Parselmouth Documentation

Release 0.5.0.dev0

Yannick Jadoul

Aug 14, 2023

CONTENTS

Parselmouth is a Python library for the Praat software.

Though other attempts have been made at porting functionality from Praat to Python, Parselmouth is unique in its aim to provide a complete and Pythonic interface to the internal Praat code. While other projects either wrap Praat's scripting language or reimplementing parts of Praat's functionality in Python, Parselmouth directly accesses Praat's C/C++ code (which means the algorithms and their output are exactly the same as in Praat) and provides efficient access to the program's data, but *also* provides an interface that looks no different from any other Python library.

Please note that Parselmouth is currently in premature state and in active development. While the amount of functionality that is currently present is not huge, more will be added over the next few months. As such, *feedback* and possibly *contributions* are highly appreciated.

Drop by our Gitter chat room or post a message to our Google discussion group if you have any question, remarks, or requests!

CHAPTER

ONE

INSTALLATION

1.1 Basics

Parselmouth can be installed like any other Python library, using (a recent version of) the Python package manager `pip`, on Linux, macOS, and Windows:

```
pip install praat-parselmouth
```

To update your installed version to the latest release, add `-U` (or `--upgrade`) to the command:

```
pip install -U praat-parselmouth
```

Warning: While the Python module itself is called `parselmouth`, the Parselmouth package on the Python Package Index has the name `praat-parselmouth`.

Note: To figure out if you can or should update, the version number of your current Parselmouth installation can be found in the *parselmouth.VERSION* variables. The version of Praat on which this version of Parselmouth is based and the release date of that Praat version are available as *PRAAT_VERSION* and *PRAAT_VERSION_DATE*, respectively.

1.2 Python distributions

Anaconda
: If you use the Anaconda distribution of Python, you can use the same `pip` command in a terminal of the appropriate Anaconda environment, either activated through the Anaconda Navigator or conda tool.

Homebrew & MacPorts
: We currently do not have Homebrew or MacPorts packages to install Parselmouth. Normally, Parselmouth can just be installed with the accompanying `pip` of these distributions.

PyPy
: Binary wheels for recent versions of `PyPy` are available on the Python Package Index (PyPI), and can be installed with `pip`.

Other
: For other distributions of Python, we are expecting that our package is compatible with the Python versions that are out there and that `pip` can handle the installation. If you are using yet another Python distribution, we are definitely interested in hearing about it, so that we can add it to this list!

1.3 PsychoPy

As a Python library, Parselmouth can be used in a PsychoPy experiment. There are two different ways in which PsychoPy can be installed: it can just be manually installed as a standard Python library, in which case Parselmouth can just be installed next to it with `pip`. For Windows and Mac OS X, however, *standalone* versions of PsychoPy exist, and the software does currently not allow for external libraries to be installed with `pip`.

To install Parselmouth in a standalone version of PsychoPy, the following script can be opened and run from within the PsychoPy Coder interface: `psychopy_installation.py`

Note: If running the script results in an error mentioning `TLSV1_ALERT_PROTOCOL_VERSION`, the version of PsychoPy/Python is too old and you will need to follow the manual instructions underneath.

Alternatively, you can follow these steps to manually install Parselmouth into a standalone version of PsychoPy:

0. Find out which version of Python PsychoPy is running.
    - To do so, you can run `import sys; print(sys.version_info)` in the *Shell* tab of the PsychoPy Coder interface. Remember the first two numbers of the version (major and minor; e.g., 3.6).
    - On *Windows*, also run `import platform; print(platform.architecture()[0])` and remember whether the Python executable's architecture is `32bit` or `64bit`.
1. Go to https://pypi.org/project/praat-parselmouth/.
2. Download the file `praat_parselmouth-x.y.z-cpVV-cpVVm-AA.whl` *(for Windows)* or `praat_parselmouth-x.y.z-cpVV-cpVVm-macosx_10_6_intel.whl` *(for Mac OS X)* - where:
    - *x.y.z* will be the version of Parselmouth you want to install
    - *VV* are the first two numbers of the Python version
    - For *Windows*, *AA* is `win32` if you have a `32bit` architecture, and `win_amd64` for `64bit`

    Be sure to find the right file in the list, containing both the correct Python version, and `win32`/`win_amd64` *(Windows)* or `macosx` *(Mac OS X)* in its name!
3. Rename the downloaded file by replacing the `.whl` extension by `.zip`.
4. Extract this zip archive somewhere on your computer, in your directory of choice. Remember the name and location of the extracted folder that contains the file `parselmouth.pyd` *(Windows)* or `parselmouth.so` *(Mac OS X)*.
5. Open PsychoPy, open the *Preferences* window, go to the *General* tab.
6. In the *General* tab of the PsychoPy *Preferences*, in the *paths* field, add the folder where you just extracted the Parselmouth library to the list, enclosing the path in quotemarks. (On *Windows*, also replace all \ charachters by /.)
    - For example, if the list was empty (`[]`), you could make it look like `['C:/Users/Yannick/parselmouth-psychopy/']` or `['/Users/yannick/parselmouth-psychopy/']`.
    - On *Windows*, to find the right location to enter in the PsychoPy settings, right click `parselmouth.pyd`, choose *Properties*, and look at the *Location* field.
    - On *Mac OS X*, to find the right location to enter in the PsychoPy settings, right click `parselmouth.so`, choose *Get info*, and look at the *where* field.
    - On *Mac OS X*, dragging the folder into a terminal window will also give you the full path with slashes.
7. Click *Ok* to save the PsychoPy settings, close the *Preferences* window, and restart PsychoPy.

8. *Optional*: if you want to check if Parselmouth was installed correctly, open the PsychoPy Coder interface, open the *Shell* tab, and type `import parselmouth`.
    - If this results in an error message, please let us know, and we'll try to help you fix what went wrong!
    - If this does not give you an error, congratulations, you can now use Parselmouth in your PsychoPy Builder!

Note: These instructions were tested with the standalone versions 3.1.3 and 1.85.2 of PsychoPy. Things might have changed since then, so if running the script or following the manual steps results in an error, please do not hesitate to get in touch.

1.4 Troubleshooting

It is possible that you run into more problems when trying to install or use Parselmouth. Supporting all of the different Python versions out there is not an easy job, as there are plenty of different platforms and setups.

If you run into problems and these common solutions are not solving them, please drop by the Gitter chat room, write a message in the Google discussion group, create a GitHub issue, or write me a quick email. We would be very happy to solve these problems, so that future users can avoid them!

1.4.1 Multiple Python versions

In case you have multiple installations of Python and don't know which `pip` belongs to which Python version *(looking at you, OS X)*:

```
python -m pip install praat-parselmouth
```

Finding out the exact location of the `python` executable (to call the previous command) for a certain Python installation can be done by typing the following lines in your Python interpreter:

```
>>> import sys
>>> print(sys.executable)
```

If executing this in your Python shell would for example print `/usr/bin/python`, then you would run `/usr/bin/python -m pip install praat-parselmouth` in a terminal to install Parselmouth. (`-U` can again be added to update an already installation to the latest version.)

Combining these two approaches, you can install Parselmouth from within Python itself without knowing where that version of Python is installed:

```
>>> import sys, subprocess
>>> subprocess.call([sys.executable, '-m', 'pip', 'install', 'praat-parselmouth'])
```

Extra arguments to `pip` can be added by inserting them as strings into the list of arguments passed to `subprocess.call` (e.g., to update an existing installation of Parselmouth: `[..., 'install', '-U', 'praat-parselmouth']`).

1.4.2 Pip version

If the standard way to install Parselmouth results in an error or takes a long time, try updating `pip` to the latest version (as `pip` needs to be a reasonably recent version to install the binary, precompiled wheels) by running

```
pip install -U pip
```

If you do not have `pip` installed, you follow these instructions to install pip: https://pip.pypa.io/en/stable/installing/

1.4.3 `ImportError: DLL load failed` on Windows

Sometimes on Windows, the installation works, but importing Parselmouth fails with an error message saying `ImportError: DLL load failed: The specified module could not be found.`. This error is cause by some missing system files, but can luckily be solved quite easily by installing the "Microsoft Visual C++ Redistributable for Visual Studio 2017".

The "Microsoft Visual C++ Redistributable for Visual Studio 2019" installer can be downloaded from Microsoft's website, listed under the "Other Tools and Frameworks" section. These are the direct download links to the relevant files:

- For a 64-bit Python installation: https://aka.ms/vs/16/release/VC_redist.x64.exe
- For a 32-bit Python installation: https://aka.ms/vs/16/release/VC_redist.x86.exe

To check which Python version you are using, you can look at the first line of output when starting a Python shell. The version information should contain `[MSC v.xxxx 64 bit (AMD64)]` in a 64-bit installation, or `[MSC v.xxxx 32 bit (Intel)]` in a 32-bit installation.

CHAPTER

TWO

EXAMPLES

Parselmouth can be used in various contexts to combine Praat functionality with standard Python features or other Python libraries. The following examples give an idea of the range of possibilities:

2.1 Plotting

Using Parselmouth, it is possible to use the existing Python plotting libraries – such as Matplotlib and seaborn – to make custom visualizations of the speech data and analysis results obtained by running Praat's algorithms.

The following examples visualize an audio recording of someone saying *"The north wind and the sun [...]"*: the_north_wind_and_the_sun.wav, extracted from a Wikipedia Commons audio file.

We start out by importing `parselmouth`, some common Python plotting libraries `matplotlib` and `seaborn`, and the `numpy` numeric library.

[1]:
```
import parselmouth

import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

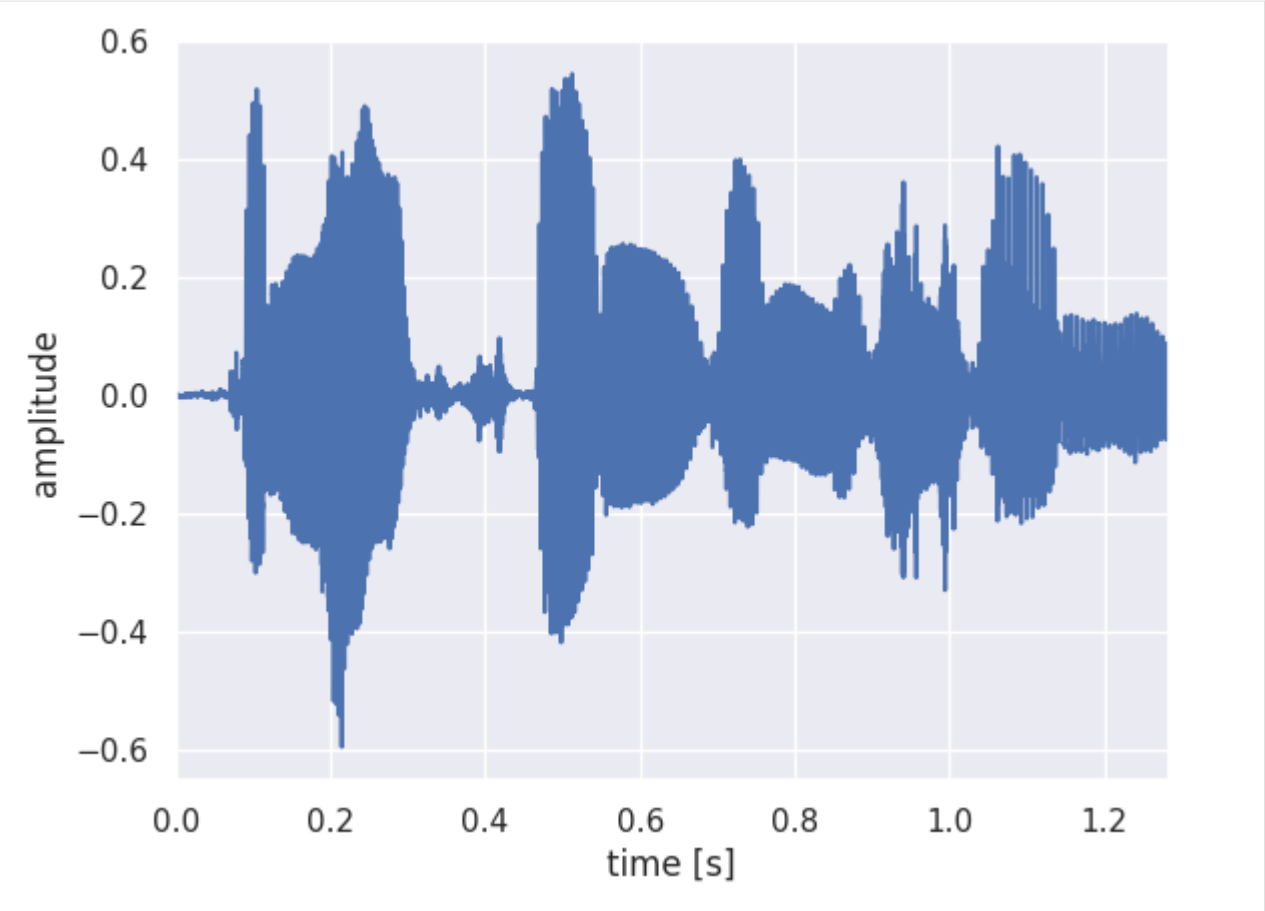
[2]:
```
sns.set() # Use seaborn's default style to make attractive graphs
plt.rcParams['figure.dpi'] = 100 # Show nicely large images in this notebook
```

Once we have the necessary libraries for this example, we open and read in the audio file and plot the raw waveform.

[3]:
```
snd = parselmouth.Sound("audio/the_north_wind_and_the_sun.wav")
```

`snd` is now a Parselmouth *Sound* object, and we can access its values and other properties to plot them with the common `matplotlib` Python library:

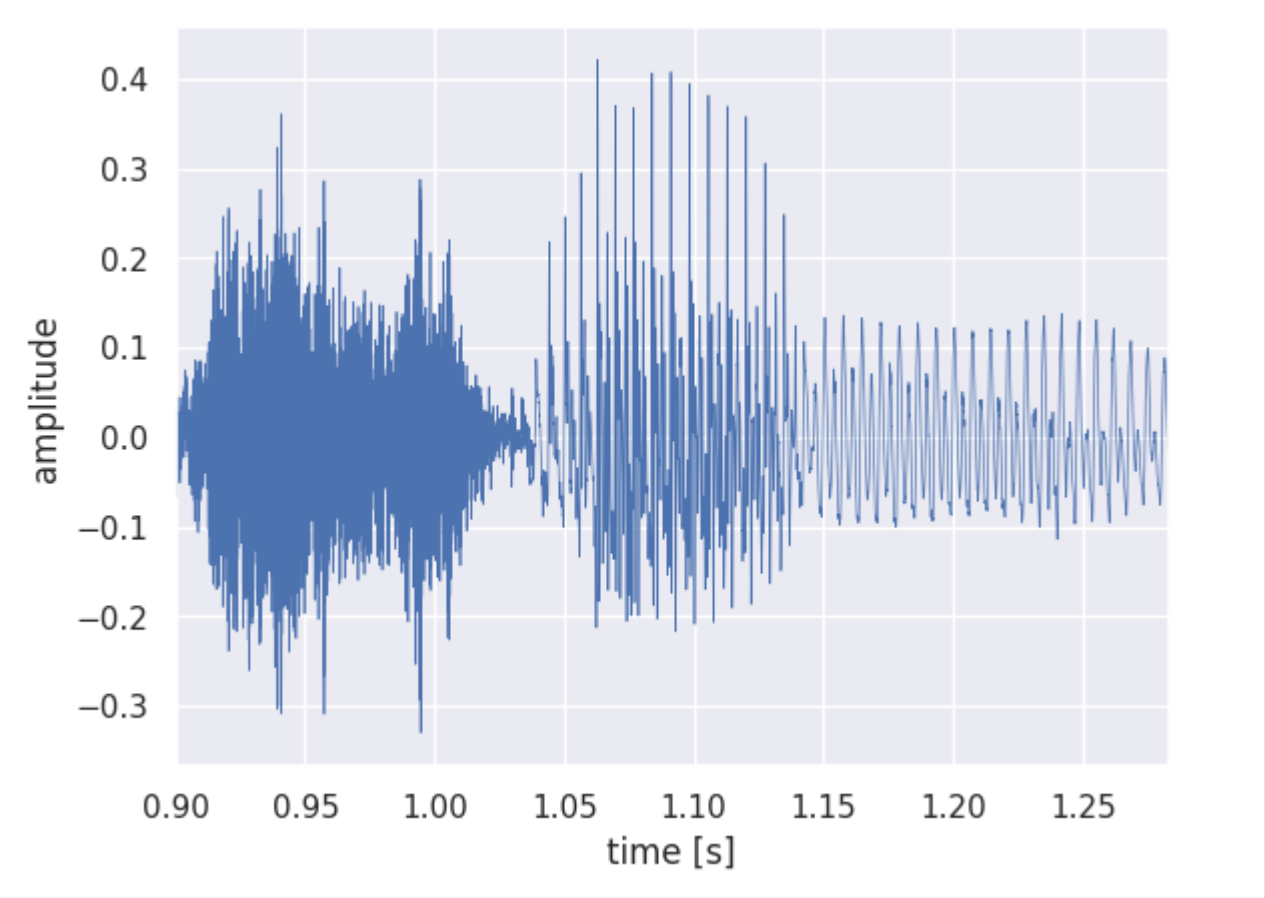
[4]:
```
plt.figure()
plt.plot(snd.xs(), snd.values.T)
plt.xlim([snd.xmin, snd.xmax])
plt.xlabel("time [s]")
plt.ylabel("amplitude")
plt.show() # or plt.savefig("sound.png"), or plt.savefig("sound.pdf")
```



It is also possible to extract part of the speech fragment and plot it separately. For example, let's extract the word *"sun"* and plot its waveform with a finer line.

[5]:
```
snd_part = snd.extract_part(from_time=0.9, preserve_times=True)
```

[6]:
```
plt.figure()
plt.plot(snd_part.xs(), snd_part.values.T, linewidth=0.5)
plt.xlim([snd_part.xmin, snd_part.xmax])
plt.xlabel("time [s]")
plt.ylabel("amplitude")
plt.show()
```



Next, we can write a couple of ordinary Python functions to plot a Parselmouth `Spectrogram` and `Intensity`.

[7]:
```
def draw_spectrogram(spectrogram, dynamic_range=70):
    X, Y = spectrogram.x_grid(), spectrogram.y_grid()
    sg_db = 10 * np.log10(spectrogram.values)
    plt.pcolormesh(X, Y, sg_db, vmin=sg_db.max() - dynamic_range, cmap='afmhot')
    plt.ylim([spectrogram.ymin, spectrogram.ymax])
    plt.xlabel("time [s]")
    plt.ylabel("frequency [Hz]")

