ground truth data** to both test and improve cross-cultural similarity algorithms.

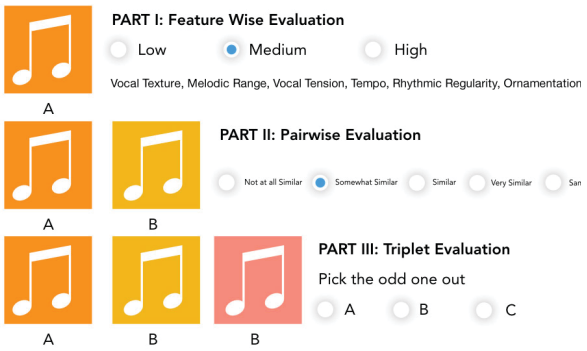
Proposed Solution

We compare **three different methods** of collecting **ground truth perceptual data** for cross cultural similarity.

We compare the ground truth data of each method with **automated methods** trained on a sample of 8,300 world music samples.



Methods



We implemented three different methods to retrieve similarity information from **62 examinees** across a total of **30 songs**. The methods were evaluated by:

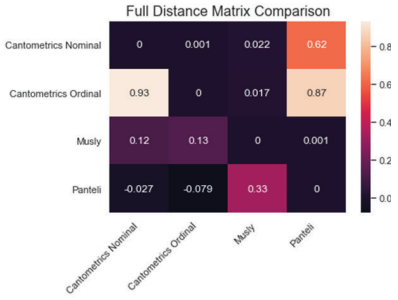
1. Songwise features
Ornamentation, Vocal Range, Temop, Rhythmic Regularity, Vocal Tension, and Vocal Texture

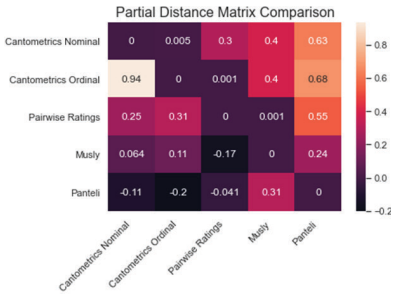
2. Pair-wise
10 pairs of 5 songs each

3. Triplet
Odd one out of 10 triplet combinations

Our automated methods employ an **LDA model** from Panteli et al. 2017 [1] and **Musly**, an open source tool that uses timbre as it's principal measure for similarity [2].

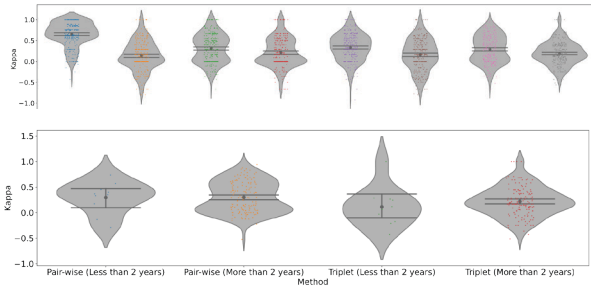
Results





While individual raters show a relatively high agreement when analyzing similarities using the same method, the **correlation across methods is unstable**

Triplet methods, where the rater has to pick the odd one out, have **relatively high stability.**



Future work

Repeat the same perceptual experiments with **particpants of different cultures**.

Develop new algorithms to **match low-level signal features** with **high level descriptors** commonly used in cross-cultural music analysis

[1] Panteli, M., Benetos, E., & Dixon, S. (2017). A computational study on outliers in world music. PloS one, 12(12).
[2] Schnitzer, D. (2014). Musly: Audio music similarity.