Product Announcement: FASTLab's SndsLike Music Search Engine

Santa Barbara, California, August, 2012: FASTLab is happy to announce the release of the **SndsLike** music search engine and recommender system. **SndsLike** is a suite of programs for building song databases and performing music similarity searches; it has applications in music discovery and automatic playlist generation. The **SndsLike** system is based on *content-derived metadata*, meaning that the software can analyze a sound file to deliver the parameters that yield a perceptually relevant similarity search (i.e., "sounds like" search in a large data set).

As an example, the first figure below shows a screen-shot of the **SndsLike** demo player in which the search key (the song at the top of the list) is a soft acoustic song by the Indigo Girls, and the results are other soft acoustic songs found in the test database. In the second figure, the search key is a punk song by the band Green Day and the results are similar high-energy punk songs. This is the essence of "sounds like" music-similarity search, and there are several ways in which the **SndsLike** song search functionality can be integrated into a customer's on-line music search tool or music subscription service web site.

Dist	Title	Artist	Album	Genre	Duration
0	Walk Away	Indigo Girls	Strange Fire	Pop	5:29
39	Im On Your Side	Divinyls	DiVinyls	New Wave	4:16
40	I Dont Wanna Know	Indigo Girls	Strange Fire	Pop	3:16
42	Somewhere Down The Craz	Robbie Robertson	Robbie Robertson	Rock	4:58
44	Drinkin In My Sunday Dress	Maria McKee	Maria McKee	Pop	3:28
44	Laura	Billy Joel	The Nylon Curtain	Pop	5:08
45	Break It Up	Patti Smith	Horses	Punk	4:04
46	Ive Seen The Saucers	Elton John	Caribou	Pop	4:47
46	Little Sister	Jewel	Pieces Of You	Folk	2:31
46	All Along The Watchtower	Indigo Girls	Live Back On The Bus, Yall	Pop	6:26
47	Shooting Dirty Pool	The Replacements	Pleased To Meet Me	Alternative	2:23
48	Beggars Bluff	Walking Wounded	Raging Winds Of Time	Mainstream Rock	3:42
49	Change It	Stevie Ray Vaughan	Soul To Soul	Blues	3:58
49	Pinky	Elton John	Caribou	Pop	3:54

Dist	Title	Artist	Album	Genre	Duration
0	Brat	Green Day	Insomniac	Alternative	1:43
33	Stuart and the Ave.	Green Day	Insomniac	Alternative	2:04
39	Get Free	The Vines	Highly Evolved	Alternative	2:07
40	Stuck With Me	Green Day	Insomniac	Alternative	2:16
40	Two-Timing Touch And Bro	The Hives	Tyrannosaurus Hives	Alternative	2:01
45	Rough Justice	The Rolling Stones	A Bigger Bang	Hard Rock	3:12
45	A.K.A I-D-I-O-T	The Hives	Your New Favourite Band	Punk	2:13
45	A Little More For Little You	The Hives	Tyrannosaurus Hives	Alternative	2:59
47	Youre Crashing, But Youre	Fall Out Boy	Infinity On High	Alternative	3:42
49	Dandelion	Audioslave	Out Of Exile	Alternative	4:38
50	Out Of My Head	Puddle Of Mudd	Come Clean	Hard Rock	3:43
50	The Way It Is	The Strokes	Room On Fire	Alternative	2:22
51	Do You Wanna Hit It	The Donnas	Turn 21	Rock	2:57
52	Walk Away	Pink	Try This	Pop	3:39

What is SndsLike?

The **SndsLike** software suite allows a content owner (a production music provider or an on-line music subscription service, for example) to create a database that can be used to match songs based on their acoustical features (i.e., "sounds like search"). The **SndsLike** system provides simi-

lar functionality to song search engines such as Pandora™ or MusicGenius™—without the need to have human listeners generate the song metadata manually, or to collect millions of user playlists. In contrast to all other music search engines, **SndsLike** can be used with non-mainstream music collections (e.g., production music), and importing new tracks into an existing data set is both fast and inexpensive (and can even be fully automated).

