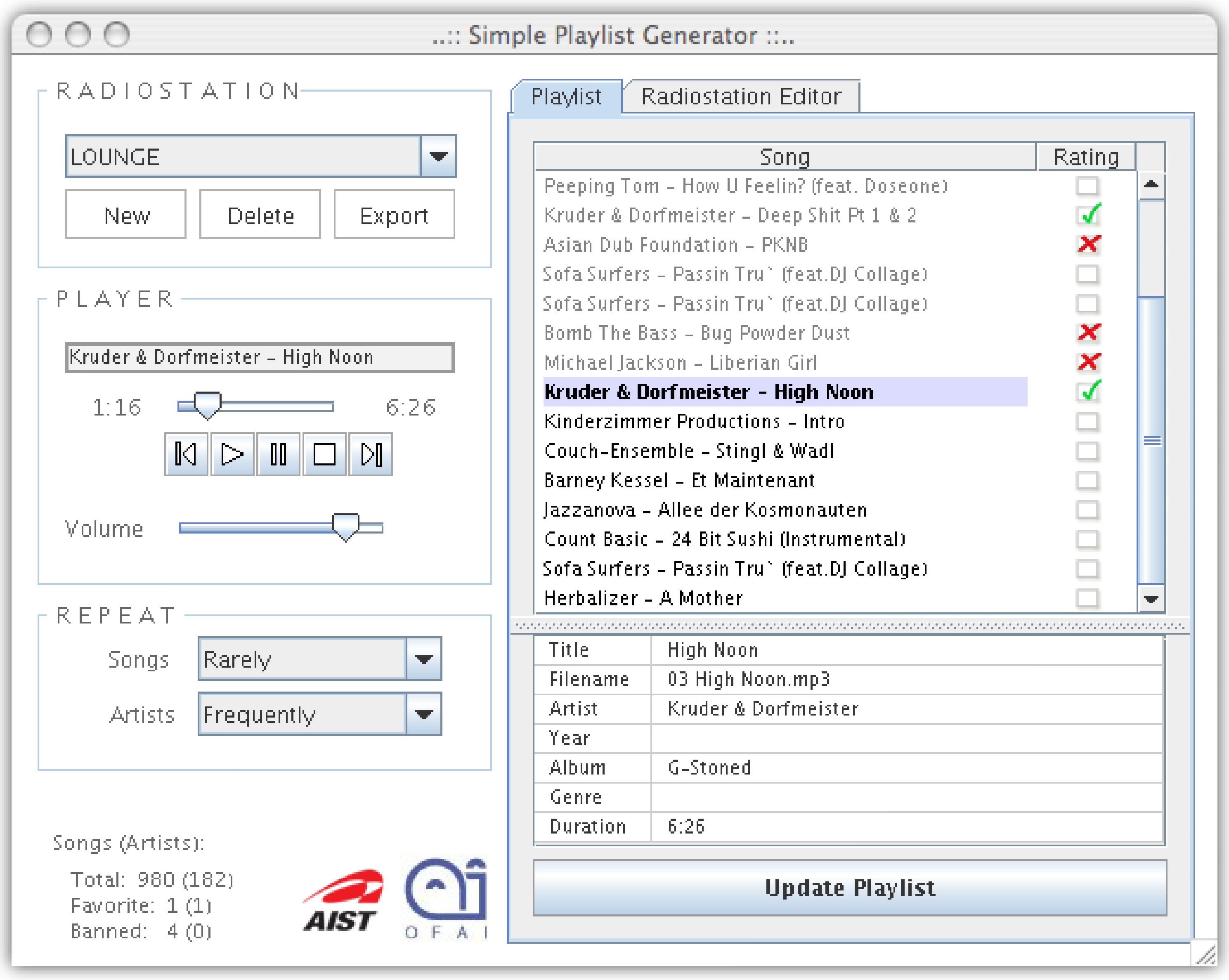
An Implementation of a Simple Playlist Generator Based on Audio Similarity Measures and User Feedback

Elias Pampalk[1] and Martin Gasser[2]

[1]National Institute for Advanced Industrial Science and Technology (AIST)
[2]Austrian Research Institute for Artificial Intelligence (OFAI)



..:: Simple Playlist Generator ::..

