INTERNATIONAL INSTITUTE OF INFORMATION TECHNOLOGY
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Technology, Social Impact

Predicting Individual Differences and Preferences from Music Induced Movement

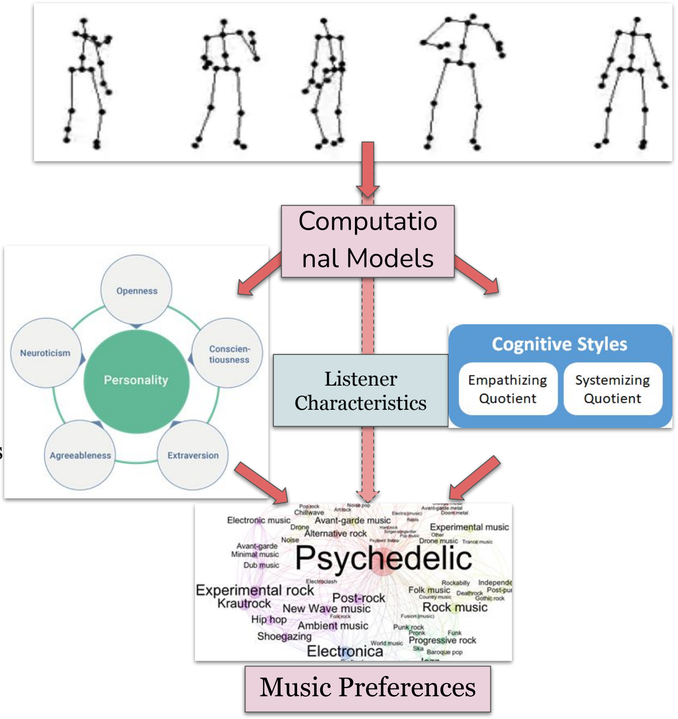
Abstract

Just like physical gestures are quick giveaways of your personality and your current emotional state, the way you groove to music also says a lot about you. In this study we have developed a machine learning model that can look at listeners' natural movement to music and predict their personalities, music preferences and cognitive styles. It has significant implications for music cognition research. As a follow-up, we investigate which bodily joints are most important in defining these traits.

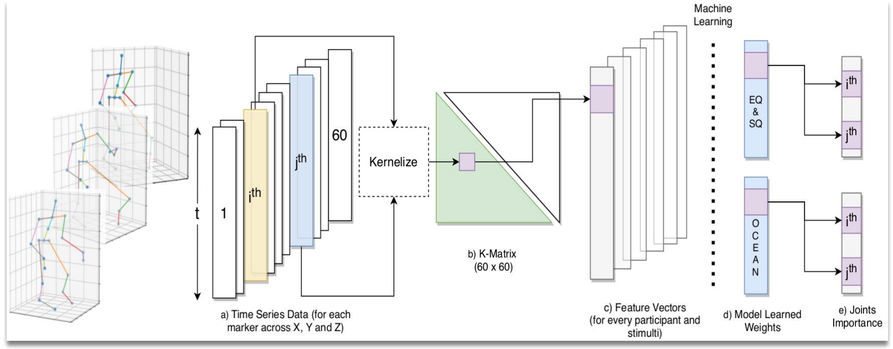
Objective & Motivation

To predict individual traits given participants' music-induced movements while listening to various genres

- Music experiences are highly embodied, making it necessary to consider individual embodied responses to music in developing more advanced personalized user experiences.
- Musical preferences have been associated previously with Personality[1] and cognitive styles of thinking[2].
- The current study is the first of its kind to use computational methods to predict individual traits, specifically personality traits, scores on the Empathy and Systemizing Quotients (EQ/SQ), and musical preferences from participants' free music-induced movements.

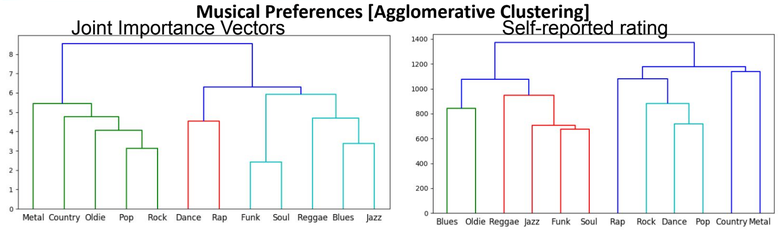


Method



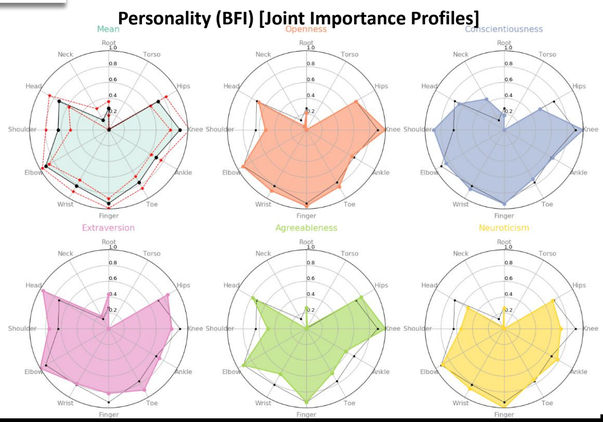
- ***Pairwise Correntropy*** calculated between *time series of joint markers' data* resulting in covariance matrix.
- Train regression model on the feature vectors to get the weight vector.
- Calculate ***joint-importance*** from learned vector from the proposed algorithm.

Results



Quantitative Results
[Average R^2 scores]
(using Bayesian Regression)

Personality (BFI) : **76.3%**
Empathizing Quotient (EQ) : **77.1%**
Musical Preference (STOMP): **77.5%**



Yudhik Agrawal, Dr. Vinoo Alluri

Music Cognition Group, Cognitive Science Lab