Freesound

Frederic Font Corbera

CompMusic Meeting, July 9th 2012
Outline

- Introduction to Freesound
- Uploading CompMusic content to Freesound
- Freesound communities and CompMusic
Part I: Freesound
What is Freesound?

- Online collaborative **sound** database
- People share audio clips under **Creative Commons** licenses
- Started in 2005 at the Music Technology Group
- The initial goal was to give support to sound researchers
- Has become one of the most popular audio clip sharing sites

Some quick numbers about Freesound (data from November 2011)

- 145,000+ sounds
- 2.5+ million users (~6,800 active contributors)
- ~30,000 unique visits per day
Freesound

Freesound

Sounds

Random sound of the day

Subway.wav
Kyoto subway sounds with announcements
underground subway recording kyoto Japan

Trinity101
March 30th, 2009
25 downloads
1 comment

Freesound

Latest sounds

02840 several different ...
Several different door handles
open closing handle doors moving opening door
different

Robinhood76
October 14th,
2011
0 downloads
0 comments

scary_ambient01.wav
a horror type sound using layered and different
speeds applied to my voice and a saw blade
recording.
ambient horror scary

jackthebear21
October 14th,
2011
0 downloads
0 comments

Freesound

More Sounds

Browse tags
Browse geotags
Browse packs
Browse remix-groups
Give me a random sound!

Latest changed packs

- Old HOUSE atmosphere sounds by
  Robinhood76 (57)
- scary sound by jackthebear21 (2)
- LPC-10 by Timbre (6)
- Twisted Robot FM Synth by Ongitak (2)
- Frequencies by delta_omega_muon (43)
- Forest Ambience by be-steele (3)
- Thailand by fobfob (2)
- Nerd Pack by edifice (3)
- Mark's Efx by Mark Ian (1)
- JapaneseGrandPrix by Heigh-hoo (27)

http://www.freesound.org
The most beautiful nightingale recording I’ve ever made. Forest near Cologne, Germany, June 2004, Vivanco EM35 with preamp into Sony DAT-recorder.
Freesound

Frederic Font Corbera
CompMusic Meeting, July 9th 2012

Geotags

Tags

1-shot, acoustic, ambiance, ambience, ambient, analog, artificial, atmosphere, background, bass, beat, bell, bird, birds, car, city, click, computer, crowd, cymbal, dance, dark, deep, digital, distorted, distortion, door, drone, drum, drums, echo, effect, electric, electro, electronic, engine, english, experimental, female, field, field-recording, foley, fx, get, glitch, guitar, hard, hit, horror, house, human, industrial, kick, loop, machine, male, metal, multisample, music, nature, noise, pad, people, percussion, piano, processed, radio, rain, reverb, recording, request, reverb, sample, sci-fi, short, snare, sound, soundscape, space, speech, stereo, street, synth, synthesizer, synthetic, talk, techno, tom, traffic, train, trance, velocity, vocal, voice, water, weird, wind, woman, wood
Freesound 2 (released in September 2011)

- New architecture: more efficient and scalable
- New interface: improved usability of the site
- New **API**: facilitating the access to Freesound content for developers and researchers

![Diagram of Freesound architecture](image)
from freesound_ import *
Freesound.set_api_key('YOUR_API_KEY_HERE')

# Get sound info example
print "Sound info:"
print "--------"
s = Sound.get_sound(96541)
print "Getting sound: " + s['original_filename']
print "Url: " + s['url']
print "Description: " + s['description']
print "Tags: " + str(s['tags'])
print "\n"

# Get sound analysis example
print "Get analysis:"
print "--------"
analysis = s.get_analysis()
mfcc = analysis['lowlevel']['mfcc']
print "Mfccs: " + str(mfcc)
print "\n"

# Get similar sounds example
print "Similar sounds: "
print "--------"
similar_sounds = s.get_similar()
for sound in similar_sounds['sounds']:
    print "\t" + sound['original_filename'] + " by " + sound['user']['username']
print "\n"

# Search Example
print "Searching for 'violoncello':"
print "--------"
results = Sound.search(q="violoncello",filter="tag:tenuto duration:[1.0 TO 15.0]",sort="rating_desc")
print "Num results: " + str(results['num_results'])
print "\t----- PAGE 1 -----"
for sound in results['sounds']:
    print "\t" + sound['original_filename'] + " by " + sound['user']['username']
print "\n"

