

LFE Medieninformatik • Christian Köpke

Antrittsvortrag Diplomarbeit

Temporal visualization for neighbor recommendations in Last.fm

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Verantwortlicher Hochschullehrer: Prof. Dr. Andreas Butz

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Motivation(1)

- Online recommender systems
 - Make recommendations based 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)

Your musical compatibility with MysticXV is **LOW**



Music you have in common includes [Three Days Grace](#), [Green Day](#) and [Metallica](#).

„Taste-o-meter“

Excerpt from Neighbor list in Last.fm

In Last.fm:

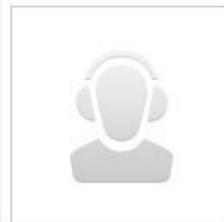
- List of neighbors calculated weekly
- Short-term musical taste is unstable
→ better to have neighbors with long-term similarity



FankyOvach11
Frank Andrew Kovach, 24, Male, United States
rock, hard rock, metal, alternative and nu metal.
Last track: Trivium – Like Light To The Flies
[Visit FankyOvach11's profile](#)

Shared artists with MysticXV

	Dark New Day		Submersed
	Edgewater		Faktion



sikopath420
United States
rock, alternative, hard rock, alternative metal and nu metal.
Listening: Blindfold – Reverse
[Visit sikopath420's profile](#)

Shared artists with MysticXV

	Dark New Day		Submersed
	Edgewater		Faktion



TeeBonZ
TBone, Male, United States
rock, hard rock, metal, alternative and nu metal.
Last track: Kansas – Carry On Wayward Son
[Visit TeeBonZ's profile](#)

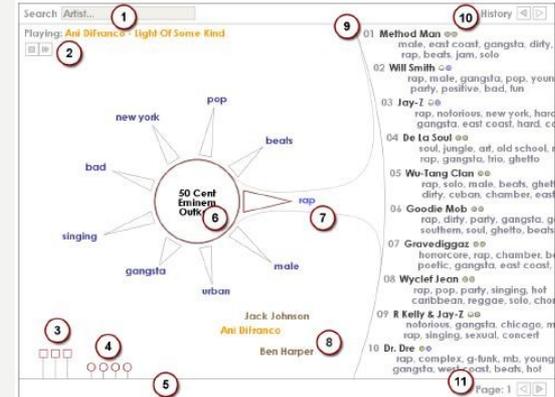
Shared artists with MysticXV

	Dark New Day		Submersed
	Edgewater		Faktion

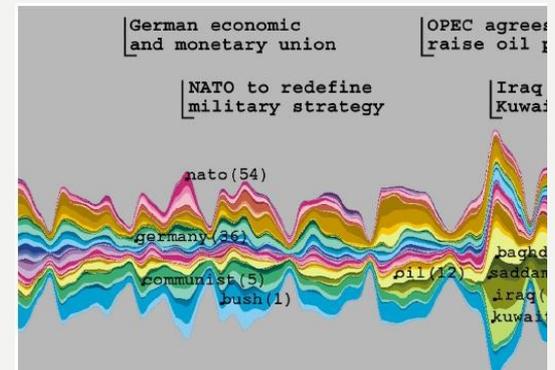


Related work

- 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



MusicSun (Pampalk, Goto)



ThemeRiver (Havre et. al)

Havre et. al.: ThemeRiver: Visualizing Theme Changes over Time (2000)

Herlocker et. al.: Evaluating Collaborative Filtering Recommender Systems (2004)

