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# **pyrubberband Documentation**

*Release 0.3.0*

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A python wrapper for `rubberband`.

For now, this just provides lightweight wrappers for pitch-shifting and time-stretching.

All processing is done via the command-line through files on disk. In the future, this could be improved by directly wrapping the C library instead.



# CHAPTER 1

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## Example usage

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```
>>> import soundfile as sf
>>> import pyrubberband as pyrb
>>> y, sr = sf.read("myfile.wav")
>>> # Play back at double speed
>>> y_stretch = pyrb.time_stretch(y, sr, 2.0)
>>> # Play back two semi-tones higher
>>> y_shift = pyrb.pitch_shift(y, sr, 2)
```





## 2.1 Functions

Command-line wrapper for rubberband

<code><i>pitch_shift</i>(y, sr, n_steps[, rbargs])</code>	Apply a pitch shift to an audio time series.
<code><i>time_stretch</i>(y, sr, rate[, rbargs])</code>	Apply a time stretch of <i>rate</i> to an audio time series.
<code><i>timemap_stretch</i>(y, sr, time_map[, rbargs])</code>	Apply a timemap stretch to an audio time series.

### 2.1.1 pyrubberband.pyrb.pitch\_shift

`pyrubberband.pyrb.pitch_shift(y, sr, n_steps, rbargs=None)`

Apply a pitch shift to an audio time series.

#### Parameters

**y** [np.ndarray [shape=(n,) or (n, c)]] Audio time series, either single or multichannel

**sr** [int > 0] Sampling rate of *y*

**n\_steps** [float] Shift by *n\_steps* semitones.

**rbargs** Additional keyword parameters for rubberband

See *rubberband -h* for details.

#### Returns

**y\_shift** [np.ndarray] Pitch-shifted audio

### 2.1.2 pyrubberband.pyrb.time\_stretch

`pyrubberband.pyrb.time_stretch(y, sr, rate, rbargs=None)`

Apply a time stretch of *rate* to an audio time series.

This uses the *tempo* form for rubberband, so the higher the rate, the faster the playback.

**Parameters**

**y** [np.ndarray [shape=(n,) or (n, c)]] Audio time series, either single or multichannel

**sr** [int > 0] Sampling rate of y

**rate** [float > 0] Desired playback rate.

**rbargs** Additional keyword parameters for rubberband

See *rubberband -h* for details.

**Returns**

**y\_stretch** [np.ndarray] Time-stretched audio

**Raises**

**ValueError** if *rate*  $\leq 0$

### 2.1.3 pyrubberband.pyrb.timemap\_stretch

`pyrubberband.pyrb.timemap_stretch` (*y*, *sr*, *time\_map*, *rbargs=None*)

Apply a timemap stretch to an audio time series.

A timemap stretch allows non-linear time-stretching by mapping source to target sample frame numbers for fixed time points within the audio data.

This uses the *time* and *timemap* form for rubberband.

**Parameters**

**y** [np.ndarray [shape=(n,) or (n, c)]] Audio time series, either single or multichannel

**sr** [int > 0] Sampling rate of y

**time\_map** [list] Each element is a tuple *t* of length 2 which corresponds to the source sample position and target sample position.

If  $t[1] < t[0]$  the track will be sped up in this area.

*time\_map[-1]* must correspond to the lengths of the source audio and target audio.

**rbargs** Additional keyword parameters for rubberband

See *rubberband -h* for details.

**Returns**

**y\_stretch** [np.ndarray] Time-stretched audio

**Raises**

**ValueError** if *time\_map* is not monotonic if *time\_map* is not non-negative if *time\_map[-1][0]* is not the input audio length

## CHAPTER 3

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### Contribute

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- [Issue Tracker](#)
- [Source Code](#)



### 4.1 Changes

#### 4.1.1 v0.3.0

- Added *timemap\_stretch* for variable-rate warping. (PR #15) *Marc Sarfati*

#### 4.1.2 v0.2.2

- Suppress console logging from *rubberband*

#### 4.1.3 v0.2.1

- Improved error handling when *rubberband* fails to execute.

#### 4.1.4 v0.2.0

- Removed dependency on *librosa* in favor of *pysoundfile* (PR #4).
- Stereo/mono interface now matches *pysoundfile* instead of *librosa*: the first axis now corresponds to time rather than channel number.



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