# Content based search example
print "Content based search:"
print "--------"
results = Sound.content_based_search(f=".lowlevel.pitch.var:[* TO 20]",
t=".lowlevel.pitch_saliencemean:1.0 .lowlevel.pitch.mean:440",
print "\n"
// Example 1
// Example of getting the info of a sound, querying for similar sounds (content based) and showing its features. Both similar sounds and analysis features are obtained with additional requests to the freesound.get_sound(96541,

```javascript
function(sound) {
    var msg = "";
    msg = "<h3>Getting info of sound: " + sound.original_filename + "]</h3>";
    msg += "<strong>Url:" + sound.url + "]</br>";
    msg += "<strong>Description:" + sound.description + "]</br>";
    msg += "<strong>Tags:" + sound.tags + "]</ul>";

    for (i in sound.tags) {
        msg += "<li>" + sound.tags[i] + "]</li>";
    }

    msg += "]</ul>";
    msg += "<img src=" + sound.waveform + "]";

    snd = new Audio(sound['preview-hq-mp3']);
    msg += "]<br></ul>
    <button onclick="snd.play()">play</ul>
    <button onclick="snd.pause()">pause</ul>
    displayMessage(msg, 'respl')

    // When we have printed some sound info, ask for analysis
    sound.get_analysis(true, null, function (analysis) {
        msg += "<strong>Mfccs:" + analysis.lowlevel.mfcc.mean + "]</ul>";
        for (i in analysis.lowlevel.mfcc.mean) {
            msg += "<li>" + analysis.lowlevel.mfcc.mean[i] + "]</li>";
        }

        msg += "]</ul>";
        displayMessage(msg, 'respl')

    // When we have printed the analysis, ask for similar sounds
    sound.get_similar_sounds(function(sounds) {
        msg += "<strong>Similar sounds:" + sounds.sounds + "]</ul>";
        for (i in sounds.sounds) {
            msg += "<li>" + sounds.sounds[i].original_filename + "]:" + sounds.sounds[i]
        }
```
Part II: Uploading CompMusic content to Freesound
Please note before uploading.

<table>
<thead>
<tr>
<th>Legality</th>
<th>Sounds only</th>
<th>Moderation</th>
<th>Formats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only upload sounds created or recorded <strong>by you</strong>. <a href="#">More details...</a></td>
<td>Freesound is for <strong>sounds</strong> only. If your file is a song/composition, upload it to for example ccMixter.</td>
<td>All files are <strong>moderated</strong>. If you upload illegal files or files that don't follow the <a href="#">guidelines</a> they will be removed.</td>
<td>We prefer <strong>wav, aif and flac</strong>, but we support ogg and mp3 too. For very large files please use some compressed format. Uploading more than 1G at once will fail.</td>
</tr>
</tbody>
</table>

**Upload Sounds**

⚠️ Don't leave before upload finishes!

Hint: you can upload multiple files at once

**Describe Sounds**

Before your sounds show up on the web site you'll have to describe them
Describe

Pick files

You've uploaded these files, but they won't appear on the website until you've described them. Select the files you want to describe and follow the instructions on the following pages. You can also delete files by selecting them and pressing the "delete" button.

- Your uploaded files (select all)
  - 13767_reinsamba_Frio_Frio_amazonas2.wav

[describe]  [delete]
13767_reinsamba_Frio_Frio_amazonas2.wav

Tags and Description

Name:
13767_reinsamba_Frio_Frio_amazonas2.wav

Tags:

Please join multi-word tags with dashes. For example: field-recording is a popular tag.

Description:

Geotag

Show Geotag map

Pack

Change pack or remove from pack:

Or fill in the name of a new pack:

License

License:
Sounds are described with a minimum of three tags. Tags with multi words are joined with dashes (field-recording). Tags can’t contain non-ascii characters :

*multisample* is a popular tag of Freesound that is used when a sample has a number of other related samples that complement itself (e.g. different notes of an instrument, different parts of a drumset...)

Example taken from sound http://www.freesound.org/people/Carlos_Vaquero/sounds/154353/ by Carlos_Vaquero
The purpose of description is, at one hand to provide information (preferently deep) about the sound, from where it comes, it's peculiarities and the tools used to create/record it ... and at the other hand to be used when doing a search. (some general guidelines: http://www.freesound.org/help/faq/#sounds-2)

We propose to use also the textual description as a way to introduce structured metadata into Freesound samples.

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**“Natural-text” version**

This is an Instrumental sample of a Bassoon playing a C in the 4th Octave. The attack and sustain of the note is Tenuto and Vibrato. The tuning frequency (concert pitch) used is 442 and the dynamic intention is of mezzoforte. This sample belongs to a Multisample pack.