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

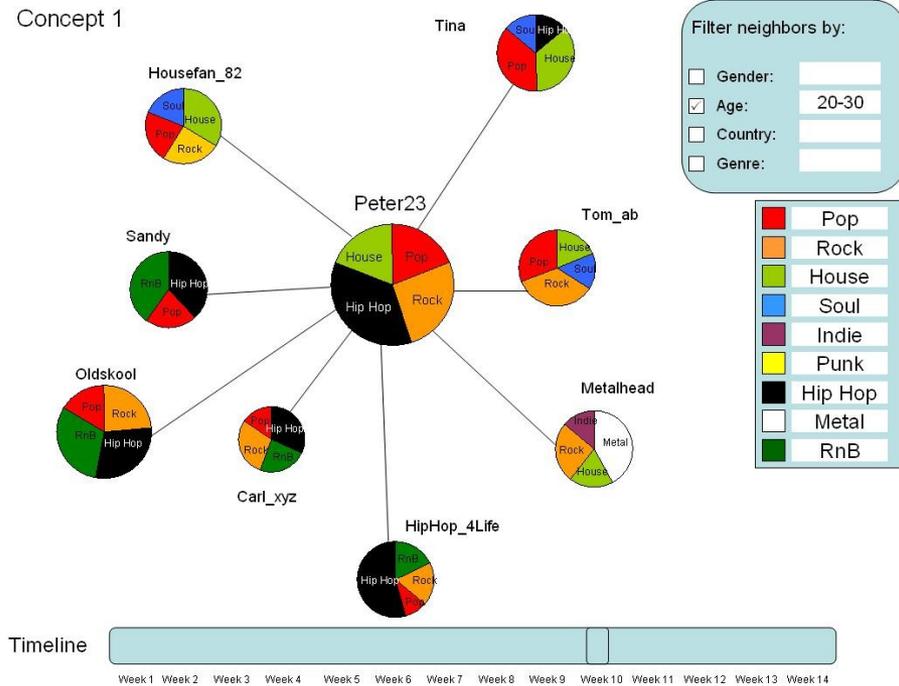


Pre-study

- 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



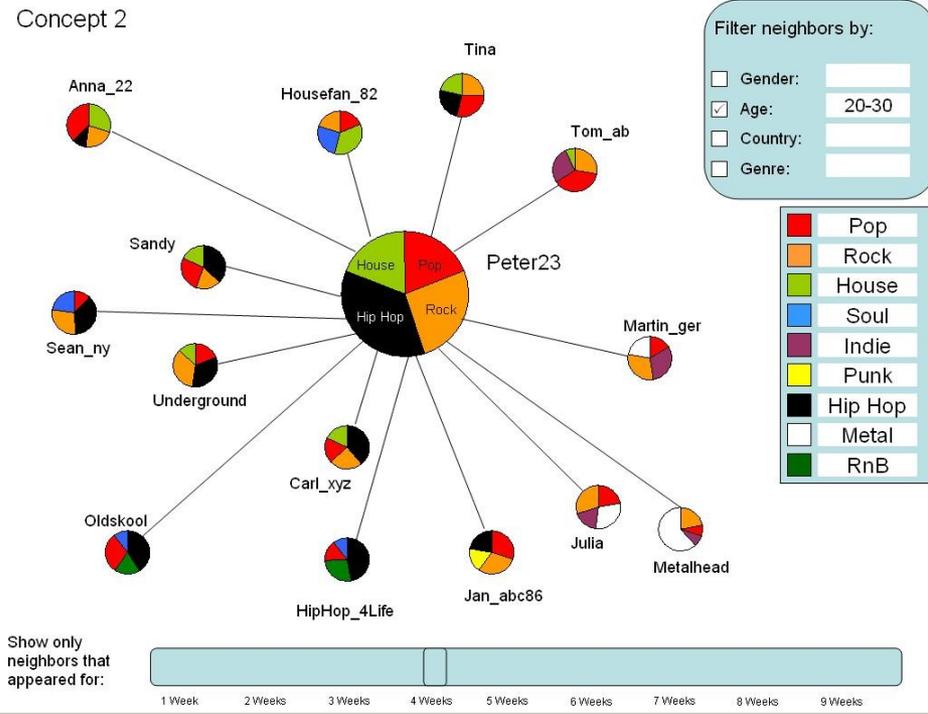
Concept 1



- Overview
- Neighbors from complete period

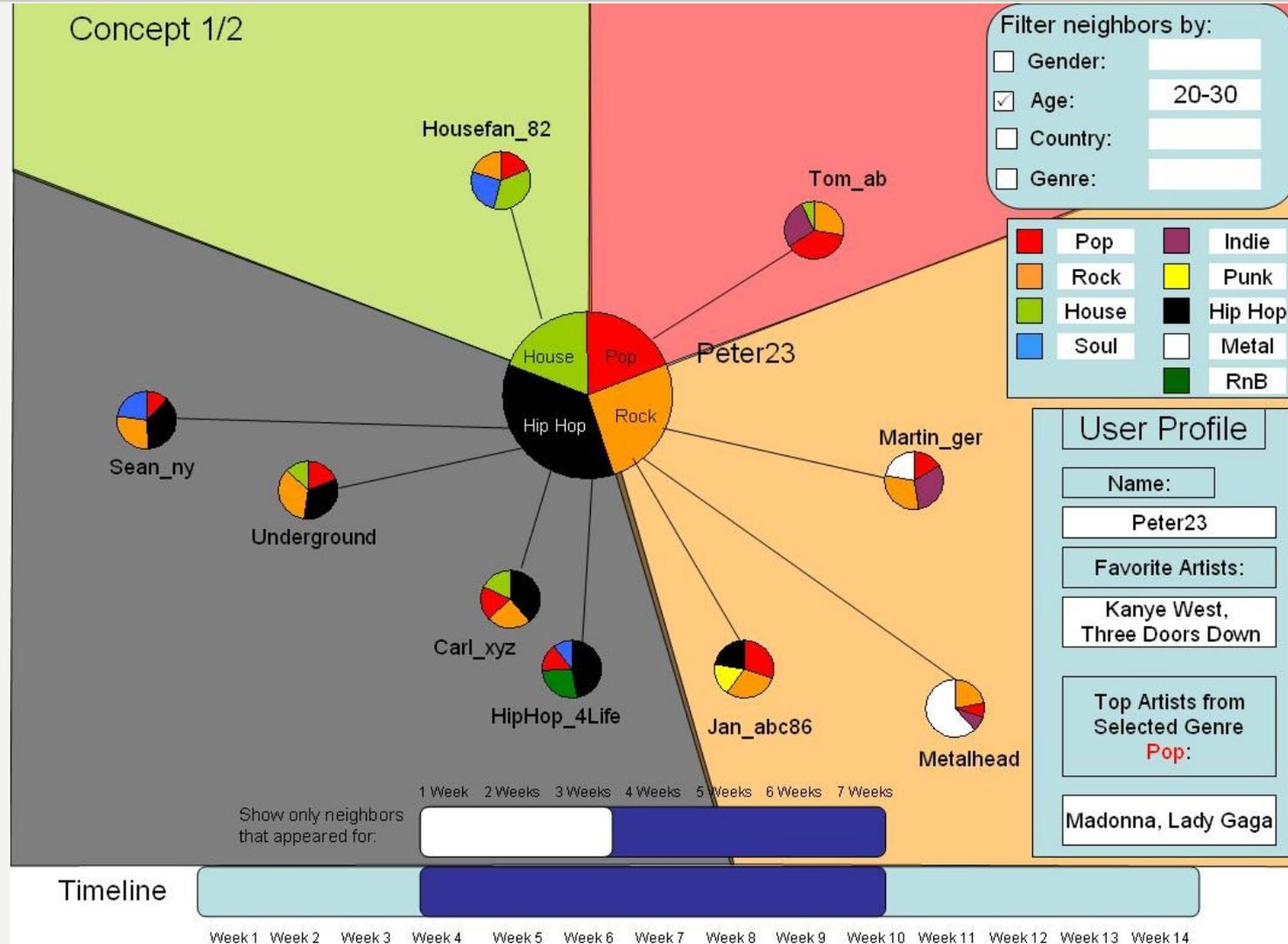
- Timeline-based
- Network visualization

Concept 2





- Combining concept 1 and 2
