SONARFLOW - VISUAL MUSIC EXPLORATION & DISCOVERY

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ABSTRACT

We are witnessing a massive increase of digital media content. Music, as the most important form of entertainment, plays a special role in this trend, not only regarding distribution but also considering creation and production processes. The entire music value chain has changed dramatically since the possibility of storing and transferring music digitally. The explosion of digital content, while certainly considered a benefit, brings some problems with it, augmented with further growth of content. The main problems are an increasing lack of overview and finding and retrieving relevant documents in a choice of millions.

Researchers on music information retrieval have been addressing these and other problems for over a decade. Though there are still many open tasks and unsolved problems, research output has been very active and many approaches have been demonstrated with their applicability to real-world problems. Yet, there are still few commercial applications using technology that resulted from Music IR research. Many applications keep a research or prototype status and are not fully deployed to be used by a wider audience. Though the situation is starting to change.

Spectralmind is a provider of solutions for music retrieval by audio analysis and developed an interactive visual front-end for end users to explore music collections intuitively by sound relations: "sonarflow". Its Web front-end has been designed for online music providers that offer up to millions of music titles. The system is based on principles from Music IR research and is optimized for commercial usage, scalability and usability by the average Internet user and music consumer. It is one of the first interfaces that provide a semantic zooming facility, clustering groups of similar content together. A version for exploring the end-user's own music collection, on devices such as Apple's iPad, is currently under development.

1. SONARFLOW

sonarflow (www.sonarflow.com) offers a visual front-end for browsing and exploring music. Its principles are based on music IR research, combining audio feature analysis and content-based clustering [1], optimized for speed and scalability. Once analyzed, music tracks are aligned by sound similarity and clustered hierarchically, to enable zooming into the available data. Meta-data typically provided with music is also clustered and shown in order to enrich the browsing experience.

The interface is highly interactive. It starts with an overview of the available content, roughly clustered into few groups (mainly reflecting musical genres), shown as circular objects (Fig.1). The user can zoom in into a range of levels of details to explore subgroups and eventually indidvidual tracks, shown with their album cover art (Fig.2). A search feature facilitates locating tracks by meta-data. At any time immediate playback of the objects is possible at any level. This means that the user can choose between playing individual tracks or entire clusters of music with a similar sound or mood. Moreover, a playlist path tool allows creating playlists through the music space going from one musical style smoothly into another. The interface has been designed for intuition, with touch-interfaces in mind. Upcoming versions will allow the exploration of user's music on mobile devices, starting with Apple's iPad. We believe in a paradigm change from browsing lists to rich visual interfaces and present sonarflow as a highly innovative and intuitive solution.

2. REFERENCES

[1] J. Frank, T. Lidy, P. Hlavac, and A. Rauber. Map-based music interfaces for mobile devices. In *Proc. ACM Multimedia*, Vancouver, Canada, Oct. 2008.

Figure 1. sonarflow - cluster overview

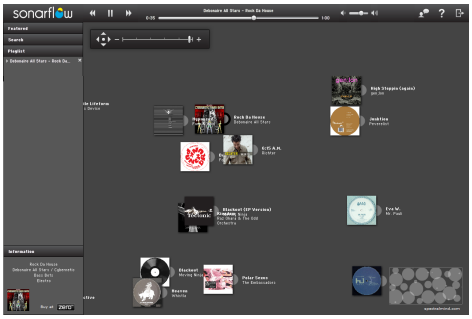

Figure 2. sonarflow - track detail view