def draw_intensity(intensity):
    plt.plot(intensity.xs(), intensity.values.T, linewidth=3, color='w')
    plt.plot(intensity.xs(), intensity.values.T, linewidth=1)
    plt.grid(False)
    plt.ylim(0)
    plt.ylabel("intensity [dB]")
```

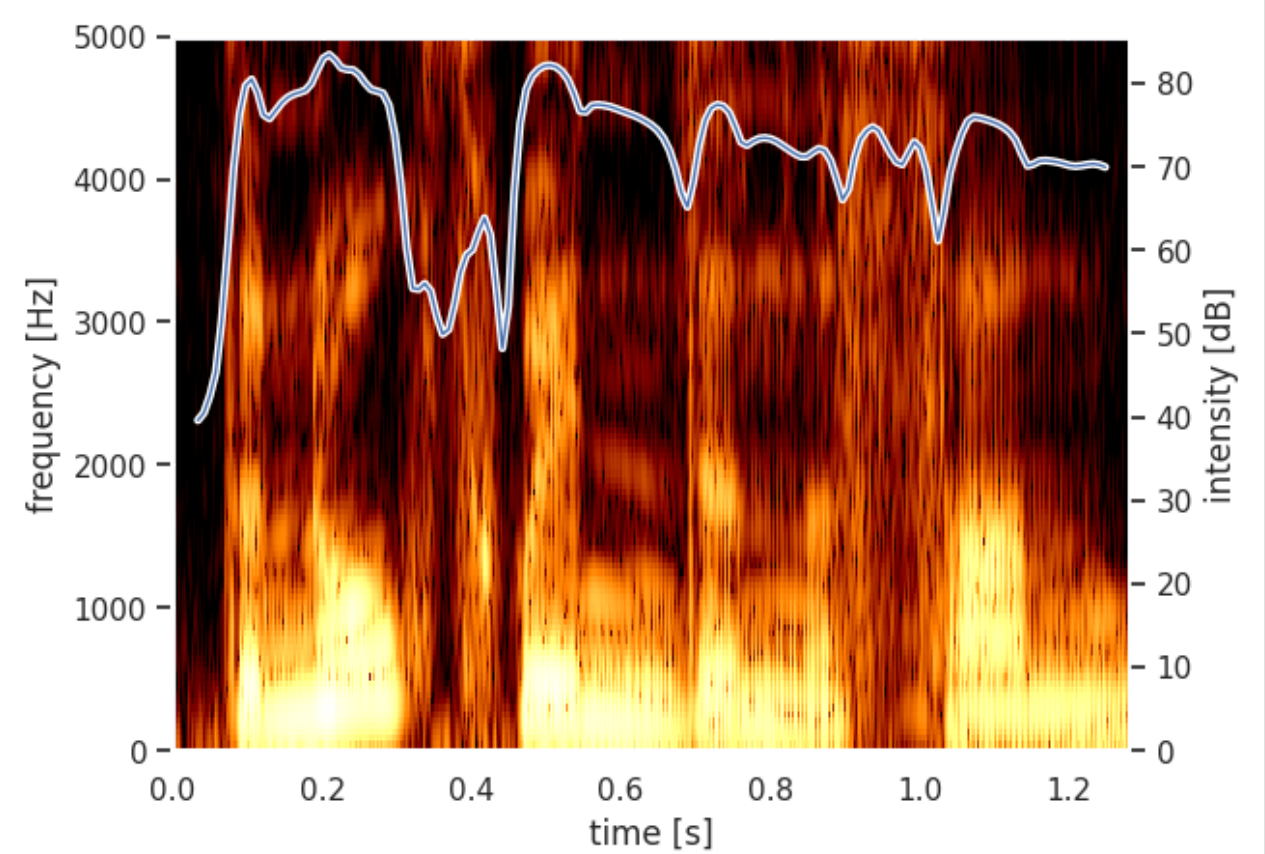
After defining how to plot these, we use Praat (through Parselmouth) to calculate the spectrogram and intensity to actually plot the intensity curve overlaid on the spectrogram.

[8]:
```
intensity = snd.to_intensity()
spectrogram = snd.to_spectrogram()
plt.figure()
draw_spectrogram(spectrogram)
```

(continues on next page)

(continued from previous page)

```
plt.twinx()
draw_intensity(intensity)
plt.xlim([snd.xmin, snd.xmax])
plt.show()
```



The Parselmouth functions and methods have the same arguments as the Praat commands, so we can for example also change the window size of the spectrogram analysis to get a narrow-band spectrogram. Next to that, let's now have Praat calculate the pitch of the fragment, so we can plot it instead of the intensity.

[9]:
```
def draw_pitch(pitch):
    # Extract selected pitch contour, and
    # replace unvoiced samples by NaN to not plot
    pitch_values = pitch.selected_array['frequency']
    pitch_values[pitch_values==0] = np.nan
    plt.plot(pitch.xs(), pitch_values, 'o', markersize=5, color='w')
    plt.plot(pitch.xs(), pitch_values, 'o', markersize=2)
    plt.grid(False)
    plt.ylim(0, pitch.ceiling)
    plt.ylabel("fundamental frequency [Hz]")
```

[10]:
```
pitch = snd.to_pitch()
```

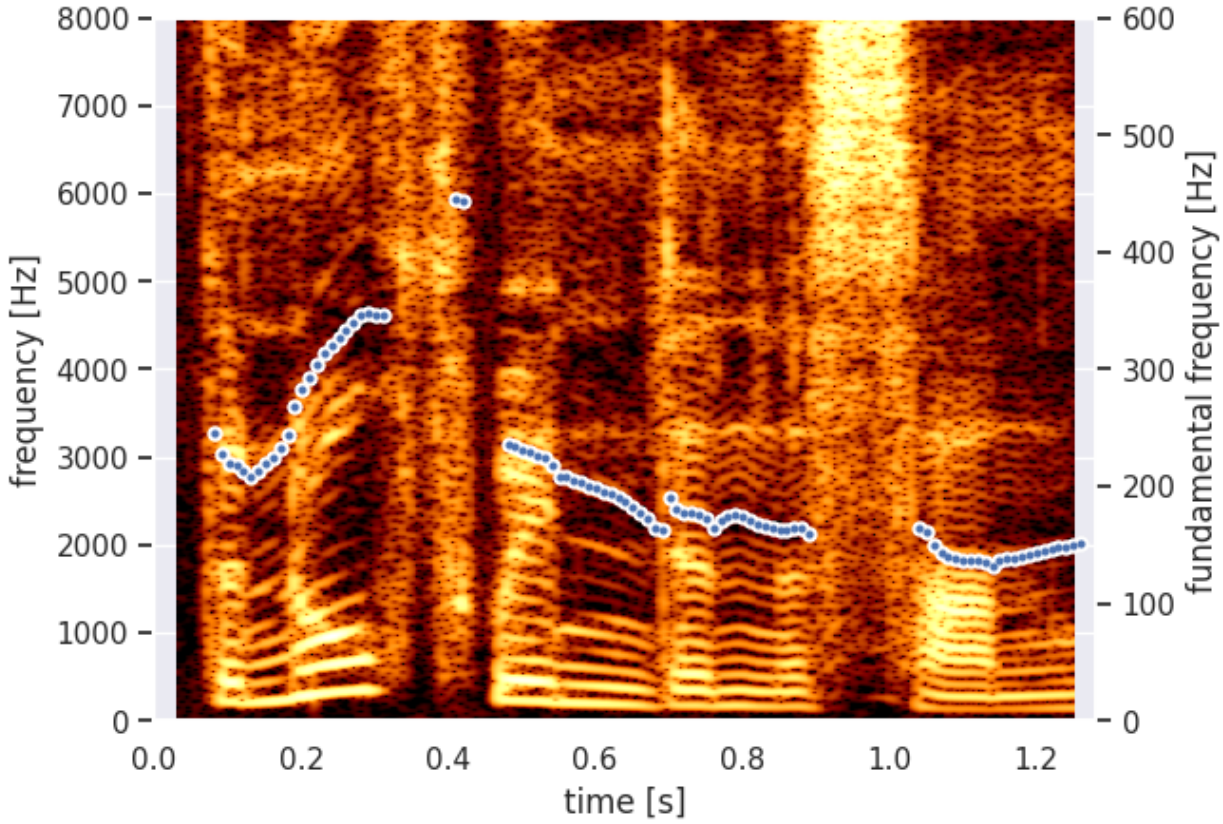
[11]:
```
# If desired, pre-emphasize the sound fragment before calculating the spectrogram
pre_emphasized_snd = snd.copy()
```

(continues on next page)

(continued from previous page)

```
pre_emphasized_snd.pre_emphasize()
spectrogram = pre_emphasized_snd.to_spectrogram(window_length=0.03, maximum_
↪frequency=8000)
```

[12]:
```
plt.figure()
draw_spectrogram(spectrogram)
plt.twinx()
draw_pitch(pitch)
plt.xlim([snd.xmin, snd.xmax])
plt.show()
```



Using the FacetGrid functionality from `seaborn`, we can even plot plot multiple a structured grid of multiple custom spectrograms. For example, we will read a CSV file (using the pandas library) that contains the digit that was spoken, the ID of the speaker and the file name of the audio fragment: digit_list.csv, 1_b.wav, 2_b.wav, 3_b.wav, 4_b.wav, 5_b.wav, 1_y.wav, 2_y.wav, 3_y.wav, 4_y.wav, 5_y.wav

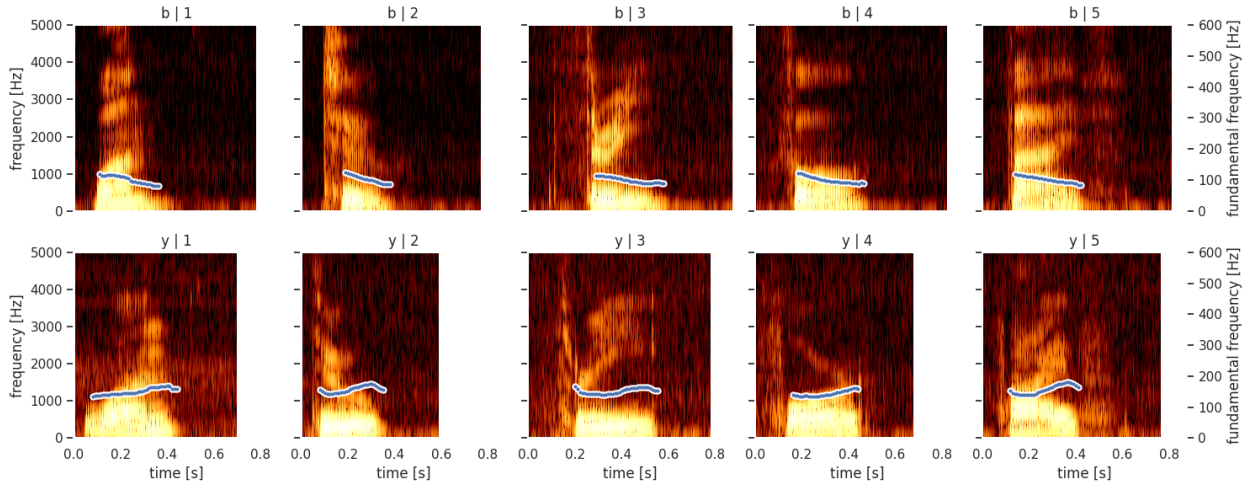
[13]:
```
import pandas as pd

def facet_util(data, **kwargs):
    digit, speaker_id = data[['digit', 'speaker_id']].iloc[0]
    sound = parselmouth.Sound("audio/{}_{}.wav".format(digit, speaker_id))
    draw_spectrogram(sound.to_spectrogram())
    plt.twinx()
    draw_pitch(sound.to_pitch())
    # If not the rightmost column, then clear the right side axis
```

(continues on next page)

(continued from previous page)