- User profile
- Genre sectors
- Filter for neighbours' appearance frequency



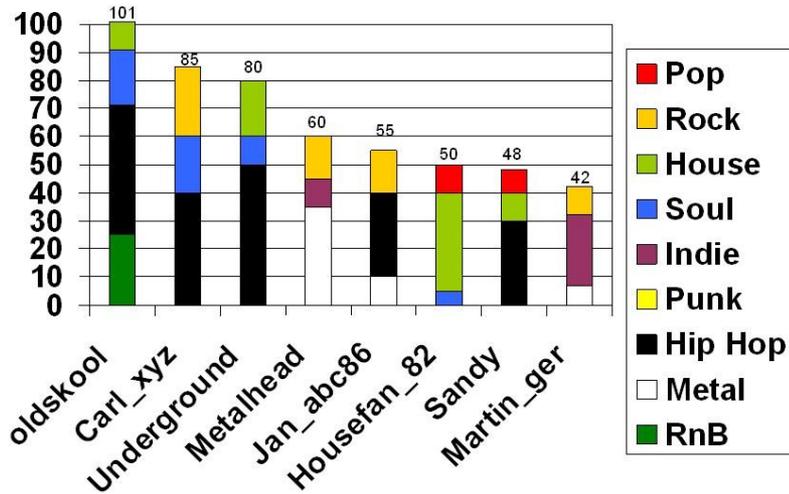


Concept 3

Filter neighbors by:

Gender:
 Age: 20-30
 Country:
 Genre:

Most similar neighbors:

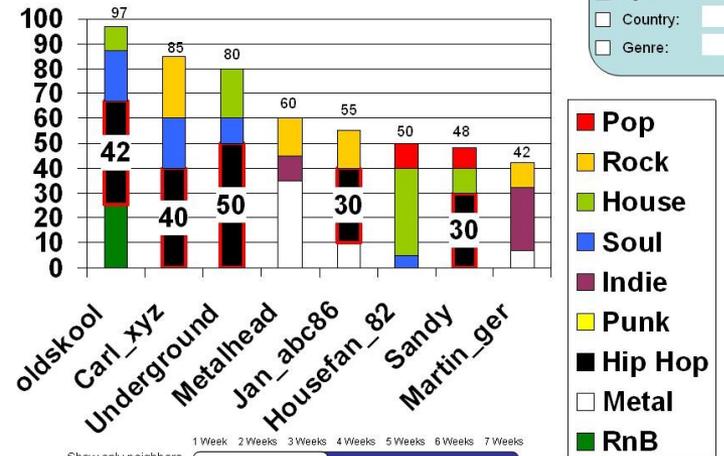


- Chart of most similar neighbors

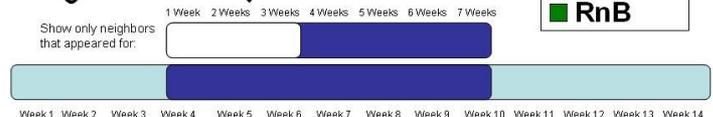
- Percentage score for musical similarity
- Timeline