RADIOSTATION: LOUNGE — New | Delete | Export

PLAYER: Kruder & Dorfmeister – High Noon — 1:16 / 6:26 — Volume

REPEAT — Songs: Rarely — Artists: Frequently

Songs (Artists):
Total: 980 (182)
Favorite: 1 (1)
Banned: 4 (0)

Playlist | Radiostation Editor

Song	Rating
Peeping Tom – How U Feelin? (feat. Doseone)	☐
Kruder & Dorfmeister – Deep Shit Pt 1 & 2	✓
Asian Dub Foundation – PKNB	✗
Sofa Surfers – Passin Tru` (feat.DJ Collage)	☐
Sofa Surfers – Passin Tru` (feat.DJ Collage)	☐
Bomb The Bass – Bug Powder Dust	✗
Michael Jackson – Liberian Girl	✗
Kruder & Dorfmeister – High Noon	✓
Kinderzimmer Productions – Intro	☐
Couch-Ensemble – Stingl & Wadl	☐
Barney Kessel – Et Maintenant	☐
Jazzanova – Allee der Kosmonauten	☐
Count Basic – 24 Bit Sushi (Instrumental)	☐
Sofa Surfers – Passin Tru` (feat.DJ Collage)	☐
Herbalizer – A Mother	☐

Title	High Noon
Filename	03 High Noon.mp3
Artist	Kruder & Dorfmeister
Year	
Album	G-Stoned
Genre	
Duration	6:26