```
    if digit != 5:
        plt.ylabel("")
        plt.yticks([])

results = pd.read_csv("other/digit_list.csv")

grid = sns.FacetGrid(results, row='speaker_id', col='digit')
grid.map_dataframe(facet_util)
grid.set_titles(col_template="{col_name}", row_template="{row_name}")
grid.set_axis_labels("time [s]", "frequency [Hz]")
grid.set(facecolor='white', xlim=(0, None))
plt.show()
```

```
/home/docs/checkouts/readthedocs.org/user_builds/parselmouth/envs/docs/lib/python3.11/
↪site-packages/seaborn/axisgrid.py:118: UserWarning: The figure layout has changed to␣
↪tight
  self._figure.tight_layout(*args, **kwargs)
```



2.2 Batch processing of files

Using the Python standard libraries (i.e., the `glob` and `os` modules), we can also quickly code up batch operations e.g. over all files with a certain extension in a directory. For example, we can make a list of all `.wav` files in the `audio` directory, use Praat to pre-emphasize these *Sound* objects, and then write the pre-emphasized sound to a `WAV` and `AIFF` format file.

[1]:
```
# Find all .wav files in a directory, pre-emphasize and save as new .wav and .aiff file
import parselmouth

import glob
import os.path

for wave_file in glob.glob("audio/*.wav"):
    print("Processing {}...".format(wave_file))
    s = parselmouth.Sound(wave_file)
    s.pre_emphasize()
```

(continues on next page)

(continued from previous page)

```
    s.save(os.path.splitext(wave_file)[0] + "_pre.wav", 'WAV') # or parselmouth.
↪SoundFileFormat.WAV instead of 'WAV'
    s.save(os.path.splitext(wave_file)[0] + "_pre.aiff", 'AIFF')
```

```
Processing audio/1_y.wav...
Processing audio/2_y.wav...
Processing audio/1_b.wav...
Processing audio/5_b.wav...
Processing audio/5_y.wav...
Processing audio/3_y.wav...
Processing audio/bat.wav...
Processing audio/2_b.wav...
Processing audio/the_north_wind_and_the_sun.wav...
Processing audio/3_b.wav...
Processing audio/bet.wav...
Processing audio/4_b.wav...
Processing audio/4_y.wav...
```

After running this, the original home directory now contains all of the original `.wav` files pre-emphazised and written again as `.wav` and `.aiff` files. The reading, pre-emphasis, and writing are all done by Praat, while looping over all `.wav` files is done by standard Python code.

[2]:
```
# List the current contents of the audio/ folder
!ls audio/
```

```
1_b.wav       2_y_pre.aiff  4_b_pre.wav   bat.wav
1_b_pre.aiff  2_y_pre.wav   4_y.wav          bat_pre.aiff
1_b_pre.wav   3_b.wav            4_y_pre.aiff  bat_pre.wav
1_y.wav       3_b_pre.aiff  4_y_pre.wav   bet.wav
1_y_pre.aiff  3_b_pre.wav   5_b.wav          bet_pre.aiff
1_y_pre.wav   3_y.wav            5_b_pre.aiff  bet_pre.wav
2_b.wav       3_y_pre.aiff  5_b_pre.wav   the_north_wind_and_the_sun.wav
2_b_pre.aiff  3_y_pre.wav   5_y.wav          the_north_wind_and_the_sun_pre.aiff
2_b_pre.wav   4_b.wav            5_y_pre.aiff  the_north_wind_and_the_sun_pre.wav
2_y.wav       4_b_pre.aiff  5_y_pre.wav
```

[3]:
```
# Remove the generated audio files again, to clean up the output from this example
!rm audio/*_pre.wav
!rm audio/*_pre.aiff
```

Similarly, we can use the pandas library to read a CSV file with data collected in an experiment, and loop over that data to e.g. extract the mean harmonics-to-noise ratio. The `results` CSV has the following structure:

condition	...	pp_id
0	...	1877
1	...	801
1	...	2456
0	...	3126

The following code would read such a table, loop over it, use Praat through Parselmouth to calculate the analysis of each row, and then write an augmented CSV file to disk. To illustrate we use an example set of sound fragments: results.csv, 1_b.wav, 2_b.wav, 3_b.wav, 4_b.wav, 5_b.wav, 1_y.wav, 2_y.wav, 3_y.wav, 4_y.wav, 5_y.wav

In our example, the original CSV file, results.csv contains the following table:

[4]:
```
import pandas as pd

print(pd.read_csv("other/results.csv"))
```

```
   condition pp_id
0          3     y
1          5     y
2          4     b
3          2     y
4          5     b
5          2     b
6          3     b
7          1     y
8          1     b
9          4     y
```

[5]:
```
def analyse_sound(row):
    condition, pp_id = row['condition'], row['pp_id']
    filepath = "audio/{}_{}.wav".format(condition, pp_id)
    sound = parselmouth.Sound(filepath)
    harmonicity = sound.to_harmonicity()
    return harmonicity.values[harmonicity.values != -200].mean()

# Read in the experimental results file
dataframe = pd.read_csv("other/results.csv")

# Apply parselmouth wrapper function row-wise
dataframe['harmonics_to_noise'] = dataframe.apply(analyse_sound, axis='columns')

# Write out the updated dataframe
dataframe.to_csv("processed_results.csv", index=False)
```

We can now have a look at the results by reading in the `processed_results.csv` file again:

[6]:
```
print(pd.read_csv("processed_results.csv"))
```

```
   condition pp_id  harmonics_to_noise
0          3     y           22.615414
1          5     y           16.403205
2          4     b           17.839167
3          2     y           21.054674
4          5     b           16.092489
5          2     b           12.378289
6          3     b           15.718858
7          1     y           16.704779
8          1     b           12.874451
9          4     y           18.431586
```

[7]:
```
# Clean up, remove the CSV file generated by this example
!rm processed_results.csv
```

2.3 Pitch manipulation and Praat commands

Another common use of Praat functionality is to manipulate certain features of an existing audio fragment. For example, in the context of a perception experiment one might want to change the pitch contour of an existing audio stimulus while keeping the rest of the acoustic features the same. Parselmouth can then be used to access the Praat algorithms that accomplish this, from Python.

Since this Praat `Manipulation` functionality has currently not been ported to Parselmouth's Python interface, we will need to use Parselmouth interface to access *raw* Praat commands.

In this example, we will increase the pitch contour of an audio recording of the word *"four"*, 4_b.wav, by one octave. To do so, let's start by importing Parselmouth and opening the audio file:

[1]:
```
import parselmouth

sound = parselmouth.Sound("audio/4_b.wav")
```

We can also listen to this audio fragment:

[2]:
```
from IPython.display import Audio
Audio(data=sound.values, rate=sound.sampling_frequency)
```

[2]:
```
<IPython.lib.display.Audio object>
```

However, now we want to use the Praat `Manipulation` functionality, but unfortunately, Parselmouth does not yet contain a `Manipulation` class and the necessary functionality is not directly accessible through the *Sound* object `sound`. To directly access the Praat commands conveniently from Python, we can make use of the *parselmouth.praat.call* function.

[3]:
```
from parselmouth.praat import call

manipulation = call(sound, "To Manipulation", 0.01, 75, 600)
```

[4]:
```
type(manipulation)
```

[4]:
```
parselmouth.Data
```

Note how we first pass in the object(s) that would be selected in Praat's object list. The next argument to this function is the name of the command as it would be used in a script or can be seen in the Praat user interface. Finally, the arguments to this command's parameters are passed to the function (in this case, Praat's default values for *"Time step (s)"*, *"Minimum pitch (Hz)"*, and *"Maximum pitch (Hz)"*). This call to `parselmouth.praat.call` will then return the result of the command as a Python type or Parselmouth object. In this case, a Praat `Manipulation` object would be created, so our function returns a `parselmouth.Data` object, as a `parselmouth.Manipulation` class does not exist in Parselmouth. However, we can still query the class name the underlying Praat object has:

[5]:
```
manipulation.class_name
```

[5]:
```
'Manipulation'
```

Next, we can continue using Praat functionality to further use this `manipulation` object similar to how one would achieve this in Praat. Here, note how we can mix normal Python (e.g. integers and lists), together with the normal use of Parselmouth as Python library (e.g., `sound.xmin`) as well as with the `parselmouth.praat.call` function.

[6]:
```
pitch_tier = call(manipulation, "Extract pitch tier")

call(pitch_tier, "Multiply frequencies", sound.xmin, sound.xmax, 2)
```

(continues on next page)

(continued from previous page)

```
call([pitch_tier, manipulation], "Replace pitch tier")
sound_octave_up = call(manipulation, "Get resynthesis (overlap-add)")
```

[7]:
```
type(sound_octave_up)
```

[7]:
```
parselmouth.Sound
```

The last invocation of `call` resulted in a Praat `Sound` object being created and returned. Because Parselmouth knows that this type corresponds to a `parselmouth.Sound` Python object, the Python type of this object is not a `parselmouth.Data`. Rather, this object is now equivalent to the one we created at the start of this example. As such, we can use this new object normally, calling methods and accessing its contents. Let's listen and see if we succeeded in increasing the pitch by one octave:

[8]:
```
Audio(data=sound_octave_up.values, rate=sound_octave_up.sampling_frequency)
```

[8]:
```
<IPython.lib.display.Audio object>
```

And similarly, we could also for example save the sound to a new file.

[9]:
```
sound_octave_up.save("4_b_octave_up.wav", "WAV")
```

[10]:
```
Audio(filename="4_b_octave_up.wav")
```

[10]:
```
<IPython.lib.display.Audio object>
```

[11]:
```
# Clean up the created audio file again
!rm 4_b_octave_up.wav
```

We can of course also turn this combination of commands into a custom function, to be reused in later code:

[12]:
```
def change_pitch(sound, factor):
    manipulation = call(sound, "To Manipulation", 0.01, 75, 600)

    pitch_tier = call(manipulation, "Extract pitch tier")

    call(pitch_tier, "Multiply frequencies", sound.xmin, sound.xmax, factor)

    call([pitch_tier, manipulation], "Replace pitch tier")
    return call(manipulation, "Get resynthesis (overlap-add)")
```

Using Jupyter widgets, one can then change the audio file or the pitch change factor, and interactively hear how this sounds.

To try this for yourself, open an online, interactive version of this notebook on Binder! (see link at the top of this notebook)

[13]:
```
import ipywidgets
import glob

def interactive_change_pitch(audio_file, factor):
    sound = parselmouth.Sound(audio_file)
    sound_changed_pitch = change_pitch(sound, factor)
    return Audio(data=sound_changed_pitch.values, rate=sound_changed_pitch.sampling_
```

(continues on next page)

(continued from previous page)

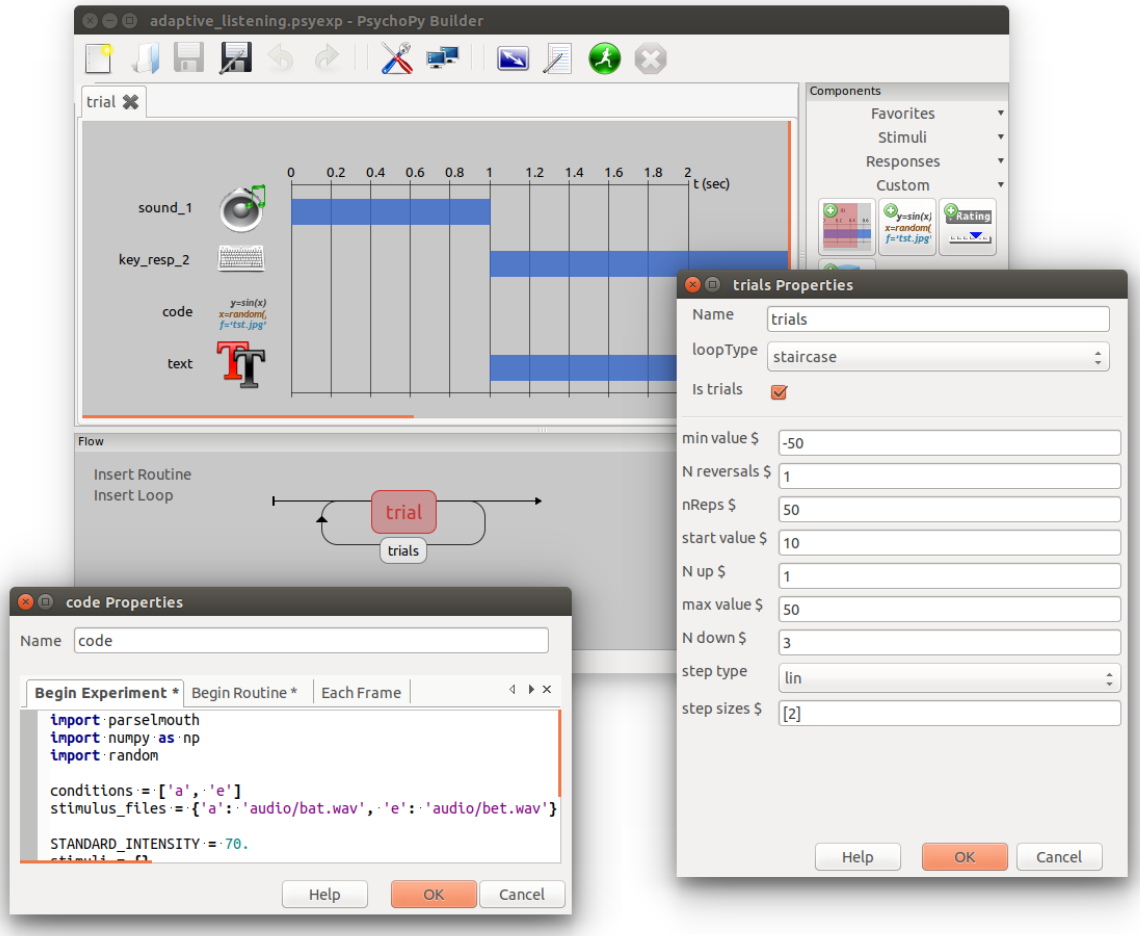
```
↪frequency)

