MUSIC RECOMMENDATION BASED ON ARTIST NOVELTY AND SIMILARITY
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MOTIVATION

- Propose a music recommendation to meet the following three requirements:
  - Be able to deal with a small amount of ratings given by the user
  - Achieve high user acceptance
  - The artists of the recommended songs should be new to the user

TERMINOLOGY

- Artist classification
  - Like/dislike
  - New/known
- Artist attribute
  - Similarity
  - Popularity

EXPERIMENTS

1. Dataset
   - 106 subjects recruited from campus
   - Music preference ranges from pop, electronic, metal, jazz, rock, hip hop, country, to vocal music
2. Compare with Spotify Radio
   - Questionnaire

<table>
<thead>
<tr>
<th>Preference score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>The song is awesome. I will listen to it again.</td>
</tr>
<tr>
<td>4</td>
<td>Nice. I might listen to it again.</td>
</tr>
<tr>
<td>3</td>
<td>The song is okay, but I may not listen to it again.</td>
</tr>
<tr>
<td>2</td>
<td>Nothing special. No comment.</td>
</tr>
<tr>
<td>1</td>
<td>The song is terrible.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Novelty score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>I've neither heard of the artist nor the song.</td>
</tr>
<tr>
<td>4</td>
<td>I know the song, but I haven't heard of the singer.</td>
</tr>
<tr>
<td>3</td>
<td>I know the singer, but I haven't heard of this song.</td>
</tr>
<tr>
<td>2</td>
<td>I know both the singer and the song.</td>
</tr>
<tr>
<td>1</td>
<td>I am quite familiar with the singer and this song.</td>
</tr>
</tbody>
</table>

PROPOSED SYSTEM

Favorite Artist

Similar Artist Search

Artist Popularity Estimation

Artist Selection

Popular Song Search

Playlist

ALGORITHM

- Similar Artist Search
  - \( P(\text{like} | a, b) \propto \text{sim}(a, b) \)
  - \( \text{sim}(\cdot ; \cdot) \): similarity
- Artist Popularity Estimation
  - \( P(\text{known} | u, b_{i,j}) \propto \text{pop}(b_{i,j} | u) \)
  - \( \text{pop}(b_{i,j} | u) \): the popularity of \( b_{i,j} \) viewed by user \( u \)
  - \( \text{pop}(b_{i,j} | u) = \frac{\log \text{pop}(b_{i,j})}{\log \text{pop}(a_i)} \)
- Artist Selection
  - \( \text{Score}(b_{i,j}) = \text{Sim}(a_i, b_{i,j}) \times \text{Novelty}(b_{i,j}) \)

RESULTS

Preference Score

Novelty Score

New Liked Song

Preference score: 1 = The song is terrible. 5 = The song is awesome. I will listen to it again.
Novelty score: 1 = I am quite familiar with the singer and this song. 5 = I've neither heard of the artist nor the song.

Percentage

Spotify Radio

our system