Concept 3

Most similar neighbors:

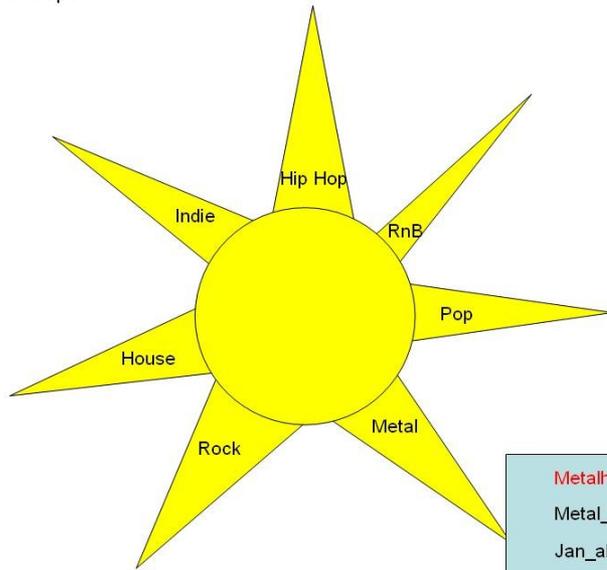


Timeline





Concept 4



Filter neighbors by:

Gender:

Age:

Country:

Genre:

User Profile

Name:

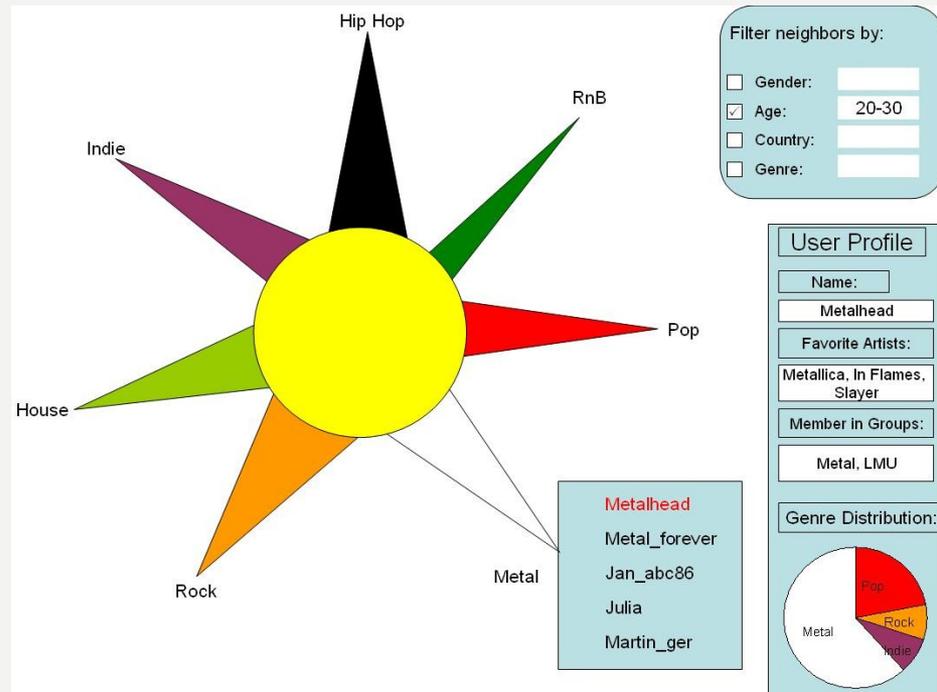
Favorite Artists:
Metallica, In Flames, Slayer

Member in Groups:
Metal, LMU

Genre Distribution:

- Metalhead**
- Metal_forever
- Jan_abc86
- Julia
- Martin_ger

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



Filter neighbors by:

Gender:

Age:

Country:

Genre:

User Profile

Name:

Favorite Artists:
Metallica, In Flames, Slayer

Member in Groups:
Metal, LMU

Genre Distribution:

- Metalhead**
- Metal_forever
- Jan_abc86
- Julia
- Martin_ger

- Sun metaphor
- The top neighbors from the selected genre are shown in a list
- Additional information in a user profile



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!