SndsLike is the only commercial-grade music search engine that derives all of the metadata used in the search from software analysis of the music content. The **SndsLike** music analysis process produces over 400 analysis parameters (known as "features") that capture the rhythm, tempo, "feel," and instrumentation of a song. These features are stored in a database and are used to compute how similar a pair of songs is. If other metadata sources (e.g., good-quality genre tags, mood labels, or user feedback) are available, these can be integrated with the content-derived song features to further improve or filter the song search results.

The **SndsLike** system is built to be integrated with the music search facilities of the client's current system. A tag-based browser is extended with a similarity search feature (the "sounds like" button) which enables users to search for tracks in the data set that are similar to a given search seed, regardless of their tags. Alternatives, users can up-load their own content (e.g., this weeks #1 hit song) and search for similar tracks in the client data set. This is a significant new feature for production music and subscription service user interfaces.

How does one use the SndsLike search engine?

The process of building and using a **SndsLike** song database consists of several steps, which are controlled using the system management console shown in the figure below. The process of database population, processing and deployment consists of the following steps:

1. Set up song database tables (using SQL provided by FASTLab).
2. Generate a list of the song files to be imported.
3. Run batch (or incremental) analysis, probably on a server farm in many parallel threads. This step populates the song feature database.
4. Perform batch or incremental statistical normalization of the song data.
5. Export a database dump file for use by the run-time search system.
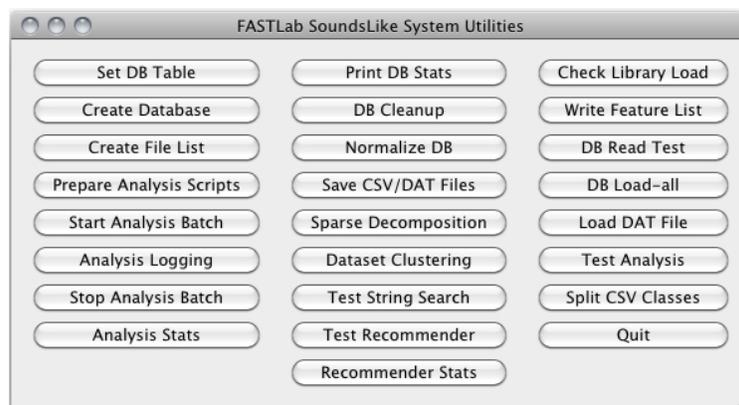
Once these steps have been completed, the run-time search engine is relatively simple. A **SndsLike** search server loads the data file produced by the steps above and waits for requests (typically from a web server script) to perform song searches based on text strings (search by song or artist name) or song IDs (search by musical similarity). The end-user application will be

the customer's playlist browser (something like the demo GUI shown on the previous page) with the additional **SndsLike** similarity-search functions that enhance the user's music discovery experience. The similarity search using content-derived features can be augmented by other metadata sources such as labels or tags.

What is the implementation?

The **SndsLike** suite consists of a number of tools; it is the 5th generation of high-performance music search tools developed and delivered by FASTLab starting in 1999. The main database management and population tools are written in the python language (for flexibility and portability); these call optimized C++ and Java back-end functions for the compute-intensive audio signal analysis and statistical number-crunching. The search engine server is a high-performance C++ program that can easily be shared by multiple web servers, or can itself be replicated for even higher query throughput.

The **SndsLike** tools support both host-based and cloud-based production environments and integrate with popular databases such as MySQL and PostgreSQL. The **SndsLike** system was developed with performance in mind and supports data sets with up to tens of millions of songs; both the analysis and search are easily parallelized for scalability. The **SndsLike** analysis and search tools can be run either on the customer's servers, or on FASTLab's cloud-based server farm.

How is SndsLike licensed?

There are several options for licensing and using the **SndsLike** system. Customers can purchase a license to use **SndsLike** for an unlimited number of songs and searches, or they can opt for a "pay as you go" model running the system on FASTLab's server farm and being billed only for actual usage. The full **SndsLike** source code can also be licensed from FASTLab. Please contact us for demo and license terms.

Who are we?

FASTLab was established in 1999 with the sole purpose of developing advanced music databases for applications such as music and sound effect search. Please see our web site for our application portfolio.

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