#w = ipywidgets.interact(interactive_change_pitch,
#                        audio_file=ipywidgets.Dropdown(options=sorted(glob.glob("audio/
↪*.wav")), value="audio/4_b.wav"),
#                        factor=ipywidgets.FloatSlider(min=0.25, max=4, step=0.05,␣
↪value=1.5))
```

2.4 PsychoPy experiments

Parselmouth also allows Praat functionality to be included in an interactive PsychoPy experiment (refer to the subsection on *installing Parselmouth for PsychoPy* for detailed installation instructions for the PsychoPy graphical interface, the *PsychoPy Builder*). The following example shows how easily Python code that uses Parselmouth can be injected in such an experiment; following an adaptive staircase experimental design, at each trial of the experiment a new stimulus is generated based on the responses of the participant. See e.g. Kaernbach, C. (2001). Adaptive threshold estimation with unforced-choice tasks. *Attention, Perception, & Psychophysics*, *63*, 1377–1388., or the PsychoPy tutorial at https://www.psychopy.org/coder/tutorial2.html.

In this example, we use an adaptive staircase experiment to determine the minimal amount of noise that makes the participant unable to distinguish between two audio fragments, *"bat"* and *"bet"* (bat.wav, bet.wav). At every iteration of the experiment, we want to generate a version of these audio files with a specific signal-to-noise ratio, of course using Parselmouth to do so. Depending on whether the participant correctly identifies whether the noisy stimulus was *"bat"* or *"bet"*, the noise level is then either increased or decreased.

As Parselmouth is just another Python library, using it from the PsychoPy *Coder* interface or from a standard Python script that imports the `psychopy` module is quite straightforward. However, PsychoPy also features a so-called *Builder* interface, which is a graphical interface to set up experiments with minimal or no coding. In this *Builder*, a user can create multiple experimental *'routines'* out of different *'components'* and combine them through *'loops'*, that can all be configured graphically:



For our simple example, we create a single routine `trial`, with a `Sound`, a `Keyboard`, and a `Text` component. We also insert a loop around this routine of the type `staircase`, such that PsychoPy will take care of the actual implementation of the loop in adaptive staircase design. The full PsychoPy experiment which can be opened in the *Builder* can be downloaded here: adaptive_listening.psyexp

Finally, to customize the behavior of the `trial` routine and to be able to use Parselmouth inside the PsychoPy experiment, we still add a `Code` component to the routine. This component will allow us to write Python code that interacts with the rest of the components and with the adaptive staircase loop. The `Code` components has different tabs, that allow us to insert custom code at different points during the execution of our trial.

First, there is the **Begin Experiment** tab. The code in this tab is executed only once, at the start of the experiment. We use this to set up the Python environment, importing modules and initializing variables, and defining constants:

[1]:
```
# ** Begin Experiment **

import parselmouth
import numpy as np
import random

conditions = ['a', 'e']
stimulus_files = {'a': "audio/bat.wav", 'e': "audio/bet.wav"}
```

(continues on next page)

(continued from previous page)

```
STANDARD_INTENSITY = 70.
stimuli = {}
for condition in conditions:
    stimulus = parselmouth.Sound(stimulus_files[condition])
    stimulus.scale_intensity(STANDARD_INTENSITY)
    stimuli[condition] = stimulus
```

The code in the **Begin Routine** tab is executed before the routine, so in our example, for every iteration of the surrounding staircase loop. This allows us to actually use Parselmouth to generate the stimulus that should be played to the participant during this iteration of the routine. To do this, we need to access the current value of the adaptive staircase algorithm: PsychoPy stores this in the Python variable `level`. For example, at some point during the experiment, this could be 10 (representing a signal-to-noise ratio of 10 dB):

[2]:
```
level = 10
```

To execute the code we want to put in the **Begin Routine** tab, we need to add a few variables that would be made available by the PsychoPy Builder, normally:

[3]:
```
# 'filename' variable is also set by PsychoPy and contains base file name of saved log/
↪output files
filename = "data/participant_staircase_23032017"

# PsychoPy also create a Trials object, containing e.g. information about the current␣
↪iteration of the loop
# So let's quickly fake this, in this example, such that the code can be executed without␣
↪errors
# In PsychoPy this would be a `psychopy.data.TrialHandler` (https://www.psychopy.org/api/
↪data.html#psychopy.data.TrialHandler)
class MockTrials:
    def addResponse(self, response):
        print("Registering that this trial was {}successful".format("" if response else
↪"un"))
trials = MockTrials()
trials.thisTrialN = 5 # We only need the 'thisTrialN' attribute of the 'trials' variable

# The Sound component can also be accessed by it's name, so let's quickly mock that as␣
↪well
# In PsychoPy this would be a `psychopy.sound.Sound` (https://www.psychopy.org/api/sound.
↪html#psychopy.sound.Sound)
class MockSound:
    def setSound(self, file_name):
        print("Setting audio file of Sound component to '{}'".format(file_name))
sound_1 = MockSound()

# And the same for our Keyboard component, `key_resp_2`:
class MockKeyboard:
    pass
key_resp_2 = MockKeyboard()

# Finally, let's also seed the random module to have a consistent output across different␣
↪runs
random.seed(42)
```

[4]:
```
# Let's also create the directory where we will store our example output
!mkdir data
```

Now, we can execute the code that would be in the **Begin Routine** tab:

[5]:
```
# ** Begin Routine **

random_condition = random.choice(conditions)
random_stimulus = stimuli[random_condition]

noise_samples = np.random.normal(size=random_stimulus.n_samples)
noisy_stimulus = parselmouth.Sound(noise_samples,
                    sampling_frequency=random_stimulus.sampling_frequency)
noisy_stimulus.scale_intensity(STANDARD_INTENSITY - level)
noisy_stimulus.values += random_stimulus.values
noisy_stimulus.scale_intensity(STANDARD_INTENSITY)

# use 'filename' to save our custom stimuli
stimulus_file_name = filename + "_stimulus_" + str(trials.thisTrialN) + ".wav"
noisy_stimulus.resample(44100).save(stimulus_file_name, 'WAV')
sound_1.setSound(stimulus_file_name)
```

```
Setting audio file of Sound component to 'data/participant_staircase_23032017_stimulus_5.
↪wav'
```

Let's listen to the file we have just generated and that we would play to the participant:

[6]:
```
from IPython.display import Audio
Audio(filename="data/participant_staircase_23032017_stimulus_5.wav")
```

[6]:
```
<IPython.lib.display.Audio object>
```

In this example, we do not really need to have code executed during the trial (i.e., in the **Each Frame** tab). However, at the end of the trial, we need to inform the PsychoPy staircase loop whether the participant was correct or not, because this will affect the further execution the adaptive staircase, and thus value of the `level` variable set by PsychoPy. For this we add a final line in the **End Routine** tab. Let's say the participant guessed *"bat"* and pressed the a key:

[7]:
```
key_resp_2.keys = 'a'
```

The **End Routine** tab then contains the following code to check the participant's answer against the randomly chosen condition, and to inform the `trials` object of whether the participant was correct:

[8]:
```
# ** End Routine **

trials.addResponse(key_resp_2.keys == random_condition)
```

```
Registering that this trial was successful
```

[9]:
```
# Clean up the output directory again
!rm -r data
```

2.5 Web service

Since Parselmouth is a normal Python library, it can also easily be used within the context of a web server. There are several Python frameworks that allow to quickly set up a web server or web service. In this examples, we will use Flask to show how easily one can set up a web service that uses Parselmouth to access Praat functionality such as the pitch track estimation algorithms. This functionality can then be accessed by clients without requiring either Praat, Parselmouth, or even Python to be installed, for example within the context of an online experiment.

All that is needed to set up the most basic web server in Flask is a single file. We adapt the standard Flask example to accept a sound file, access Parselmouth's *Sound.to_pitch*, and then send back the list of pitch track frequencies. Note that apart from saving the file that was sent in the HTTP request and encoding the resulting list of frequencies in JSON, the Python code of the `pitch_track` function is the same as one would write in a normal Python script using Parselmouth.

[1]:
```
%%writefile server.py

from flask import Flask, request, jsonify
import tempfile

app = Flask(__name__)

@app.route('/pitch_track', methods=['POST'])
def pitch_track():
    import parselmouth

    # Save the file that was sent, and read it into a parselmouth.Sound
    with tempfile.NamedTemporaryFile() as tmp:
        tmp.write(request.files['audio'].read())
        sound = parselmouth.Sound(tmp.name)

    # Calculate the pitch track with Parselmouth
    pitch_track = sound.to_pitch().selected_array['frequency']

    # Convert the NumPy array into a list, then encode as JSON to send back
    return jsonify(list(pitch_track))
```

```
Writing server.py
```

Normally, we can then run the server typing `FLASK_APP=server.py flask run` on the command line, as explained in the Flask documentation. Please do note that to run this server publicly, in a secure way and as part of a bigger setup, other options are available to deploy! Refer to the Flask deployment documentation.

However, to run the server from this Jupyter notebook and still be able to run the other cells that access the functionality on the client side, the following code will start the server in a separate thread and print the output of the running server.

[2]:
```
import os
import subprocess
import sys
import time

# Start a subprocess that runs the Flask server
p = subprocess.Popen([sys.executable, "-m", "flask", "run"], env=dict(**os.environ,␣
↪FLASK_APP="server.py"), stdout=subprocess.PIPE, stderr=subprocess.PIPE)
```

(continues on next page)

(continued from previous page)

```
# Start two subthreads that forward the output from the Flask server to the output of␣
↪the Jupyter notebook
def forward(i, o):
    while p.poll() is None:
        l = i.readline().decode('utf-8')
        if l:
            o.write("[SERVER] " + l)

import threading
threading.Thread(target=forward, args=(p.stdout, sys.stdout)).start()
threading.Thread(target=forward, args=(p.stderr, sys.stderr)).start()

# Let's give the server a bit of time to make sure it has started
time.sleep(2)
```

```
[SERVER]  * Serving Flask app 'server.py'
[SERVER]  * Debug mode: off
```

```
[SERVER] WARNING: This is a development server. Do not use it in a production deployment.
↪ Use a production WSGI server instead.
[SERVER]  * Running on http://127.0.0.1:5000
[SERVER] Press CTRL+C to quit
```

Now that the server is up and running, we can make a standard HTTP request to this web service. For example, we can send a Wave file with an audio recording of someone saying *"The north wind and the sun […]"*: the_north_wind_and_the_sun.wav, extracted from a Wikipedia Commons audio file.

[3]:
```
from IPython.display import Audio
Audio(filename="audio/the_north_wind_and_the_sun.wav")
```

[3]:
```
<IPython.lib.display.Audio object>
```

To do so, we use the requests library in this example, but we could use any library to send a standard HTTP request.

[4]:
```
import requests
import json

# Load the file to send
files = {'audio': open("audio/the_north_wind_and_the_sun.wav", 'rb')}
# Send the HTTP request and get the reply
reply = requests.post("http://127.0.0.1:5000/pitch_track", files=files)
# Extract the text from the reply and decode the JSON into a list
pitch_track = json.loads(reply.text)
print(pitch_track)
```

```
[0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 245.46350823786898, 228.46732333120045, 220.229881904913,␣
↪217.9494117767135, 212.32120094882643, 208.42371077564596, 213.3210292245136, 219.
↪22164169979897, 225.08564349338334, 232.58018420251648, 243.6102854675347, 267.
↪9586673940531, 283.57192373203253, 293.09087794771966, 303.9716558501677, 314.
↪16812500255537, 320.11744147538917, 326.34395013825196, 333.3632387299925, 340.
↪0277922275489, 345.8240749033839, 348.57743419008335, 346.9665344057159, 346.
↪53179321965666, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 445.1355539937184, 442.
↪99367847432956, 0.0, 0.0, 0.0, 0.0, 0.0, 236.3912949256524, 233.77304383699934, 231.
↪61759183978316, 229.252937317608, 226.5388725505901, 223.6713912521482, 217.
```

(continues on next page)

(continued from previous page)

```
↪56247158178041, 208.75233223541412, 208.36854272051312, 205.1132684638252, 202.
↪99628328370704, 200.74245529822406, 198.379243723561, 195.71387722456126, 192.
↪92640662381228, 189.55087006373063, 186.29856999154498, 182.60612897184708, 178.
↪0172095327713, 171.7286500573546, 164.43397092360505, 163.15047735066148, 190.
↪94898597265222, 180.11404296436555, 177.42215658133307, 176.85852955755865, 175.
↪90234348007218, 172.72381274834703, 165.07291074214982, 170.84308758689093, 173.
↪84326581969435, 175.39817924857263, 174.73813404735137, 171.30666910901442, 167.
↪57344824865035, 165.26925804867895, 164.0488248694515, 163.3665771538607, 162.
↪9182321154844, 164.4049979046003, 164.16734205916592, 160.17875848111373, 0.0, 0.0, 0.
↪0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 163.57343758482958, 160.
↪63654708070163, 150.27906547408838, 143.6142724404569, 139.70737167424176, 138.
↪15535972924215, 137.401926952887, 137.45520345586323, 136.78723483908712, 135.
↪18334597312617, 132.3066180187801, 136.04747210818914, 138.65745092917942, 139.
↪1335736781387, 140.238485464634, 141.83711308294014, 143.10991285599226, 144.
↪40501561368708, 146.07295382762607, 147.47513524525806, 148.1692013818143, 149.
↪54122031709116, 151.0336292203337]
```

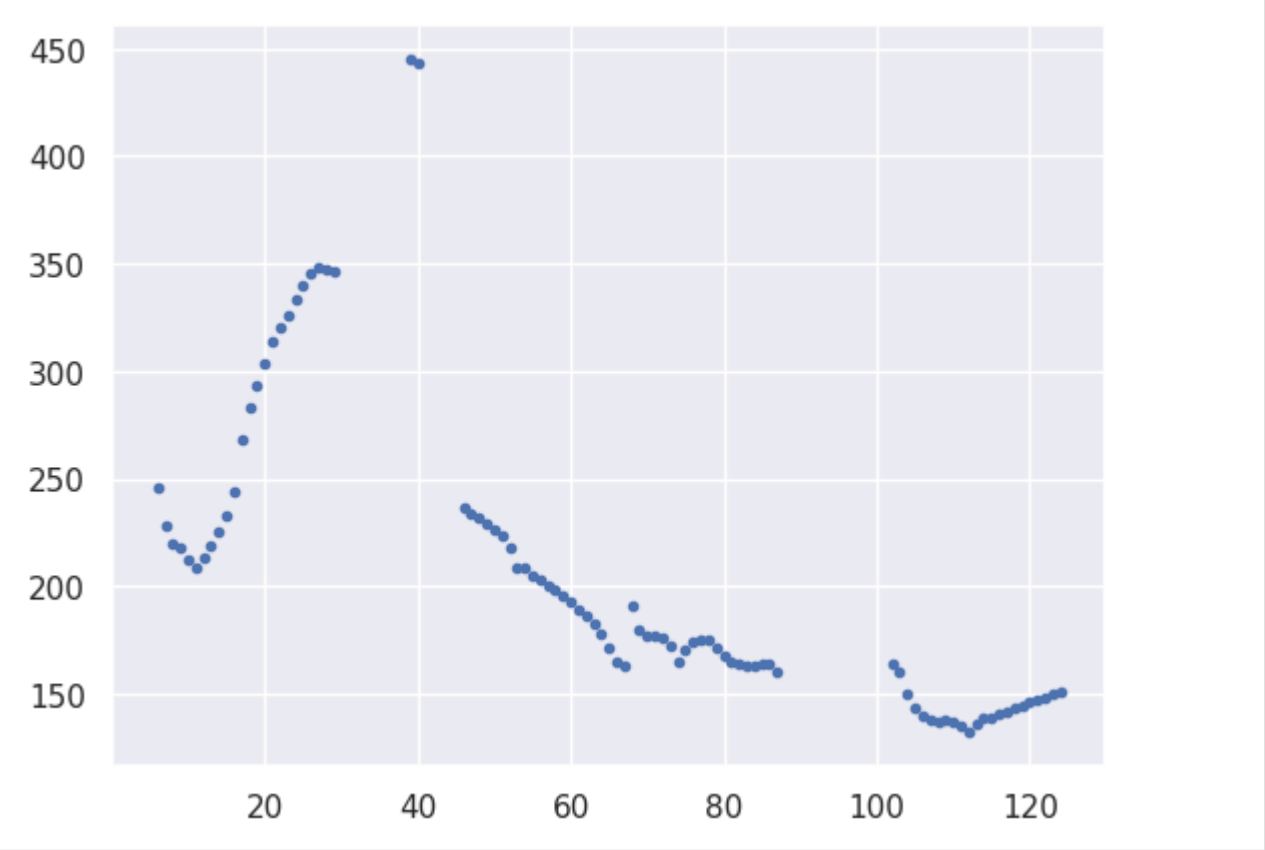
```
[SERVER] 127.0.0.1 - - [14/Aug/2023 22:10:38] "POST /pitch_track HTTP/1.1" 200 -
```

Since we used the standard `json` library from Python to decode the reply from server, `pitch_track` is now a normal list of `floats` and we can for example plot the estimated pitch track:

[5]:
```
import matplotlib.pyplot as plt
import seaborn as sns
```

[6]:
```
sns.set() # Use seaborn's default style to make attractive graphs
plt.rcParams['figure.dpi'] = 100 # Show nicely large images in this notebook
```

[7]:
```
plt.figure()
plt.plot([float('nan') if x == 0.0 else x for x in pitch_track], '.')
plt.show()
```



Refer to the *examples on plotting* for more details on using Parselmouth for plotting.

Importantly, Parselmouth is thus only needed by the server; the client only needs to be able to send a request and read the reply. Consequently, we could even use a different programming language on the client's side. For example, one could make build a HTML page with JavaScript to make the request and do something with the reply:

```
<head>
    <meta http-equiv="content-type" content="text/html; charset=UTF-8" />
    <script type="text/javascript" src="jquery.min.js"></script>
    <script type="text/javascript" src="plotly.min.js"></script>
    <script type="text/javascript">
    var update_plot = function() {
        var audio = document.getElementById("audio").files[0];
        var formData = new FormData();
        formData.append("audio", audio);

        $.getJSON({url: "http://127.0.0.1:5000/pitch_track", method: "POST",
                   data: formData, processData: false, contentType: false,
                   success: function(data){
                       Plotly.newPlot("plot", [{ x: [...Array(data.length).keys()],
                                                 y: data.map(function(x) { return x == 0.
↪0 ? undefined : x; }),
                                                 type: "lines" }]);}});

    };
    </script>
</head>
```

(continues on next page)

(continued from previous page)

```
<body>
<form onsubmit="update_plot(); return false;">
    <input type="file" name="audio" id="audio" />
    <input type="submit" value="Get pitch track" />
    <div id="plot" style="width:1000px;height:600px;"></div>
</form>
</body>
```

Again, one thing to take into account is the security of running such a web server. However, apart from deploying the flask server in a secure and performant way, we also need one extra thing to circumvent a standard security feature of the browser. Without handling Cross Origin Resource Sharing (CORS) on the server, the JavaScript code on the client side will not be able to access the web service's reply. A Flask extension exists however, Flask-CORS, and we refer to its documentation for further details.

[8]:
```
# Let's shut down the server
p.kill()
```

[9]:
```
# Cleaning up the file that was written to disk
!rm server.py
```

2.6 Projects using Parselmouth

The following projects provide larger, real-life examples and demonstrate the use of Parselmouth:

- The my-voice-analysis and myprosody projects by Shahab Sabahi (@Shahabks) provide Python libraries for voice analysis and acoustical statistics, interfacing Python to his previously developed Praat scripts.
- David R. Feinberg (@drfeinberg) has written multiple Python scripts and programs with Parselmouth to analyse properties of speech recordings:
  - Praat Scripts is a collection of Praat scripts used in research, translated into Python.
  - Voice Lab Software is a GUI application to measure and manipulate voices.

Note: If you have a project using Parselmouth that could be useful for others, and want to add it to this list, do let us know on Gitter!

CHAPTER

THREE

API REFERENCE

Parselmouth consists of two main modules, *parselmouth* and *parselmouth.praat*, though both modules will be imported on importing *parselmouth*.

parselmouth	Main module with a Python interface to Praat.
parselmouth.praat	Submodule with functions to call Praat commands and run Praat scripts.

3.1 parselmouth

Main module with a Python interface to Praat.

parselmouth.**VERSION = '0.5.0.dev0'**

This version of Parselmouth.

parselmouth.**PRAAT_VERSION = '6.2.23'**

The Praat version on which this version of Parselmouth is based.

parselmouth.**PRAAT_VERSION_DATE = '8 October 2022'**

The release date of the Praat version on which this version of Parselmouth is based.

Functions

read	Read a file into a *parselmouth.Data* object.

3.1.1 parselmouth.read

parselmouth.**read**(*file_path: str*) → *parselmouth.Data*

Read a file into a *parselmouth.Data* object.

Parameters

file_path (*str*) – The path of the file on disk to read.

Returns

The Praat Data object that was read.

Return type

parselmouth.Data

See also:

Praat: "Read from file…"

Classes

AmplitudeScaling	
CC	
Data	
Formant	
FormantUnit	
Function	
Harmonicity	
Intensity	
Interpolation	alias of *ValueInterpolation*
MFCC	
Matrix	
Pitch	
PitchUnit	
Sampled	
SampledXY	
SignalOutsideTimeDomain	
Sound	A fragment of audio, represented by one or multiple channels of floating point values between -1 and 1, sampled at a fixed sampling frequency.
SoundFileFormat	
SpectralAnalysisWindowShape	
Spectrogram	
Spectrum	
TextGrid	
Thing	
TimeFrameSampled	
TimeFunction	
ValueInterpolation	
Vector	
WindowShape	

3.1.2 parselmouth.AmplitudeScaling

class parselmouth.**AmplitudeScaling**

Bases: pybind11_object

Methods

__init__

Attributes

INTEGRAL
NORMALIZE
PEAK_0_99
SUM
name
value

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.AmplitudeScaling) → int

__init__(*self:* parselmouth.AmplitudeScaling, *value: int*) → None
__init__(*self:* parselmouth.AmplitudeScaling, *arg0: str*) → None

__int__(*self:* parselmouth.AmplitudeScaling) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()

name(self: handle) -> str

INTEGRAL = <AmplitudeScaling.INTEGRAL: 1>

NORMALIZE = <AmplitudeScaling.NORMALIZE: 3>

PEAK_0_99 = <AmplitudeScaling.PEAK_0_99: 4>

SUM = <AmplitudeScaling.SUM: 2>

property name

property value

3.1.3 parselmouth.CC

class parselmouth.**CC**

Bases: *TimeFrameSampled*, *Sampled*

Methods

__init__	
copy	
frame_number_to_time	
get_c0_value_in_frame	
get_end_time	
get_frame	
get_frame_number_from_time	
get_number_of_coefficients	
get_number_of_frames	
get_start_time	
get_time_from_frame_number	
get_time_step	
get_total_duration	
get_value_in_frame	
info	
read	Read a file into a *parselmouth.Data* object.
save	
save_as_binary_file	
save_as_short_text_file	

continues on next page

Table 1 – continued from previous page

save_as_text_file
scale_times_by
scale_times_to
scale_x_by
scale_x_to
shift_times_by
shift_times_to
shift_x_by
shift_x_to
t_bins
t_grid
time_to_frame_number
to_array
to_matrix
ts
x_bins
x_grid
xs

Attributes

centre_time
class_name
dt
duration
dx
end_time
fmax
fmin
full_name
max_n_coefficients
n_frames
name
nt
nx
start_time
t1
time_range
time_step
tmax
tmin
total_duration
trange
x1
xmax
xmin
xrange

class FileFormat

Bases: pybind11_object

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.Data.FileFormat) → int

__init__(*self:* parselmouth.Data.FileFormat, *value: int*) → None
__init__(*self:* parselmouth.Data.FileFormat, *arg0: str*) → None

__int__(*self:* parselmouth.Data.FileFormat) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()

name(self: handle) -> str

BINARY = <FileFormat.BINARY: 2>

SHORT_TEXT = <FileFormat.SHORT_TEXT: 1>

TEXT = <FileFormat.TEXT: 0>

property name

property value

class Frame

Bases: pybind11_object

__getitem__(*self:* parselmouth.CC.Frame, *i: int*) → float

__init__(**args*, ***kwargs*)

__len__(*self:* parselmouth.CC.Frame) → int

__new__(***kwargs*)

__setitem__(*self:* parselmouth.CC.Frame, *i: int*, *value: float*) → None

to_array(*self:* parselmouth.CC.Frame) → numpy.ndarray[numpy.float64]

property c

property c0

__copy__(*self:* parselmouth.Data) → *parselmouth.Data*

__deepcopy__(*self:* parselmouth.Data, *memo: dict*) → *parselmouth.Data*

__eq__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__getitem__(*self:* parselmouth.CC, *i: int*) → *parselmouth.CC.Frame*
__getitem__(*self:* parselmouth.CC, *ij: Tuple[int, int]*) → float

__init__(**args*, ***kwargs*)

__iter__(*self:* parselmouth.CC) → Iterator

__len__(*self:* parselmouth.Sampled) → int

__ne__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__new__(***kwargs*)

__setitem__(*self:* parselmouth.CC, *ij: Tuple[int, int]*, *value: float*) → None

__str__(*self:* parselmouth.Thing) → str

copy(*self:* parselmouth.Data) → *parselmouth.Data*

frame_number_to_time(*self:* parselmouth.Sampled, *frame_number: Positive[int]*) → float

get_c0_value_in_frame(*self:* parselmouth.CC, *frame_number: Positive[int]*) → float

get_end_time(*self:* parselmouth.Function) → float

get_frame(*self:* parselmouth.CC, *frame_number: Positive[int]*) → *parselmouth.CC.Frame*

get_frame_number_from_time(*self:* parselmouth.Sampled, *time: float*) → float

get_number_of_coefficients(*self:* parselmouth.CC, *frame_number: Positive[int]*) → int

get_number_of_frames(*self:* parselmouth.Sampled) → int

get_start_time(*self:* parselmouth.Function) → float

get_time_from_frame_number(*self:* parselmouth.Sampled, *frame_number: Positive[int]*) → float

get_time_step(*self:* parselmouth.Sampled) → float

get_total_duration(*self:* parselmouth.Function) → float

get_value_in_frame(*self:* parselmouth.CC, *frame_number: Positive[int]*, *index: Positive[int]*) → float

info(*self:* parselmouth.Thing) → str

static read(*file_path: str*) → *parselmouth.Data*

Read a file into a `parselmouth.Data` object.

Parameters
file_path (`str`) – The path of the file on disk to read.

Returns
The Praat Data object that was read.

Return type
parselmouth.Data

See also:

Praat: "Read from file…"

save(*self: parselmouth.Data*, *file_path: str*, *format: parselmouth.Data.FileFormat = <FileFormat.TEXT: 0>*) → None

save_as_binary_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_short_text_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_text_file(*self:* parselmouth.Data, *file_path: str*) → None

scale_times_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_times_to(*self:* parselmouth.Function, *new_start_time: float*, *new_end_time: float*) → None

scale_x_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_x_to(*self:* parselmouth.Function, *new_xmin: float*, *new_xmax: float*) → None

shift_times_by(*self:* parselmouth.Function, *seconds: float*) → None

shift_times_to(*self:* parselmouth.Function, *time: float*, *new_time: float*) → None
shift_times_to(*self:* parselmouth.Function, *time: str*, *new_time: float*) → None

shift_x_by(*self:* parselmouth.Function, *shift: float*) → None

shift_x_to(*self:* parselmouth.Function, *x: float*, *new_x: float*) → None

t_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

t_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

time_to_frame_number(*self:* parselmouth.Sampled, *time: float*) → float

to_array(*self:* parselmouth.CC) → numpy.ndarray[numpy.float64]

to_matrix(*self:* parselmouth.CC) → *parselmouth.Matrix*

ts(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

xs(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

__hash__ = None

property centre_time

property class_name

property dt

property duration

property dx

property end_time

property fmax

property fmin

property full_name

property max_n_coefficients

property n_frames

property name

property nt

property nx

property start_time

property t1

property time_range

property time_step

property tmax

property tmin

property total_duration

property trange

property x1

property xmax

property xmin

property xrange

3.1.4 parselmouth.Data

class parselmouth.Data

Bases: *Thing*

Methods

__init__	
copy	
info	
read	Read a file into a *parselmouth.Data* object.
save	
save_as_binary_file	
save_as_short_text_file	
save_as_text_file	

Attributes

class_name
full_name
name

class FileFormat

Bases: pybind11_object

__eq__(*self:* *object*, *other:* *object*) → bool

__hash__(*self:* *object*) → int

__index__(*self:* parselmouth.Data.FileFormat) → int

__init__(*self:* parselmouth.Data.FileFormat, *value:* *int*) → None

__init__(*self:* parselmouth.Data.FileFormat, *arg0:* *str*) → None

__int__(*self:* parselmouth.Data.FileFormat) → int

__ne__(*self:* *object*, *other:* *object*) → bool

__new__(***kwargs*)

__repr__(*self:* *object*) → str

__str__()

name(self: handle) -> str

BINARY = <FileFormat.BINARY: 2>

SHORT_TEXT = <FileFormat.SHORT_TEXT: 1>

TEXT = <FileFormat.TEXT: 0>

property name

property value

__copy__(*self:* parselmouth.Data) → *parselmouth.Data*

__deepcopy__(*self:* parselmouth.Data, *memo:* *dict*) → *parselmouth.Data*

__eq__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__init__(**args*, ***kwargs*)

__ne__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__new__(***kwargs*)

__str__(*self:* parselmouth.Thing) → str

copy(*self:* parselmouth.Data) → *parselmouth.Data*

info(*self:* parselmouth.Thing) → str

static read(*file_path: str*) → *parselmouth.Data*

Read a file into a *parselmouth.Data* object.

Parameters
file_path (*str*) – The path of the file on disk to read.

Returns
The Praat Data object that was read.

Return type
parselmouth.Data

See also:

Praat: "Read from file…"

save(*self: parselmouth.Data*, *file_path: str*, *format: parselmouth.Data.FileFormat = <FileFormat.TEXT: 0>*) → None

save_as_binary_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_short_text_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_text_file(*self:* parselmouth.Data, *file_path: str*) → None

__hash__ = None

property class_name

property full_name

property name

3.1.5 parselmouth.Formant

class parselmouth.**Formant**

Bases: *TimeFrameSampled*, *Sampled*

Methods

__init__
copy
frame_number_to_time
get_bandwidth_at_time
get_end_time
get_frame_number_from_time

continues on next page

Table 2 – continued from previous page

get_number_of_frames	
get_start_time	
get_time_from_frame_number	
get_time_step	
get_total_duration	
get_value_at_time	
info	
read	Read a file into a *parselmouth.Data* object.
save	
save_as_binary_file	
save_as_short_text_file	
save_as_text_file	
scale_times_by	
scale_times_to	
scale_x_by	
scale_x_to	
shift_times_by	
shift_times_to	
shift_x_by	
shift_x_to	
t_bins	
t_grid	
time_to_frame_number	
ts	
x_bins	
x_grid	

continues on next page

Table 2 – continued from previous page

xs

Attributes

centre_time
class_name
dt
duration
dx
end_time
full_name
n_frames
name
nt
nx
start_time
t1
time_range
time_step
tmax
tmin
total_duration
trange
x1
xmax
xmin
xrange

class FileFormat

Bases: pybind11_object

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.Data.FileFormat) → int

__init__(*self:* parselmouth.Data.FileFormat, *value: int*) → None
__init__(*self:* parselmouth.Data.FileFormat, *arg0: str*) → None

__int__(*self:* parselmouth.Data.FileFormat) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()
name(self: handle) -> str