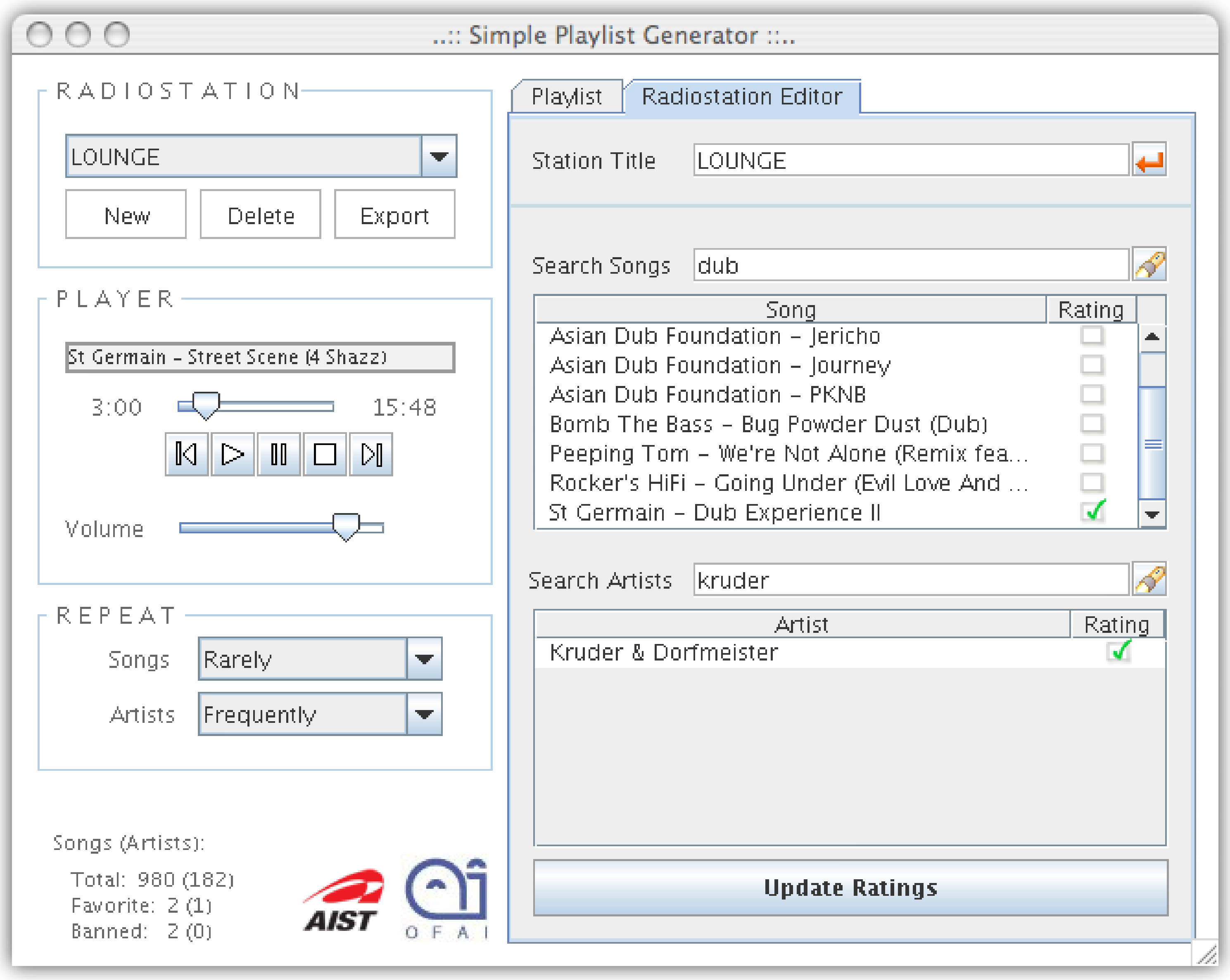
Update Playlist

Concept

- Manage large personal music collections.
- Minimum user input (replace random shuffling).
- Support users who are willing to give lots of input.
- Use radio station concept (similar to e.g. Pandora.com):
  - each radio station defines a playlist, and
  - user feedback only affects the current radio station.
- Use an audio-based similarity measure.

Prototype Implementation

- Helped clarify specifications and usability issues (e.g. repetition frequency and variance of the playlist).
- Intended for first field studies.



..:: Simple Playlist Generator ::..

RADIOSTATION: LOUNGE — New | Delete | Export

PLAYER: St Germain – Street Scene (4 Shazz) — 3:00 / 15:48 — Volume

REPEAT — Songs: Rarely — Artists: Frequently

Songs (Artists):
Total: 980 (182)
Favorite: 2 (1)
Banned: 2 (0)

Playlist | Radiostation Editor

Station Title: LOUNGE

Search Songs: dub

Song	Rating
Asian Dub Foundation – Jericho	☐
Asian Dub Foundation – Journey	☐
Asian Dub Foundation – PKNB	☐
Bomb The Bass – Bug Powder Dust (Dub)	☐
Peeping Tom – We're Not Alone (Remix fea…	☐
Rocker's HiFi – Going Under (Evil Love And …	☐
St Germain – Dub Experience II	✓

