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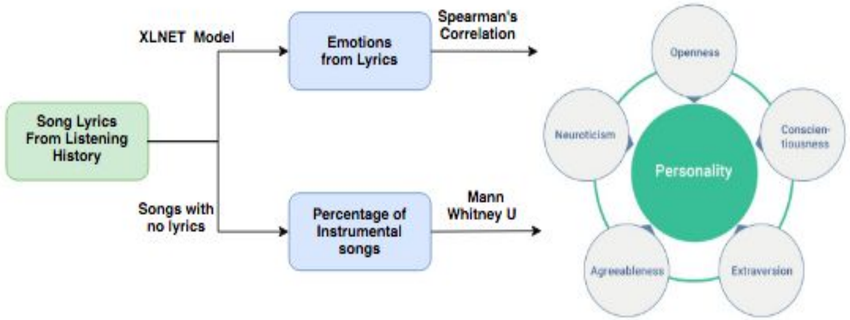
NLP Techniques For Lyrics Analysis And Its Use In Song Recommendations

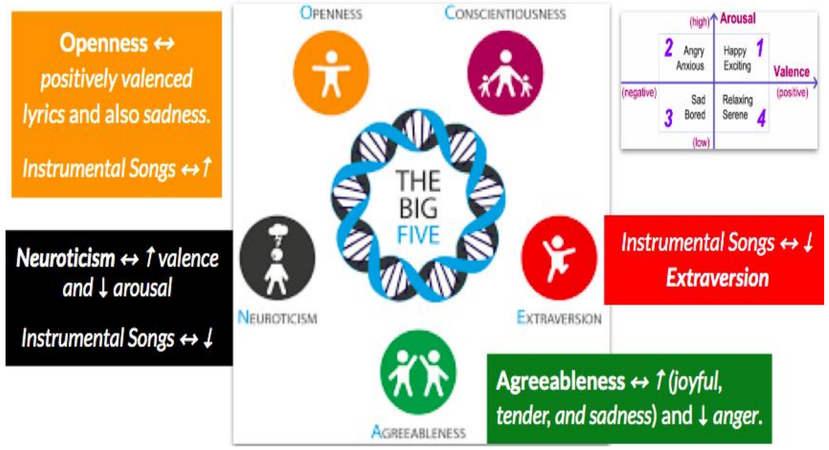
ABSTRACT

Lyrics are an important feature for eliciting emotions from a song. The use of transformer models on many downstream NLP tasks like sentiment analysis, semantic textual similarity and many others has improved performances significantly. We used XLNet transformers on lyrics for the music emotion recognition task and performed better than existing state-of-the-art methods. Studies have shown that people prefer songs close to their emotional needs which are modulated by personality. We performed statistical tests to understand the correlation between song preferences based on emotions via lyric and personality scores and also linked instrumental songs' likeness to particular traits.



OBJECTIVE

- Identifying emotions of a song in Russell's Valence-Arousal space by using transformer models on lyrics.
- Understanding the relationship between personality traits(OCEAN) and the emotions conveyed through the lyrics of their preferred songs.
- Identifying personality traits' likeness towards instrumental songs.



METHOD

- Two datasets(Moody Lyrics and MER) which contains songs annotated with their emotion quadrants in Russel's Valence-Arousal space, were used to train and validate our models.
- A pre-trained XLNet model was fine-tuned on these datasets for identifying emotions of a song in the VA space.
- Two LastFM datasets(LFD and PCD) containing user listening history for at least one year and big five OCEAN personality trait scores were used to identify the relationships between emotion via lyric and personality.
- Spearman correlation test was used to correlate personality trait with the emotion quadrant and Mann Whitney U test to calculate the group differences for likeness towards instrumental songs.

Emotions from lyrics can be used in music recommendation by recommending songs similar in emotions to songs in a session. Other lyric features like lyric structure, topics, summary, and others can also be extracted using NLP techniques, which can improve understanding of music preferences.

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