BINARY = <FileFormat.BINARY: 2>

SHORT_TEXT = <FileFormat.SHORT_TEXT: 1>

TEXT = <FileFormat.TEXT: 0>

property name

property value

__copy__(*self:* parselmouth.Data) → *parselmouth.Data*

__deepcopy__(*self:* parselmouth.Data, *memo: dict*) → *parselmouth.Data*

__eq__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__init__(**args*, ***kwargs*)

__len__(*self:* parselmouth.Sampled) → int

__ne__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__new__(***kwargs*)

__str__(*self:* parselmouth.Thing) → str

copy(*self:* parselmouth.Data) → *parselmouth.Data*

frame_number_to_time(*self:* parselmouth.Sampled, *frame_number: Positive[int]*) → float

get_bandwidth_at_time(*self: parselmouth.Formant, formant_number: Positive[int], time: float, unit: parselmouth.FormantUnit = <FormantUnit.HERTZ: 0>*) → float

get_end_time(*self:* parselmouth.Function) → float

get_frame_number_from_time(*self:* parselmouth.Sampled, *time: float*) → float

get_number_of_frames(*self:* parselmouth.Sampled) → int

get_start_time(*self:* parselmouth.Function) → float

get_time_from_frame_number(*self:* parselmouth.Sampled, *frame_number: Positive[int]*) → float

get_time_step(*self:* parselmouth.Sampled) → float

get_total_duration(*self:* parselmouth.Function) → float

get_value_at_time(*self: parselmouth.Formant, formant_number: Positive[int], time: float, unit: parselmouth.FormantUnit = <FormantUnit.HERTZ: 0>*) → float

info(*self:* parselmouth.Thing) → str

static read(*file_path: str*) → *parselmouth.Data*

Read a file into a `parselmouth.Data` object.

Parameters
file_path (*str*) – The path of the file on disk to read.

Returns
The Praat Data object that was read.

Return type
parselmouth.Data

See also:

Praat: "Read from file…"

save(*self: parselmouth.Data, file_path: str, format: parselmouth.Data.FileFormat = <FileFormat.TEXT: 0>*) → None

save_as_binary_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_short_text_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_text_file(*self:* parselmouth.Data, *file_path: str*) → None

scale_times_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_times_to(*self:* parselmouth.Function, *new_start_time: float*, *new_end_time: float*) → None

scale_x_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_x_to(*self:* parselmouth.Function, *new_xmin: float*, *new_xmax: float*) → None

shift_times_by(*self:* parselmouth.Function, *seconds: float*) → None

shift_times_to(*self:* parselmouth.Function, *time: float*, *new_time: float*) → None
shift_times_to(*self:* parselmouth.Function, *time: str*, *new_time: float*) → None

shift_x_by(*self:* parselmouth.Function, *shift: float*) → None

shift_x_to(*self:* parselmouth.Function, *x: float*, *new_x: float*) → None

t_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

t_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

time_to_frame_number(*self:* parselmouth.Sampled, *time: float*) → float

ts(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

xs(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

__hash__ = None

property centre_time

property class_name

property dt

property duration

property dx

property end_time

property full_name

property n_frames

property name

property nt

property nx

property start_time

property t1

property time_range

property time_step

property tmax

property tmin

property total_duration

property trange

property x1

property xmax

property xmin

property xrange

3.1.6 parselmouth.FormantUnit

class parselmouth.**FormantUnit**

Bases: pybind11_object

Methods

__init__

Attributes

BARK
HERTZ
name
value

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.FormantUnit) → int

__init__(*self:* parselmouth.FormantUnit, *value: int*) → None

__init__(*self:* parselmouth.FormantUnit, *arg0: str*) → None

__int__(*self:* parselmouth.FormantUnit) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()

name(self: handle) -> str

BARK = <FormantUnit.BARK: 1>

HERTZ = <FormantUnit.HERTZ: 0>

property name

property value

3.1.7 parselmouth.Function

class parselmouth.**Function**

Bases: *Data*

Methods

__init__	
copy	
info	
read	Read a file into a *parselmouth.Data* object.
save	
save_as_binary_file	
save_as_short_text_file	
save_as_text_file	
scale_x_by	
scale_x_to	
shift_x_by	
shift_x_to	

Attributes

class_name	
full_name	
name	
xmax	
xmin	
xrange	

class FileFormat

Bases: pybind11_object

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.Data.FileFormat) → int

__init__(*self:* parselmouth.Data.FileFormat, *value: int*) → None
__init__(*self:* parselmouth.Data.FileFormat, *arg0: str*) → None

__int__(*self:* parselmouth.Data.FileFormat) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()
name(self: handle) -> str

BINARY = <FileFormat.BINARY: 2>

SHORT_TEXT = <FileFormat.SHORT_TEXT: 1>

TEXT = <FileFormat.TEXT: 0>

property name

property value

__copy__(*self:* parselmouth.Data) → *parselmouth.Data*

__deepcopy__(*self:* parselmouth.Data, *memo: dict*) → *parselmouth.Data*

__eq__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__init__(**args*, ***kwargs*)

__ne__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__new__(***kwargs*)

__str__(*self:* parselmouth.Thing) → str

copy(*self:* parselmouth.Data) → *parselmouth.Data*

info(*self:* parselmouth.Thing) → str

static read(*file_path: str*) → *parselmouth.Data*
Read a file into a `parselmouth.Data` object.

Parameters
file_path (`str`) – The path of the file on disk to read.

Returns
The Praat Data object that was read.

Return type
parselmouth.Data

See also:

Praat: "Read from file…"

save(*self: parselmouth.Data*, *file_path: str*, *format: parselmouth.Data.FileFormat = <FileFormat.TEXT: 0>*) → None

save_as_binary_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_short_text_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_text_file(*self:* parselmouth.Data, *file_path: str*) → None

scale_x_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_x_to(*self:* parselmouth.Function, *new_xmin: float*, *new_xmax: float*) → None

shift_x_by(*self:* parselmouth.Function, *shift: float*) → None

shift_x_to(*self:* parselmouth.Function, *x: float*, *new_x: float*) → None

__hash__ = None

property class_name

property full_name

property name

property xmax

property xmin

property xrange

3.1.8 parselmouth.Harmonicity

class parselmouth.**Harmonicity**

Bases: *TimeFrameSampled*, *Vector*

Methods

__init__
add
as_array
at_xy
copy
divide
formula
frame_number_to_time

continues on next page

Table 3 – continued from previous page

get_column_distance	
get_end_time	
get_frame_number_from_time	
get_highest_x	
get_highest_y	
get_lowest_x	
get_lowest_y	
get_maximum	
get_minimum	
get_number_of_columns	
get_number_of_frames	
get_number_of_rows	
get_row_distance	
get_start_time	
get_sum	
get_time_from_frame_number	
get_time_step	
get_total_duration	
get_value	
get_value_at_xy	
get_value_in_cell	
get_x_of_column	
get_y_of_row	
info	
multiply	
read	Read a file into a *parselmouth.Data* object.

continues on next page

Table 3 – continued from previous page

save
save_as_binary_file
save_as_headerless_spreadsheet_file
save_as_matrix_text_file
save_as_short_text_file
save_as_text_file
scale
scale_peak
scale_times_by
scale_times_to
scale_x_by
scale_x_to
set_value
shift_times_by
shift_times_to
shift_x_by
shift_x_to
subtract
subtract_mean
t_bins
t_grid
time_to_frame_number
ts
x_bins
x_grid
xs

continues on next page

Table 3 – continued from previous page

y_bins
y_grid
ys

Attributes

centre_time
class_name
dt
duration
dx
dy
end_time
full_name
n_columns
n_frames
n_rows
name
nt
nx
ny
start_time
t1
time_range
time_step
tmax

continues on next page

Table 4 – continued from previous page

tmin
total_duration
trange
values
x1
xmax
xmin
xrange
y1
ymax
ymin
yrange

class FileFormat

Bases: pybind11_object

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.Data.FileFormat) → int

__init__(*self:* parselmouth.Data.FileFormat, *value: int*) → None

__init__(*self:* parselmouth.Data.FileFormat, *arg0: str*) → None

__int__(*self:* parselmouth.Data.FileFormat) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()

name(self: handle) -> str

BINARY = <FileFormat.BINARY: 2>

SHORT_TEXT = <FileFormat.SHORT_TEXT: 1>

TEXT = <FileFormat.TEXT: 0>

property name

property value

__add__(*self:* parselmouth.Vector, *number:* *float*) → *parselmouth.Vector*

__copy__(*self:* parselmouth.Data) → *parselmouth.Data*

__deepcopy__(*self:* parselmouth.Data, *memo:* *dict*) → *parselmouth.Data*

__eq__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__iadd__(*self:* parselmouth.Vector, *number:* *float*) → *parselmouth.Vector*

__imul__(*self:* parselmouth.Vector, *factor:* *float*) → *parselmouth.Vector*

__init__(**args*, ***kwargs*)

__isub__(*self:* parselmouth.Vector, *number:* *float*) → *parselmouth.Vector*

__itruediv__(*self:* parselmouth.Vector, *factor:* *float*) → *parselmouth.Vector*

__len__(*self:* parselmouth.Sampled) → int

__mul__(*self:* parselmouth.Vector, *factor:* *float*) → *parselmouth.Vector*

__ne__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__new__(***kwargs*)

__radd__(*self:* parselmouth.Vector, *number:* *float*) → *parselmouth.Vector*

__rmul__(*self:* parselmouth.Vector, *factor:* *float*) → *parselmouth.Vector*

__str__(*self:* parselmouth.Thing) → str

__sub__(*self:* parselmouth.Vector, *number:* *float*) → *parselmouth.Vector*

__truediv__(*self:* parselmouth.Vector, *factor:* *float*) → *parselmouth.Vector*

add(*self:* parselmouth.Vector, *number:* *float*) → None

as_array(*self:* parselmouth.Matrix) → numpy.ndarray[numpy.float64]

at_xy(*self:* parselmouth.Matrix, *x:* *float*, *y:* *float*) → float

copy(*self:* parselmouth.Data) → *parselmouth.Data*

divide(*self:* parselmouth.Vector, *factor:* *float*) → None

formula(*self:* parselmouth.Matrix, *formula:* *str*, *from_x:* *float* | *None* = None, *to_x:* *float* | *None* = None, *from_y:* *float* | *None* = None, *to_y:* *float* | *None* = None) → None

formula(*self:* parselmouth.Matrix, *formula:* *str*, *x_range:* *Tuple[float* | *None, float* | *None]* = (None, None), *y_range:* *Tuple[float* | *None, float* | *None]* = (None, None)) → None

frame_number_to_time(*self:* parselmouth.Sampled, *frame_number:* *Positive[int]*) → float

get_column_distance(*self:* parselmouth.Matrix) → float

get_end_time(*self:* parselmouth.Function) → float

get_frame_number_from_time(*self:* parselmouth.Sampled, *time:* *float*) → float

get_highest_x(*self:* parselmouth.Matrix) → float

get_highest_y(*self:* parselmouth.Matrix) → float

get_lowest_x(*self:* parselmouth.Matrix) → float

get_lowest_y(*self:* parselmouth.Matrix) → float

get_maximum(*self:* parselmouth.Matrix) → float

get_minimum(*self:* parselmouth.Matrix) → float

get_number_of_columns(*self:* parselmouth.Matrix) → int

get_number_of_frames(*self:* parselmouth.Sampled) → int

get_number_of_rows(*self:* parselmouth.Matrix) → int

get_row_distance(*self:* parselmouth.Matrix) → float

get_start_time(*self:* parselmouth.Function) → float

get_sum(*self:* parselmouth.Matrix) → float

get_time_from_frame_number(*self:* parselmouth.Sampled, *frame_number: Positive[int]*) → float

get_time_step(*self:* parselmouth.Sampled) → float

get_total_duration(*self:* parselmouth.Function) → float

get_value(*self: parselmouth.Harmonicity*, *time: float*, *interpolation: parselmouth.ValueInterpolation = <ValueInterpolation.CUBIC: 2>*) → float

get_value_at_xy(*self:* parselmouth.Matrix, *x: float*, *y: float*) → float

get_value_in_cell(*self:* parselmouth.Matrix, *row_number: Positive[int]*, *column_number: Positive[int]*) → float

get_x_of_column(*self:* parselmouth.Matrix, *column_number: Positive[int]*) → float

get_y_of_row(*self:* parselmouth.Matrix, *row_number: Positive[int]*) → float

info(*self:* parselmouth.Thing) → str

multiply(*self:* parselmouth.Vector, *factor: float*) → None

static read(*file_path: str*) → *parselmouth.Data*

Read a file into a `parselmouth.Data` object.

Parameters
file_path (`str`) – The path of the file on disk to read.

Returns
The Praat Data object that was read.

Return type
parselmouth.Data

See also:

Praat: "Read from file…"

save(*self: parselmouth.Data*, *file_path: str*, *format: parselmouth.Data.FileFormat = <FileFormat.TEXT: 0>*) → None

save_as_binary_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_headerless_spreadsheet_file(*self:* parselmouth.Matrix, *file_path: str*) → None

save_as_matrix_text_file(*self:* parselmouth.Matrix, *file_path: str*) → None

save_as_short_text_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_text_file(*self:* parselmouth.Data, *file_path: str*) → None

scale(*self:* parselmouth.Vector, *scale: Positive[float]*) → None

scale_peak(*self:* parselmouth.Vector, *new_peak: Positive[float] = 0.99*) → None

scale_times_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_times_to(*self:* parselmouth.Function, *new_start_time: float*, *new_end_time: float*) → None

scale_x_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_x_to(*self:* parselmouth.Function, *new_xmin: float*, *new_xmax: float*) → None

set_value(*self:* parselmouth.Matrix, *row_number: Positive[int]*, *column_number: Positive[int]*, *new_value: float*) → None

shift_times_by(*self:* parselmouth.Function, *seconds: float*) → None

shift_times_to(*self:* parselmouth.Function, *time: float*, *new_time: float*) → None

shift_times_to(*self:* parselmouth.Function, *time: str*, *new_time: float*) → None

shift_x_by(*self:* parselmouth.Function, *shift: float*) → None

shift_x_to(*self:* parselmouth.Function, *x: float*, *new_x: float*) → None

subtract(*self:* parselmouth.Vector, *number: float*) → None

subtract_mean(*self:* parselmouth.Vector) → None

t_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

