PlaySOM and PocketSOMPlayer: Alternative User Interfaces to Large Audio Collections

Robert Neumayer[1], Michael Dittenbach[2], Andreas Rauber[1]

[1] Vienna University of Technology
Department of Software Technology and Interactive Systems
Favoritenstr. 9-11 / 188
A-1040, Vienna, Austria
{neumayer,rauber}@ifs.tuwien.ac.at

[2] eCommerce Competence Center
iSpaces Group
Donau-City Str. 1
A-1220, Vienna, Austria
michael.dittenbach@ec3.at

User Interfaces for Audio Collections

We present the PlaySOM, a full desktop application that allows users to explore their collection, identify regions of interest, exporting playlists or just simply listen to the selected music by sending playlists to XMMS or Winamp.

The PocketSOMPlayer, an implementation for mobile devices, supports simpler interaction and perfectly suits any streaming application.

With the rising popularity of digital music archives the need for new access methods such as interactive exploration or similarity-based search becomes significant.
We present the PlaySOM, as well as the PocketSOMPlayer, two novel interfaces that enable one to browse a music collection by navigating a map of clustered music tracks and to select regions of interest containing similar tracks for playing. The PlaySOM system is primarily designed to allow interaction via a large-screen device, whereas the PocketSOMPlayer is implemented for mobile devices, supporting both local as well as streamed audio replay.
This approach offers content-based organization of music as an alternative to the conventional navigation of audio archives, i.e. flat or hierarchical listings of music tracks that are sorted and filtered by meta information.

The SOMeJB Framework

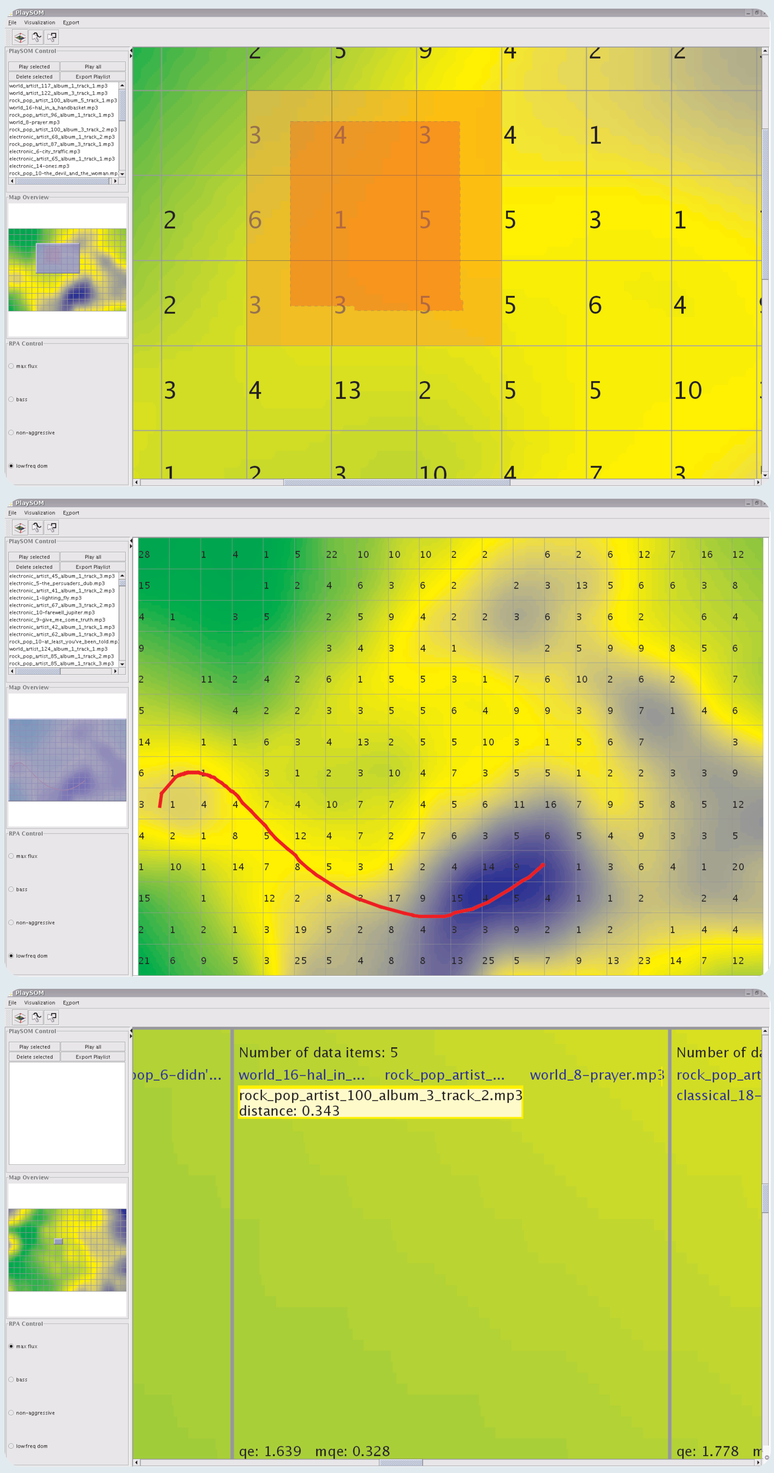
- Operates on raw audio data (decoded from WAV, MP3, OGG, ...)