Orchestral Instrument: Bassoon
Instrument: Aerophone
Aerophone: Woodwind Double-reed
Note: C
Octave: 4
Concert Pitch: 442Hz
Dynamic: mezzoforte
Attack: Tenuto
Sustain: Vibrato
Microphone: Schoeps-MK4
Microphone Setup: XY

---

**“Structured” version**

Example taken from sound http://www.freesound.org/people/Carlos_Vaquero/sounds/154353/ by Carlos_Vaquero
Another example...

“Natural-text” version

Sound is produced by the acoustic Tanpura, a drone instrument used in Indian classical music. The recording was done at Tapan music center in Barcelona during a demonstration on how to tune a Tanpura. Clip captures the decay of the Tanpura sound.


Details:

- Size of the body: big
- Thread position: inserted
- Tuning used: ma SA SA sa
- Frequency of SA: ~136 Hz
- Mike position: close
- Recording device: Sony PCM-D-50

“Structured” version

number of paragraphs (can contain links, embedded images from external sources...)

number of lines with property name and property value separated by “:”

If following the structure above it is easy to retrieve this properties in an structured way by parsing the descriptions...

Example taken from sound [http://www.freesound.org/people/sankalp/sounds/153267/by sankalp](http://www.freesound.org/people/sankalp/sounds/153267/by sankalp)
Geotag

To indicate the location where the sound was recorded (specially relevant for field recordings, etc...)
For every sound you upload you have to pick one license...

**Creative Commons Zero**
You let people use your sounds and they can do whatever they want. They don’t even need to credit you. [Read more..](#)

**Creative Commons Attribution**
You let people use your sounds, for commercial purposes, but they always need to credit you. [Read more..](#)

**Creative Commons Attribution Non-Commercial**
You let people use your sounds, but not for commercial purposes. They also always need to credit you. [Read more..](#)
Pack

Sounds can be grouped in packs.

- Packs belong to single users (sound from different users cannot be combined into a pack)
Packs can also include descriptions (useful to explain general aspects that apply to all the sounds inside the pack, explain the “property names” or naming conventions used in the description...)

Pack info

A 1-shot sample taken of an 18-inch diameter, 16-inch deep floor tom, recorded with an Equitek E100 close-mic, a Shure SM57 close mic and two Peavey electret condenser microphones in an XY pair. The drum was fitted with a Remo coated ambassador head on top and a Remo clear diplomat head on bottom.

Notes for samples in this pack:

Tuning:
VLP = Very Low Pitch
LP = Low Pitch
MLP = Medium-Low Pitch
MP = Medium Pitch
MH = Medium-High Pitch
HP = High Pitch
VHP = Very High Pitch

Playing style:
CS = Cross Stick Strike (Shank of stick strikes the rim while the butt of the stick rests on the head)
HdC = Head-Center Strike
HdE = Head-Edge Strike
RS = Rimshot (Simultaneous head and rim) Strike
Rm = Rim Strike

Velocity:
Send a zipped folder with all sounds and a .csv file with all metadata...

