Package 'sonify'

May 9, 2026

Version 0.0-1

Date 2017-02-01

Title Data Sonification - Turning Data into Sound

Description Sonification (or audification) is the process of representing data by sounds in the audible range. This package provides the R function sonify() that transforms univariate data, sampled at regular or irregular intervals, into a continuous sound with time-varying frequency. The ups and downs in frequency represent the ups and downs in the data. Sonify provides a substitute for R's plot function to simplify data analysis for the visually impaired.

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License GPL (>= 2)

Depends R (>= 3.0.0), tuneR (>= 1.3.1)

RoxygenNote 5.0.1

NeedsCompilation no

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Repository CRAN

Date/Publication 2017-02-01 16:12:12

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`sonify` *Data sonification*

Description

Sonification (or audification) is the process of representing data by sounds in the audible range. This package provides the R function ‘sonify‘ that transforms univariate data, sampled at regular or irregular intervals, into a continuous sound with time-varying frequency. The ups and downs in frequency represent the ups and downs in the data. Sonify provides a substitute for R’s plot function to simplify data analysis for the visually impaired.

Usage

```
sonify(x = NULL, y = NULL, waveform = c("sine", "square", "triangle",
  "sawtooth"), interpolation = c("spline", "linear", "constant"),
  duration = 5, flim = c(440, 880), ticks = NULL, tick_len = 0.05,
  pulse_len = 0, pulse_amp = 0.2, noise_interval = c(0, 0),
  noise_amp = 0.5, amp_level = 1, na_freq = 300, stereo = TRUE,
  smp_rate = 44100, play = TRUE, player = NULL, player_args = NULL)
```

Arguments

x	The x values. Can be used when y values are unevenly spaced. Default is -length(y)/2:length(y)/2
y	The data values used to modulate the frequency.
waveform	The waveform used for the sound. One of ‘sine‘, ‘square‘, ‘triangle‘, ‘sawtooth‘. Default is ‘sine‘.
interpolation	The interpolation method to connect the y-values before generating the sound. One of ‘spline‘, ‘linear‘, ‘constant‘. ‘spline‘ and ‘linear‘ generate continous transitions between frequencies, ‘constant‘ changes frequencies abruptly. Note: If ‘interpolation=constant‘, y[1] is played from x[1] to x[2], y[2] is played from x[2] to x[3], etc, and the last y-value y[n] is played for the duration x[n] - x[n-1]. Default is ‘spline‘.
duration	Total duration of the generated sound in seconds. Default is 5.
flim	The frequency range in Hz to which the data is mapped. The frequency mapping is linear. Default is c(440, 880).
ticks	The location of x-axis ticks. The ticks are indicated by short bursts of a sawtooth wave (duration set by ‘tick_len‘). The default is NULL (no ticks).
tick_len	The duration of each tick sound.
pulse_len	Length of white-noise pulses (in seconds) to mark the individual x-values. Default is 0.
pulse_amp	Amplitude of pulses between 0 and 1. Default is 0.2.
noise_interval	White noise is overlayed whenever y is inside this interval (if noise_amp > 0) or outside this interval (if noise_amp < 0). For example, set to c(-Inf, 0) to indicate data in the negative range. Default is c(0,0) (no noise).
noise_amp	Amplitude (between 0 and 1) of the noise used for noise_interval. Negative values (between 0 and -1) invert noise_interval, i.e. noise is overlaid whenever y falls outside ‘noise_interval‘. Default is 0.5.
amp_level	Amplitude level between 0 and 1 to adjust the volume. Default is 1.

na_freq	Frequency in Hz that is used for NA data. Default is 300.
stereo	If TRUE a left-to-right transition is simulated. Default is TRUE.
smp_rate	The sampling rate of the wav file. Default is 44100 (CD quality)
play	If TRUE, the sound is played. Default is TRUE.
player	(Path to) a program capable of playing a wave file from the command line. Under windows, the default is "mplay32.exe" or "wmplayer.exe" (as specified in ‘?tuneR::play‘). Under Linux, the default is "mplayer". Under OS X, the default is "afplay". See ‘?tuneR::play‘ for details.
player_args	Further arguments passed to the wav player. Ignored when ‘player‘ is unspecified. Under Windows the default is ‘"/play /close"‘. Under Linux the default is ‘&>/dev/null‘. Under OS X the default is "". See ‘?tuneR::play‘ for details.

Value

The synthesized sound saved as a ‘tuneR::WaveMC‘ object.

Licence

GPL (>=2)

Author(s)

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See Also

tuneR::play, tuneR::WaveMC

Examples

```
obj = sonify(dnorm(seq(-3,3,.1)), duration=1, play=FALSE)
## Not run: sonify(dnorm(seq(-3,3,.1)), duration=1)
```

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