- Computes/uses feature vectors representing acoustic characteristics (Rhythm Patterns, Marsyas, ...)

- Organizes audio data on a two-dimensional map in a way that preserves topological information using the Self-Organizing Map (SOM)

PlaySOM and PocketSOMPlayer

Interactive User Interfaces for Exploration of Musical Information Spaces



Rectangle Selection

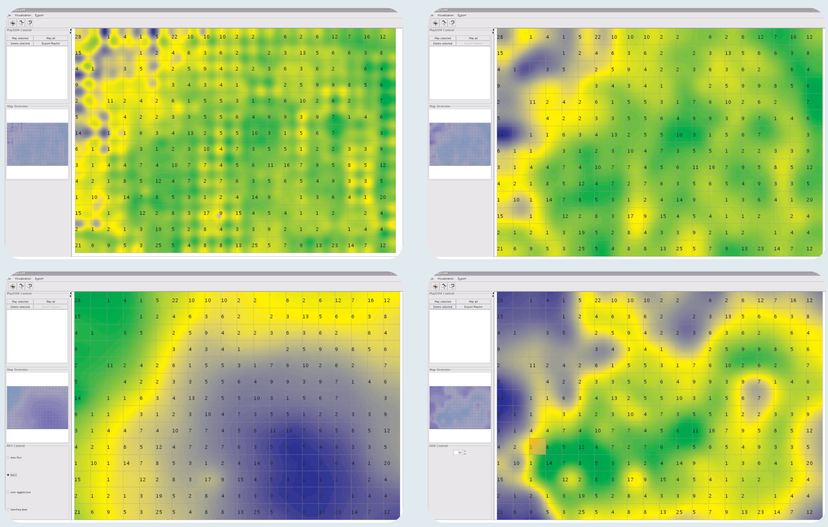
Selecting songs by marking a rectangular area on the map. Allows to create a simple playlist by marking a certain area on the map containing a specific style of music. (e.g. classical music)

Trajectory Selection

Selection of songs along a trajectory. Allows to create a sophisticated playlist starting at a certain style of music (e.g. smooth piano music), randomly picking songs along the trajectory moving to a different style (e.g. orchestral music) and possibly returning to the former again forming a loop.

Semantic Zooming

Provides information at different degrees of detail. When smoothly zooming into the map increasing amounts of more detailed information are being displayed, starting from e.g. map only via number of songs per grid area to song titles.

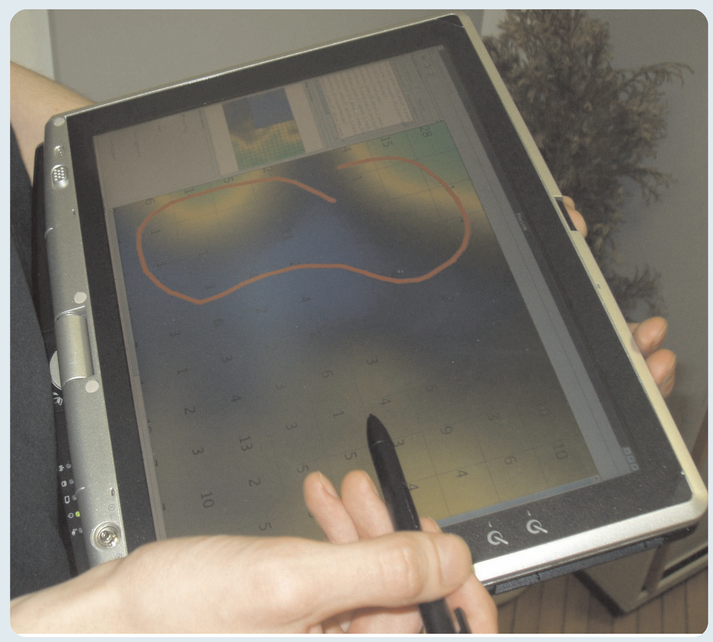


Support for Various Visualizations (clockwise)

U-Matrix
D-Matrix
Smoothed Data Histograms
Grouped Component Planes
(aka. 'Weather Charts', e.g. Bass)

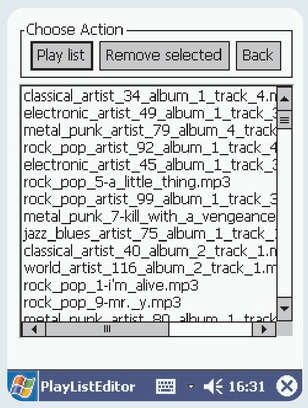
PlaySOM

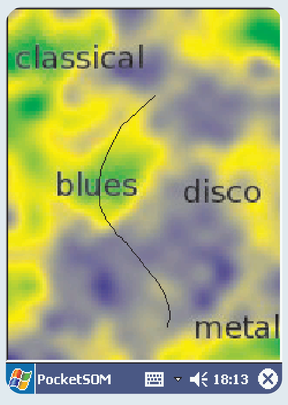
- Natural interaction
- Quick selection of areas of interest
- Export to mobile devices
- Supports devices like Tablet PC



PocketSOMPlayer

- Runs on mobile devices, based on Java
- Provides reduced functionality (no zooming)
- Select and listen to
- Playing of locally stored audio
- Streaming via WLAN
- May act as kind of 'remote control' for an audio server





Presented at the 6th International Conference on Music Information Retrieval
London, UK 11 - 15 September 2005