<table>
<thead>
<tr>
<th>FILENAME</th>
<th>SOUNDNAME</th>
<th>TAGS</th>
<th>GEOTAG</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>01_52_01-00-50-09.aif</td>
<td>Hero Zombie</td>
<td>zombie undead dead-season horror monster solo voice roar snarl</td>
<td></td>
<td>&quot;Hero zombie&quot; Lightly processed</td>
</tr>
<tr>
<td>cons.aif</td>
<td>Can Foley</td>
<td>can foley tims dead-season</td>
<td></td>
<td>Food cans being handled</td>
</tr>
<tr>
<td>01-06-54-22_backpack.aif</td>
<td>Backpack Foley</td>
<td>Foley acting backpack canvas zipper clothing dead-season</td>
<td></td>
<td>Stuff being tossed into a nylon b</td>
</tr>
<tr>
<td>01-06-58-01_zipper.aif</td>
<td>Zipper Foley</td>
<td>Foley acting backpack canvas zipper clothing dead-season</td>
<td></td>
<td>Nylon backpack zipper being closed</td>
</tr>
<tr>
<td>01-09-22-13_Zombie_Group_1A</td>
<td>Zombie Group 1A</td>
<td>zombie undead dead-season horror monster solo voice roar snarl group ensemble dead-season</td>
<td></td>
<td>Multiple people pretending to be</td>
</tr>
<tr>
<td>01-09-22-13_Zombie_Group_2A</td>
<td>Zombie Group 1B</td>
<td>zombie undead dead-season horror monster solo voice roar snarl group ensemble dead-season</td>
<td></td>
<td>Multiple people pretending to be</td>
</tr>
<tr>
<td>01-09-22-13_Zombie_Group_3A</td>
<td>Zombie Group 1C</td>
<td>zombie undead dead-season horror monster solo voice roar snarl group ensemble dead-season</td>
<td></td>
<td>Multiple people pretending to be</td>
</tr>
<tr>
<td>01-09-22-13_Zombie_Group_4A</td>
<td>Zombie Group 1D</td>
<td>zombie undead dead-season horror monster solo voice roar snarl group ensemble dead-season</td>
<td></td>
<td>Multiple people pretending to be</td>
</tr>
<tr>
<td>01-10-03-00_elvis_scream.aif</td>
<td>Elvis Battle Cry 1</td>
<td>human scream male voice yell dead-season battle-cry</td>
<td></td>
<td>Scott Peat as Elvis strawbridge -</td>
</tr>
<tr>
<td>01-45-34-12_BatHits1_SFX Scott.wav</td>
<td>5 Bat Hits</td>
<td>bat hit percussion foley meat dead-season</td>
<td></td>
<td>5 foley hits, wooden bat on zom</td>
</tr>
<tr>
<td>01-45-34-12_BatHits2_SFX Scott.wav</td>
<td>3 Bat Hits</td>
<td>bat hit percussion foley meat dead-season</td>
<td></td>
<td>3 foley hits, wooden bat on zom</td>
</tr>
<tr>
<td>01-45-34-12_BatHits3_SFX Scott.wav</td>
<td>5 Bat Hits</td>
<td>bat hit percussion foley meat dead-season</td>
<td></td>
<td>5 foley hits, wooden bat on zom</td>
</tr>
<tr>
<td>01-52-13-10-ch20-fs-tweeter.aif</td>
<td>Gravel Foley</td>
<td>gravel walk step foley dead-season</td>
<td></td>
<td>Four footsteps on gravel/dirt.</td>
</tr>
<tr>
<td>01-52-17-19-ch20-fs-kurt.aif</td>
<td>Boot Foley</td>
<td>floor dirt walk step foley boot dead-season</td>
<td></td>
<td>Walking on dirty floor in boots</td>
</tr>
<tr>
<td>01-55-21-05-ch21-fs-tweeter.aif</td>
<td>Soft Shoe Foley</td>
<td>floor walk soft step foley shoe sneaker dead-season</td>
<td></td>
<td>Walking softly on dirty floor in zc</td>
</tr>
<tr>
<td>01-55-59-02-ch21-fs-evils.aif</td>
<td>Walking Foley performance 1</td>
<td>floor walk step foley shoe dead-season</td>
<td></td>
<td>Extended foley performance for t</td>
</tr>
<tr>
<td>01-57-04-16-ch21-fs-kurt.aif</td>
<td>Walking Foley performance 2</td>
<td>floor walk step foley shoe dead-season</td>
<td></td>
<td>Extended foley performance, abr</td>
</tr>
<tr>
<td>02-01-01-20-01_Zombie_Solo_Rev.aif</td>
<td>Solo Zombie 1</td>
<td>zombie undead dead-season horror monster solo voice groan dead-season</td>
<td></td>
<td>Single groaning zombie.</td>
</tr>
<tr>
<td>02-01-01-33-04_Zombie_Solo_Rev.aif</td>
<td>Reverbant Zombies</td>
<td>zombie undead dead-season horror monster solo voice roar snarl group ensemble dead-season</td>
<td></td>
<td>Multiple people pretending to be</td>
</tr>
<tr>
<td>02-01-02-01-ch24-fs-evils.aif</td>
<td>Walking Foley performance 3</td>
<td>floor walk step foley shoe dead-season</td>
<td></td>
<td>Extended foley performance, abr</td>
</tr>
<tr>
<td>02-05-46-14-ch28_fs_tweeter.aif</td>
<td>Walking Foley performance 4</td>
<td>floor walk step foley shoe dead-season</td>
<td></td>
<td>Extended foley performance, stai</td>
</tr>
<tr>
<td>02-08-36-23-ch27-fs-zombies.aif</td>
<td>Walking Zombie foley performance 1</td>
<td>floor walk step foley shoe dead-season</td>
<td></td>
<td>Extended foley performance, zon</td>
</tr>
<tr>
<td>02-08-47-22_SFX.aif</td>
<td>Zombie battle FX</td>
<td>blood gore squish hit smash splat drip flesh dead-season</td>
<td></td>
<td>Extended FX performance, zombil</td>
</tr>
<tr>
<td>02-09-04-16-ch26-fs_tweeter.aif</td>
<td>Walking Foley performance 5</td>
<td>floor dirt walk step foley boot dead-season</td>
<td></td>
<td>multi-surface, multi-environment</td>
</tr>
<tr>
<td>02-09-14-07-ch27-fs_tommy.aif</td>
<td>Walking Foley performance 6</td>
<td>floor dirt walk step foley boot dead-season</td>
<td></td>
<td>Extended foley performance, abr</td>
</tr>
<tr>
<td>02-11-18-19-ch28-fs_zombies.aif</td>
<td>Walking Zombie foley performance 2</td>
<td>floor walk step foley shoe dead-season</td>
<td></td>
<td>Extended foley performance, zon</td>
</tr>
<tr>
<td>02-11-19-03-ch28-fs-tommy.aif</td>
<td>Running up stairs</td>
<td>stairs run foley boot fast dead-season</td>
<td></td>
<td>Running up stairs foot foley.</td>
</tr>
<tr>
<td>02-11-20-01-ch28-fs-evils.aif</td>
<td>Running through grass</td>
<td>grass run shoe foley fast dead-season</td>
<td></td>
<td>Running through grass foot foley.</td>
</tr>
</tbody>
</table>
Part III: Freesound Communities and CompMusic
Sounds, users...
...and interactions between them

