Embed song/artist vectors into the same feature space

- In music recommendation, artists and songs are represented by latent vectors
- The vectors are usually used only to compute a user’s preference toward a song
- We embed song/artist vectors in the same feature space to leverage the vectors for realizing new song search applications

Overall similarity (OS) and prominent affinity (PA)

- Overall similarity is defined as the closeness between an artist and a song
- When a song is fairly close to an artist, the song is similar overall to the artist

- Prominent affinity is defined as the inner product of an artist and a song
- When a song is fairly close to the extended position of an artist, the song prominently represents the artist’s characteristics

Application examples

Familiarity-oriented search

- What are unexpected songs of The Black Keys?
- Query: Lady Gaga
  - A: for users who are not familiar with the artist
  - B: for users who want to know the artist’s diversity
  - C: for users who want to listen to unexpected songs
  - D: for users who want to become an artist devotee

Typicality-oriented search

- Which song represents Lady Gaga’s typical characteristics well?
  - Given artist a, all songs in the dataset can be ranked in terms of OS or PA
  - By showing such songs to a user who is a fan of Lady Gaga, she may be willing to listen to unfamiliar songs because they are highly related to Lady Gaga

Analogy search

- Search for the target artist’s songs that have a similar relationship between the source artist and the source song
- The similarity is defined by the angle between vectors and the ratio of vector lengths

Contributions

- Propose the concepts of overall similarity and prominent affinity
- Relationships between songs and artists in a latent feature space
- Show characteristics of overall similarity and prominent affinity
- Latent vectors are generated by using Last.fm play logs for two years
- Demonstrate three applications for music information retrieval
- Familiarity-oriented search, typicality-oriented search, and analogy search

We want other researchers to leverage our proposed concepts and realize useful music information retrieval systems