Temporal visualization for neighbor recommendations in Last.fm

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Motivation(1)

• Online recommender systems
  – Make recommendations bases on users‘ latest interests
  – Users normally can‘t influence the recommendation process
• The visualization of a recommendation history
  – Enhances self-reflection
  – New things can be discovered
  – Insight can be gained
• Interaction helps to explore the history in an active way
Motivation(2)

In Last.fm:
- List of neighbors calculated weekly
- Short-term musical taste is unstable → better to have neighbors with long-term similarity
Related work

- Recommender systems (for example Herlocker et. al., Swearingen and Sinha)
  - Transparency, Multi-dimensionality, Privacy, User feedback, Efficiency, Recommendation accuracy vs. diversity

- Visualization
  - Music collections
  - Temporal visualization

Havre et. al.: ThemeRiver: Visualizing Theme Changes over Time (2000)
Pampalk, Goto: Musicsun: A new approach to artist recommendation (ISMIR 2007)
Swearingen and Sinha: The Role of Transparency in Recommender Systems (CHI 2002)
Concept Development

• Guidelines were extracted from desired features of recommender systems
• Main features:
  – Current/future recommendations (e.g. neighbors‘ neighbors)
  – Multi-dimensionality: Musical/social aspects
  – Interaction: filter…
  – Transparency: understand why recommendations are made
Pre-study

- Study with four participants (age between 22 and 27, Students and PhD Students, technical background)

- Procedure
  - were shown the four concepts
  - rated them and gave suggestions

- Results
  - Neighbor feature is used to find new music
  - Concept 1 and 2 were rated best
  - Many interesting suggestions were made
  → led to changes in original concepts
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- **Overview**
- **Neighbors from complete period**

- **Timeline-based**
- **Network visualization**

Timeline-based visualization.

Network visualization.

Filter neighbors by:
- Gender:
- Age: 20-30
- Country:
- Genre:

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- Combining concept 1 and 2
- User profile
- Genre sectors
- Filter for neighbours’ appearance frequency
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- Percentage score for musical similarity
- Timeline

Chart of most similar neighbors

- Filter neighbors by:
  - Gender:
  - Age: 20-30
  - Country:
  - Genre:
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- Sun metaphor
- The top neighbors from the selected genre are shown in a list
- Additional information in a user profile

- Color scheme added, to keep consistency to the other concepts
- Genre names at the end of the rays

Concept 4

User Profile
- Name:
- Metalhead
- Favorite Artists:
  - Metallica, In Flames, Slayer
- Member in Groups:
  - Metal, LMU

Genre Distribution:
- Pop
- Rock
- Metal
- Indie
- House
- RnB
- Hip Hop

Filter neighbors by:
- Gender:
- Age: 20-30
- Country:
- Genre:
Future work

• Online survey with Last.fm users (with the improved concepts)
• Prototype Implementation with selected concept
• Evaluation (with collected data from the test users)
Thank you for your attention!