Crowdsourcing-Based Musical Predictions

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Overview

- Using clustering and crowdsourcing, we are able to make musical predictions to an audience of users
- Designed a modified crowdsourcing framework
- Operates on a mobile network
Background - Crowdsourcing

- What is it?
- Why use it?
- Benefits and Risks?
Basic Crowdsourcing Framework

End User/Requester with Usable Data

Server/PC

Processing Data

Crowdsourcing Platform

Collecting Data

Smart Devices

Users with Smart Devices
Mixing Crowdsourcing And Music

- Goal: Create a central service that can be used on mobile devices
- We can use crowdsourced musical data to make recommendations
- Modifying the traditional crowdsourcing framework so it will change with users
New Framework

Radio Station

Radio Station Sends Music History Data to Server

Predictor

Decision Maker

Users/Listeners Send Data To Server

Server Sends Recommendations Back To Users/Listeners

Users/Listeners
Predictor

- This is where the musical data is processed
- Apply K-means clustering to the data
  - Simple and effective method to group data
- 3 Clusters are formed
Decision Maker

- Implements crowd-voting to rank recommendations
- Users build a dynamic queue of songs
- This will change as different users connect or disconnect
Data Collection

- Using Spotify and Last.fm we collected musical data
- Sample data collected from a user’s Last.fm account.

<table>
<thead>
<tr>
<th>Title</th>
<th>Artist</th>
<th>BPM</th>
<th>Energy</th>
<th>Dance</th>
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<td>The Bouncing Souls</td>
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<td>Alice In Chains</td>
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<td>56</td>
<td>38</td>
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</tbody>
</table>
Results

- Musical data was graphed and K-Means clustering was applied & compared with an existing radio station:
Analysis

- Recommendation zones can be put over another set of musical data
- Any songs that fall within these zones will be considered as a possible upcoming song
- This process happens in real-time as the pool of listeners changes
Future Work

- Develop the framework that will allow users to make an account and sign-in
- Apply different types of clustering algorithms to the data
- Address common security risks that are associated with crowdsourcing
  - Privacy of users
  - Malicious users
Thank you – Questions?