t_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

time_to_frame_number(*self:* parselmouth.Sampled, *time: float*) → float

ts(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

xs(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

y_bins(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

y_grid(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

ys(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

__hash__ = None

property centre_time

property class_name

property dt

property duration

property dx

property dy

property end_time

property full_name

property n_columns

property n_frames

property n_rows

property name

property nt

property nx

property ny

property start_time

property t1

property time_range

property time_step

property tmax

property tmin

property total_duration

property trange

property values

property x1

property xmax

property xmin

property xrange

property y1

property ymax

property ymin

property yrange

3.1.9 parselmouth.Intensity

class parselmouth.**Intensity**

Bases: *TimeFrameSampled*, *Vector*

Methods

__init__
add
as_array
at_xy
copy
divide
formula
frame_number_to_time
get_average
get_column_distance
get_end_time
get_frame_number_from_time
get_highest_x
get_highest_y
get_lowest_x
get_lowest_y
get_maximum
get_minimum
get_number_of_columns

continues on next page

Table 5 – continued from previous page

get_number_of_frames	
get_number_of_rows	
get_row_distance	
get_start_time	
get_sum	
get_time_from_frame_number	
get_time_step	
get_total_duration	
get_value	
get_value_at_xy	
get_value_in_cell	
get_x_of_column	
get_y_of_row	
info	
multiply	
read	Read a file into a *parselmouth.Data* object.
save	
save_as_binary_file	
save_as_headerless_spreadsheet_file	
save_as_matrix_text_file	
save_as_short_text_file	
save_as_text_file	
scale	
scale_peak	
scale_times_by	
scale_times_to	

continues on next page

Table 5 – continued from previous page

scale_x_by
scale_x_to
set_value
shift_times_by
shift_times_to
shift_x_by
shift_x_to
subtract
subtract_mean
t_bins
t_grid
time_to_frame_number
ts
x_bins
x_grid
xs
y_bins
y_grid
ys

Attributes

centre_time
class_name
dt
duration

continues on next page

Table 6 – continued from previous page

dx
dy
end_time
full_name
n_columns
n_frames
n_rows
name
nt
nx
ny
start_time
t1
time_range
time_step
tmax
tmin
total_duration
trange
values
x1
xmax
xmin
xrange
y1
ymax

continues on next page

Table 6 – continued from previous page

ymin
yrange

class AveragingMethod

Bases: pybind11_object

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.Intensity.AveragingMethod) → int

__init__(*self:* parselmouth.Intensity.AveragingMethod, *value: int*) → None
__init__(*self:* parselmouth.Intensity.AveragingMethod, *arg0: str*) → None

__int__(*self:* parselmouth.Intensity.AveragingMethod) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()

name(self: handle) -> str

DB = <AveragingMethod.DB: 3>

ENERGY = <AveragingMethod.ENERGY: 1>

MEDIAN = <AveragingMethod.MEDIAN: 0>

SONES = <AveragingMethod.SONES: 2>

property name

property value

class FileFormat

Bases: pybind11_object

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.Data.FileFormat) → int

__init__(*self:* parselmouth.Data.FileFormat, *value: int*) → None
__init__(*self:* parselmouth.Data.FileFormat, *arg0: str*) → None

__int__(*self:* parselmouth.Data.FileFormat) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()

name(self: handle) -> str

BINARY = <FileFormat.BINARY: 2>

SHORT_TEXT = <FileFormat.SHORT_TEXT: 1>

TEXT = <FileFormat.TEXT: 0>

property name

property value

__add__(*self:* parselmouth.Vector, *number: float*) → *parselmouth.Vector*

__copy__(*self:* parselmouth.Data) → *parselmouth.Data*

__deepcopy__(*self:* parselmouth.Data, *memo: dict*) → *parselmouth.Data*

__eq__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__iadd__(*self:* parselmouth.Vector, *number: float*) → *parselmouth.Vector*

__imul__(*self:* parselmouth.Vector, *factor: float*) → *parselmouth.Vector*

__init__(**args*, ***kwargs*)

__isub__(*self:* parselmouth.Vector, *number: float*) → *parselmouth.Vector*

__itruediv__(*self:* parselmouth.Vector, *factor: float*) → *parselmouth.Vector*

__len__(*self:* parselmouth.Sampled) → int

__mul__(*self:* parselmouth.Vector, *factor: float*) → *parselmouth.Vector*

__ne__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__new__(***kwargs*)

__radd__(*self:* parselmouth.Vector, *number: float*) → *parselmouth.Vector*

__rmul__(*self:* parselmouth.Vector, *factor: float*) → *parselmouth.Vector*

__str__(*self:* parselmouth.Thing) → str

__sub__(*self:* parselmouth.Vector, *number: float*) → *parselmouth.Vector*

__truediv__(*self:* parselmouth.Vector, *factor: float*) → *parselmouth.Vector*

add(*self:* parselmouth.Vector, *number: float*) → None

as_array(*self:* parselmouth.Matrix) → numpy.ndarray[numpy.float64]

at_xy(*self:* parselmouth.Matrix, *x: float*, *y: float*) → float

copy(*self:* parselmouth.Data) → *parselmouth.Data*

divide(*self:* parselmouth.Vector, *factor: float*) → None

formula(*self:* parselmouth.Matrix, *formula: str*, *from_x: float | None = None*, *to_x: float | None = None*, *from_y: float | None = None*, *to_y: float | None = None*) → None

formula(*self:* parselmouth.Matrix, *formula: str*, *x_range: Tuple[float | None, float | None] = (None, None)*, *y_range: Tuple[float | None, float | None] = (None, None)*) → None

frame_number_to_time(*self:* parselmouth.Sampled, *frame_number: Positive[int]*) → float

get_average(*self: parselmouth.Intensity*, *from_time: Optional[float] = None*, *to_time: Optional[float] = None*, *averaging_method: parselmouth.Intensity.AveragingMethod = <AveragingMethod.ENERGY: 1>*) → float

get_column_distance(*self:* parselmouth.Matrix) → float

get_end_time(*self:* parselmouth.Function) → float

get_frame_number_from_time(*self:* parselmouth.Sampled, *time: float*) → float

get_highest_x(*self:* parselmouth.Matrix) → float

get_highest_y(*self:* parselmouth.Matrix) → float

get_lowest_x(*self:* parselmouth.Matrix) → float

get_lowest_y(*self:* parselmouth.Matrix) → float

get_maximum(*self:* parselmouth.Matrix) → float

get_minimum(*self:* parselmouth.Matrix) → float

get_number_of_columns(*self:* parselmouth.Matrix) → int

get_number_of_frames(*self:* parselmouth.Sampled) → int

get_number_of_rows(*self:* parselmouth.Matrix) → int

get_row_distance(*self:* parselmouth.Matrix) → float

get_start_time(*self:* parselmouth.Function) → float

get_sum(*self:* parselmouth.Matrix) → float

get_time_from_frame_number(*self:* parselmouth.Sampled, *frame_number: Positive[int]*) → float

get_time_step(*self:* parselmouth.Sampled) → float

get_total_duration(*self:* parselmouth.Function) → float

get_value(*self: parselmouth.Intensity*, *time: float*, *interpolation: parselmouth.ValueInterpolation = <ValueInterpolation.CUBIC: 2>*) → float

get_value_at_xy(*self:* parselmouth.Matrix, *x: float*, *y: float*) → float

get_value_in_cell(*self:* parselmouth.Matrix, *row_number: Positive[int]*, *column_number: Positive[int]*) → float

get_x_of_column(*self:* parselmouth.Matrix, *column_number: Positive[int]*) → float

get_y_of_row(*self:* parselmouth.Matrix, *row_number: Positive[int]*) → float

info(*self:* parselmouth.Thing) → str

multiply(*self:* parselmouth.Vector, *factor: float*) → None

static read(*file_path: str*) → *parselmouth.Data*

Read a file into a `parselmouth.Data` object.

Parameters
file_path (`str`) – The path of the file on disk to read.

Returns
The Praat Data object that was read.

Return type
parselmouth.Data

See also:

Praat: "Read from file…"

save(*self: parselmouth.Data*, *file_path: str*, *format: parselmouth.Data.FileFormat = <FileFormat.TEXT: 0>*) → None

save_as_binary_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_headerless_spreadsheet_file(*self:* parselmouth.Matrix, *file_path: str*) → None

save_as_matrix_text_file(*self:* parselmouth.Matrix, *file_path: str*) → None

save_as_short_text_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_text_file(*self:* parselmouth.Data, *file_path: str*) → None

scale(*self:* parselmouth.Vector, *scale: Positive[float]*) → None

scale_peak(*self:* parselmouth.Vector, *new_peak: Positive[float] = 0.99*) → None

scale_times_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_times_to(*self:* parselmouth.Function, *new_start_time: float*, *new_end_time: float*) → None

scale_x_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_x_to(*self:* parselmouth.Function, *new_xmin: float*, *new_xmax: float*) → None

set_value(*self:* parselmouth.Matrix, *row_number: Positive[int]*, *column_number: Positive[int]*, *new_value: float*) → None

shift_times_by(*self:* parselmouth.Function, *seconds: float*) → None

shift_times_to(*self:* parselmouth.Function, *time: float*, *new_time: float*) → None
shift_times_to(*self:* parselmouth.Function, *time: str*, *new_time: float*) → None

shift_x_by(*self:* parselmouth.Function, *shift: float*) → None

shift_x_to(*self:* parselmouth.Function, *x: float*, *new_x: float*) → None

subtract(*self:* parselmouth.Vector, *number: float*) → None

subtract_mean(*self:* parselmouth.Vector) → None

t_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

t_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

time_to_frame_number(*self:* parselmouth.Sampled, *time:* *float*) → float

ts(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

xs(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

y_bins(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

y_grid(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

ys(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

__hash__ = None

property centre_time

property class_name

property dt

property duration

property dx

property dy

property end_time

property full_name

property n_columns

property n_frames

property n_rows

property name

property nt

property nx

property ny

property start_time

property t1

property time_range

property time_step

property tmax

property tmin

property total_duration

property trange

property values

property x1

property xmax

property xmin

property xrange

property y1

property ymax

property ymin

property yrange

3.1.10 parselmouth.Interpolation

parselmouth.**Interpolation**

alias of *ValueInterpolation*

3.1.11 parselmouth.MFCC

class parselmouth.**MFCC**

Bases: *CC*

Methods

__init__
convolve
copy
cross_correlate
extract_features
frame_number_to_time
get_c0_value_in_frame

continues on next page

Table 7 – continued from previous page

get_end_time	
get_frame	
get_frame_number_from_time	
get_number_of_coefficients	
get_number_of_frames	
get_start_time	
get_time_from_frame_number	
get_time_step	
get_total_duration	
get_value_in_frame	
info	
read	Read a file into a *parselmouth.Data* object.
save	
save_as_binary_file	
save_as_short_text_file	
save_as_text_file	
scale_times_by	
scale_times_to	
scale_x_by	
scale_x_to	
shift_times_by	
shift_times_to	
shift_x_by	
shift_x_to	
t_bins	
t_grid	

continues on next page

Table 7 – continued from previous page

time_to_frame_number
to_array
to_matrix
to_matrix_features
to_sound
ts
x_bins
x_grid
xs

Attributes

centre_time
class_name
dt
duration
dx
end_time
fmax
fmin
full_name
max_n_coefficients
n_frames
name
nt
nx
start_time
t1
time_range
time_step
tmax
tmin
total_duration
trange
x1
xmax
xmin
xrange

class FileFormat

Bases: pybind11_object

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.Data.FileFormat) → int

__init__(*self:* parselmouth.Data.FileFormat, *value: int*) → None
__init__(*self:* parselmouth.Data.FileFormat, *arg0: str*) → None

__int__(*self:* parselmouth.Data.FileFormat) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()

name(self: handle) -> str

BINARY = <FileFormat.BINARY: 2>

SHORT_TEXT = <FileFormat.SHORT_TEXT: 1>

TEXT = <FileFormat.TEXT: 0>

property name

property value

class Frame

Bases: pybind11_object

__getitem__(*self:* parselmouth.CC.Frame, *i: int*) → float

__init__(**args*, ***kwargs*)

__len__(*self:* parselmouth.CC.Frame) → int

__new__(***kwargs*)

__setitem__(*self:* parselmouth.CC.Frame, *i: int*, *value: float*) → None

to_array(*self:* parselmouth.CC.Frame) → numpy.ndarray[numpy.float64]

property c

property c0

__copy__(*self:* parselmouth.Data) → *parselmouth.Data*

__deepcopy__(*self:* parselmouth.Data, *memo: dict*) → *parselmouth.Data*

__eq__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__getitem__(*self:* parselmouth.CC, *i: int*) → *parselmouth.CC.Frame*
__getitem__(*self:* parselmouth.CC, *ij: Tuple[int, int]*) → float

__init__(**args*, ***kwargs*)

__iter__(*self:* parselmouth.CC) → Iterator

__len__(*self:* parselmouth.Sampled) → int

__ne__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__new__(***kwargs*)

__setitem__(*self:* parselmouth.CC, *ij: Tuple[int, int]*, *value: float*) → None

__str__(*self:* parselmouth.Thing) → str

convolve(*self: parselmouth.MFCC*, *other: parselmouth.MFCC*, *scaling: parselmouth.AmplitudeScaling = <AmplitudeScaling.PEAK_0_99: 4>*, *signal_outside_time_domain: parselmouth.SignalOutsideTimeDomain = <SignalOutsideTimeDomain.ZERO: 1>*) → *parselmouth.Sound*

copy(*self:* parselmouth.Data) → *parselmouth.Data*

cross_correlate(*self: parselmouth.MFCC*, *other: parselmouth.MFCC*, *scaling: parselmouth.AmplitudeScaling = <AmplitudeScaling.PEAK_0_99: 4>*, *signal_outside_time_domain: parselmouth.SignalOutsideTimeDomain = <SignalOutsideTimeDomain.ZERO: 1>*) → *parselmouth.Sound*

extract_features(*self:* parselmouth.MFCC, *window_length: Positive[float] = 0.025*, *include_energy: bool = False*) → *parselmouth.Matrix*

frame_number_to_time(*self:* parselmouth.Sampled, *frame_number: Positive[int]*) → float

get_c0_value_in_frame(*self:* parselmouth.CC, *frame_number: Positive[int]*) → float

get_end_time(*self:* parselmouth.Function) → float