These interactions bring new information to characterize sounds and users:

- Popularity of sounds (ratings, downloads)
- Annotations on sounds (comments)
- Usage of sounds (remixes, compositions)
- Popularity of users (ratings, downloads, forum posts)
- ...
Freesound Comms.

- Heterogeneous community
Community that characterizes a particular sound space

- Adapted sound sample descriptions
- Adapted similarity metrics
- Useful taxonomies/ontologies to describe the sound space
- Characterization of user behavior
- Identification of trends
- Relevant sounds and users for a community
- Relevant communities for a community
- ...

Freesound Comms.
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Adaptation to communities, ex: search adapted to communities, similarity measures adapted to communities, sound descriptions adapted to communities, relevant sounds adapted to communities... **Current focus** is on extending sound descriptions with tag-propagation based on sound community models.
Have CompMusic communities in Freesound!

Use these communities as case studies for the adaptation of Freesound functionalities to the communities

- **xserra**: [http://www.freesound.org/people/xserra/](http://www.freesound.org/people/xserra/) (various sound packs, turkish instruments, indian instruments...)

- **barisbozkurt**: [http://www.freesound.org/people/barisbozkurt/](http://www.freesound.org/people/barisbozkurt/) (ottoman rhythms with various percussion instruments)

- **sankalp**: [http://www.freesound.org/people/sankalp/](http://www.freesound.org/people/sankalp/) (a lot of acoustic and electronic tanpuras)

- **stetogias**: [http://www.freesound.org/people/stetogias/](http://www.freesound.org/people/stetogias/) (greek/turkish rhythms)
not all compmusic sounds have the tag “compmusic”
Carlos Vaquero (SMC student) master thesis (ongoing work): “Improving the description of instrumental sounds by using ontologies and automatic content analysis”

More than 700 samples of classical western music instruments recorded and uploaded to Freesound.

**Alto Recorder: 415 Staccato F4-F6** (25 sounds)
by Carlos Vaquero. Downloaded 0 times.
Tags of sounds inside the pack: aerophone alto-recorder mezzoforte multisample non-vibrato staccato woodwind zoom-h2n -5 a a-4 a-sharp-4 a-sharp-5 b-4 b-5 c-5 c-6 c-sharp-5 c-sharp-6 d-5 ...

**Alto Recorder: 440 Staccato F4-F6** (25 sounds)
by Carlos Vaquero. Downloaded 1 times.
Tags of sounds inside the pack: aerophone alto-recorder mezzoforte multisample non-vibrato staccato woodwind zoom-h2n -5 a a-4 a-sharp-4 a-sharp-5 b-4 b-5 c-5 c-6 c-sharp-5 c-sharp-6 d-5 ...

**Bassoon: Fortissimo and Pianissimo samples G3**
(4 sounds)
by Carlos Vaquero. Downloaded 3 times.
Tags of sounds inside the pack: aerophone bassoon double-reed g-3 mezzoforte multisample non-vibrato schoeps-mk4 tenuto woodwind

**Bassoon: Staccato Non Vibrato C2-C4** (25 sounds)
Designed a small ontology to describe classical western music instruments. Each node corresponds to a tag that can be used to describe a sound.
Sound analysis from Freesound (using Essentia)

For each node of the ontology, a classifier is trained (with supervised learning, previous manual annotation of all samples) to distinguish between all the “leaves” of the node.

![Ontology Diagram]
Questions?

Frederic Font Corbera
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