Search Artists: kruder

Artist	Rating
Kruder & Dorfmeister	✓

Update Ratings

User Input

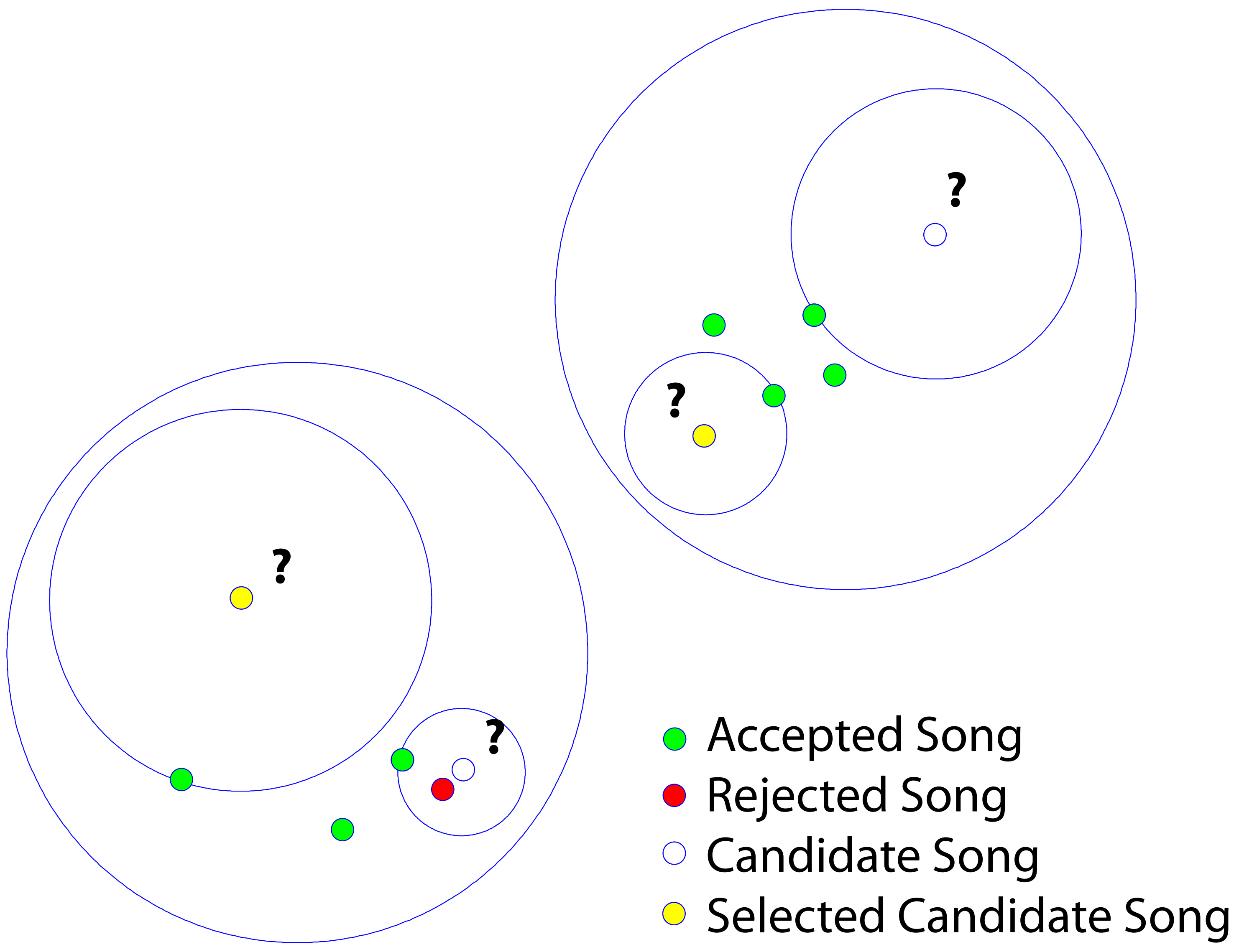
- Rate songs and artists (positive, negative, neutral).
- To control the variance of the playlist: define the maximum frequency with which a piece or pieces from the same artist should be repeated (frequently, sometimes, rarely).
- Define radio station name.

Technique

- For each piece in the collection find the 100 most similar pieces using an audio-based music similarity measure [1].
- Use a simple heuristic to select songs based on user ratings (the same as in [2] with an extension for rated artists).

Playlist Generation Heuristic

- Let A be the set of songs belonging to positively rated artists.
- Let B be the set of songs belonging to negatively rated artists.
- Remove from B all positively rated songs.
- Remove from A all negatively rated songs.
- Let C be the set of all candidate songs (songs which were not played recently, or whose artist was not recently played).
- Remove from C all songs from set B.
- For each song in C,
  - let d_a be the distance to the nearest song in A, and
  - let d_b be the distances to the nearest song in B.
  - if $d_b < d_a$ then remove the song from C.
- from the remaining songs in C:
  - select the song with the smallest d_a value.
  - if C is empty, select the song with the smallest d_a/d_b ratio.



🟢 Accepted Song
🔴 Rejected Song
○ Candidate Song
🟡 Selected Candidate Song

References

[1] E. Pampalk, *Computational Models of Music Similarity and their Application in Music Information Retrieval*, TU Wien, Austria, March 2006.
[2] E. Pampalk, T. Pohle, and G. Widmer, *Dynamic Playlist Generation Based on Skipping Behaviour*, in Proceedings of ISMIR 2005.

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