get_frame(*self:* parselmouth.CC, *frame_number: Positive[int]*) → *parselmouth.CC.Frame*

get_frame_number_from_time(*self:* parselmouth.Sampled, *time: float*) → float

get_number_of_coefficients(*self:* parselmouth.CC, *frame_number: Positive[int]*) → int

get_number_of_frames(*self:* parselmouth.Sampled) → int

get_start_time(*self:* parselmouth.Function) → float

get_time_from_frame_number(*self:* parselmouth.Sampled, *frame_number: Positive[int]*) → float

get_time_step(*self:* parselmouth.Sampled) → float

get_total_duration(*self:* parselmouth.Function) → float

get_value_in_frame(*self:* parselmouth.CC, *frame_number: Positive[int]*, *index: Positive[int]*) → float

info(*self:* parselmouth.Thing) → str

static read(*file_path: str*) → *parselmouth.Data*

Read a file into a `parselmouth.Data` object.

Parameters

file_path (`str`) – The path of the file on disk to read.

Returns
The Praat Data object that was read.

Return type
parselmouth.Data

See also:

Praat: "Read from file…"

save(*self: parselmouth.Data*, *file_path: str*, *format: parselmouth.Data.FileFormat = <FileFormat.TEXT: 0>*) → None

save_as_binary_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_short_text_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_text_file(*self:* parselmouth.Data, *file_path: str*) → None

scale_times_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_times_to(*self:* parselmouth.Function, *new_start_time: float*, *new_end_time: float*) → None

scale_x_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_x_to(*self:* parselmouth.Function, *new_xmin: float*, *new_xmax: float*) → None

shift_times_by(*self:* parselmouth.Function, *seconds: float*) → None

shift_times_to(*self:* parselmouth.Function, *time: float*, *new_time: float*) → None
shift_times_to(*self:* parselmouth.Function, *time: str*, *new_time: float*) → None

shift_x_by(*self:* parselmouth.Function, *shift: float*) → None

shift_x_to(*self:* parselmouth.Function, *x: float*, *new_x: float*) → None

t_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

t_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

time_to_frame_number(*self:* parselmouth.Sampled, *time: float*) → float

to_array(*self:* parselmouth.CC) → numpy.ndarray[numpy.float64]

to_matrix(*self:* parselmouth.CC) → *parselmouth.Matrix*

to_matrix_features(*self:* parselmouth.MFCC, *window_length: Positive[float] = 0.025*, *include_energy: bool = False*) → *parselmouth.Matrix*

to_sound(*self:* parselmouth.MFCC) → *parselmouth.Sound*

ts(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

xs(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

__hash__ = None

property centre_time

property class_name

property dt

property duration

property dx

property end_time

property fmax

property fmin

property full_name

property max_n_coefficients

property n_frames

property name

property nt

property nx

property start_time

property t1

property time_range

property time_step

property tmax

property tmin

property total_duration

property trange

property x1

property xmax

property xmin

property xrange

3.1.12 parselmouth.Matrix

class parselmouth.**Matrix**

Bases: *SampledXY*

Methods

__init__	
as_array	
at_xy	
copy	
formula	
get_column_distance	
get_highest_x	
get_highest_y	
get_lowest_x	
get_lowest_y	
get_maximum	
get_minimum	
get_number_of_columns	
get_number_of_rows	
get_row_distance	
get_sum	
get_value_at_xy	
get_value_in_cell	
get_x_of_column	
get_y_of_row	
info	
read	Read a file into a *parselmouth.Data* object.

continues on next page

Table 8 – continued from previous page

save
save_as_binary_file
save_as_headerless_spreadsheet_file
save_as_matrix_text_file
save_as_short_text_file
save_as_text_file
scale_x_by
scale_x_to
set_value
shift_x_by
shift_x_to
x_bins
x_grid
xs
y_bins
y_grid
ys

Attributes

class_name
dx
dy
full_name
n_columns
n_rows
name
nx
ny
values
x1
xmax
xmin
xrange
y1
ymax
ymin
yrange

class FileFormat

Bases: pybind11_object

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.Data.FileFormat) → int

__init__(*self:* parselmouth.Data.FileFormat, *value: int*) → None
__init__(*self:* parselmouth.Data.FileFormat, *arg0: str*) → None

__int__(*self:* parselmouth.Data.FileFormat) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()
name(self: handle) -> str

BINARY = <FileFormat.BINARY: 2>

SHORT_TEXT = <FileFormat.SHORT_TEXT: 1>

TEXT = <FileFormat.TEXT: 0>

property name

property value

__copy__(*self:* parselmouth.Data) → *parselmouth.Data*

__deepcopy__(*self:* parselmouth.Data, *memo: dict*) → *parselmouth.Data*

__eq__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__init__(**args*, ***kwargs*)

__len__(*self:* parselmouth.Sampled) → int

__ne__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__new__(***kwargs*)

__str__(*self:* parselmouth.Thing) → str

as_array(*self:* parselmouth.Matrix) → numpy.ndarray[numpy.float64]

at_xy(*self:* parselmouth.Matrix, *x: float*, *y: float*) → float

copy(*self:* parselmouth.Data) → *parselmouth.Data*

formula(*self:* parselmouth.Matrix, *formula: str*, *from_x: float | None = None*, *to_x: float | None = None*, *from_y: float | None = None*, *to_y: float | None = None*) → None

formula(*self:* parselmouth.Matrix, *formula: str*, *x_range: Tuple[float | None, float | None] = (None, None)*, *y_range: Tuple[float | None, float | None] = (None, None)*) → None

get_column_distance(*self:* parselmouth.Matrix) → float

get_highest_x(*self:* parselmouth.Matrix) → float

get_highest_y(*self:* parselmouth.Matrix) → float

get_lowest_x(*self:* parselmouth.Matrix) → float

get_lowest_y(*self:* parselmouth.Matrix) → float

get_maximum(*self:* parselmouth.Matrix) → float

get_minimum(*self:* parselmouth.Matrix) → float

get_number_of_columns(*self:* parselmouth.Matrix) → int

get_number_of_rows(*self:* parselmouth.Matrix) → int

get_row_distance(*self:* parselmouth.Matrix) → float

get_sum(*self:* parselmouth.Matrix) → float

get_value_at_xy(*self:* parselmouth.Matrix, *x: float*, *y: float*) → float

get_value_in_cell(*self:* parselmouth.Matrix, *row_number: Positive[int]*, *column_number: Positive[int]*) → float

get_x_of_column(*self:* parselmouth.Matrix, *column_number: Positive[int]*) → float

get_y_of_row(*self:* parselmouth.Matrix, *row_number: Positive[int]*) → float

info(*self:* parselmouth.Thing) → str

static read(*file_path: str*) → *parselmouth.Data*

Read a file into a `parselmouth.Data` object.

Parameters
file_path (*str*) – The path of the file on disk to read.

Returns
The Praat Data object that was read.

Return type
parselmouth.Data

See also:

Praat: "Read from file…"

save(*self: parselmouth.Data*, *file_path: str*, *format: parselmouth.Data.FileFormat = <FileFormat.TEXT: 0>*) → None

save_as_binary_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_headerless_spreadsheet_file(*self:* parselmouth.Matrix, *file_path: str*) → None

save_as_matrix_text_file(*self:* parselmouth.Matrix, *file_path: str*) → None

save_as_short_text_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_text_file(*self:* parselmouth.Data, *file_path: str*) → None

scale_x_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_x_to(*self:* parselmouth.Function, *new_xmin: float*, *new_xmax: float*) → None

set_value(*self:* parselmouth.Matrix, *row_number: Positive[int]*, *column_number: Positive[int]*, *new_value: float*) → None

shift_x_by(*self:* parselmouth.Function, *shift: float*) → None

shift_x_to(*self:* parselmouth.Function, *x: float*, *new_x: float*) → None

x_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

xs(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

y_bins(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

y_grid(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

ys(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

__hash__ = None

property class_name

property dx

property dy

property full_name

property n_columns

property n_rows

property name

property nx

property ny

property values

property x1

property xmax

property xmin

property xrange

property y1

property ymax

property ymin

property yrange

3.1.13 parselmouth.Pitch

class parselmouth.**Pitch**

Bases: *TimeFrameSampled*, *Sampled*

Methods

__init__
copy
count_differences
count_voiced_frames
fifth_down
fifth_up
formula
frame_number_to_time
get_end_time
get_frame
get_frame_number_from_time
get_mean_absolute_slope
get_number_of_frames
get_slope_without_octave_jumps
get_start_time
get_time_from_frame_number
get_time_step
get_total_duration
get_value_at_time
get_value_in_frame
info
interpolate
kill_octave_jumps
octave_down
octave_up

continues on next page

Table 9 – continued from previous page

path_finder	
read	Read a file into a *parselmouth.Data* object.
save	
save_as_binary_file	
save_as_short_text_file	
save_as_text_file	
scale_times_by	
scale_times_to	
scale_x_by	
scale_x_to	
shift_times_by	
shift_times_to	
shift_x_by	
shift_x_to	
smooth	
step	
subtract_linear_fit	
t_bins	
t_grid	
time_to_frame_number	
to_array	
to_matrix	
to_sound_hum	
to_sound_pulses	
to_sound_sine	
ts	

continues on next page

Table 9 – continued from previous page

unvoice
x_bins
x_grid
xs

Attributes

ceiling
centre_time
class_name
dt
duration
dx
end_time
full_name
max_n_candidates
n_frames
name
nt
nx
selected
selected_array
start_time
t1
time_range
time_step
tmax
tmin
total_duration
trange
x1
xmax
xmin
xrange

class Candidate

Bases: pybind11_object

__init__(*args, **kwargs)

__new__(**kwargs)

property frequency

property strength

class FileFormat

Bases: pybind11_object

__eq__(self: object, other: object) → bool

__hash__(self: object) → int

__index__(self: parselmouth.Data.FileFormat) → int

__init__(self: parselmouth.Data.FileFormat, value: int) → None
__init__(self: parselmouth.Data.FileFormat, arg0: str) → None

__int__(self: parselmouth.Data.FileFormat) → int

__ne__(self: object, other: object) → bool

__new__(**kwargs)

__repr__(self: object) → str

__str__()
name(self: handle) -> str

BINARY = <FileFormat.BINARY: 2>

SHORT_TEXT = <FileFormat.SHORT_TEXT: 1>

TEXT = <FileFormat.TEXT: 0>

property name

property value

class Frame

Bases: pybind11_object

__getitem__(self: parselmouth.Pitch.Frame, i: int) → parselmouth.Pitch.Candidate

__init__(*args, **kwargs)

__len__(self: parselmouth.Pitch.Frame) → int

__new__(**kwargs)

as_array(self: parselmouth.Pitch.Frame) → numpy.ndarray

select(self: parselmouth.Pitch.Frame, candidate: parselmouth.Pitch.Candidate) → None
select(self: parselmouth.Pitch.Frame, i: int) → None

unvoice(*self:* parselmouth.Pitch.Frame) → None

property candidates

property intensity

property selected

__copy__(*self:* parselmouth.Data) → *parselmouth.Data*

__deepcopy__(*self:* parselmouth.Data, *memo: dict*) → *parselmouth.Data*

__eq__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__getitem__(*self:* parselmouth.Pitch, *i: int*) → *parselmouth.Pitch.Frame*
__getitem__(*self:* parselmouth.Pitch, *ij: Tuple[int, int]*) → *parselmouth.Pitch.Candidate*

__init__(**args*, ***kwargs*)

__iter__(*self:* parselmouth.Pitch) → Iterator

__len__(*self:* parselmouth.Sampled) → int

__ne__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__new__(***kwargs*)

__str__(*self:* parselmouth.Thing) → str

copy(*self:* parselmouth.Data) → *parselmouth.Data*

count_differences(*self:* parselmouth.Pitch, *other:* parselmouth.Pitch) → str

count_voiced_frames(*self:* parselmouth.Pitch) → int

fifth_down(*self:* parselmouth.Pitch, *from_time: float | None = None*, *to_time: float | None = None*) → None

fifth_up(*self:* parselmouth.Pitch, *from_time: float | None = None*, *to_time: float | None = None*) → None

formula(*self:* parselmouth.Pitch, *formula: str*) → None

frame_number_to_time(*self:* parselmouth.Sampled, *frame_number: Positive[int]*) → float

get_end_time(*self:* parselmouth.Function) → float

get_frame(*self:* parselmouth.Pitch, *frame_number: Positive[int]*) → *parselmouth.Pitch.Frame*

get_frame_number_from_time(*self:* parselmouth.Sampled, *time: float*) → float

get_mean_absolute_slope(*self: parselmouth.Pitch*, *unit: parselmouth.PitchUnit = <PitchUnit.HERTZ: 0>*) → float

get_number_of_frames(*self:* parselmouth.Sampled) → int

get_slope_without_octave_jumps(*self:* parselmouth.Pitch) → float

get_start_time(*self:* parselmouth.Function) → float

get_time_from_frame_number(*self:* parselmouth.Sampled, *frame_number: Positive[int]*) → float

get_time_step(*self:* parselmouth.Sampled) → float

get_total_duration(*self:* parselmouth.Function) → float

get_value_at_time(*self: parselmouth.Pitch*, *time: float*, *unit: parselmouth.PitchUnit = <PitchUnit.HERTZ: 0>*, *interpolation: parselmouth.ValueInterpolation = <ValueInterpolation.LINEAR: 1>*) → float

get_value_in_frame(*self: parselmouth.Pitch*, *frame_number: int*, *unit: parselmouth.PitchUnit = <PitchUnit.HERTZ: 0>*) → float

info(*self:* parselmouth.Thing) → str

interpolate(*self:* parselmouth.Pitch) → *parselmouth.Pitch*

kill_octave_jumps(*self:* parselmouth.Pitch) → *parselmouth.Pitch*

octave_down(*self:* parselmouth.Pitch, *from_time: float | None = None*, *to_time: float | None = None*) → None

octave_up(*self:* parselmouth.Pitch, *from_time: float | None = None*, *to_time: float | None = None*) → None

path_finder(*self:* parselmouth.Pitch, *silence_threshold: float = 0.03*, *voicing_threshold: float = 0.45*, *octave_cost: float = 0.01*, *octave_jump_cost: float = 0.35*, *voiced_unvoiced_cost: float = 0.14*, *ceiling: Positive[float] = 600.0*, *pull_formants: bool = False*) → None

static read(*file_path: str*) → *parselmouth.Data*

Read a file into a `parselmouth.Data` object.

Parameters
file_path (`str`) – The path of the file on disk to read.

Returns
The Praat Data object that was read.

Return type
parselmouth.Data

See also:

Praat: "Read from file…"

save(*self: parselmouth.Data*, *file_path: str*, *format: parselmouth.Data.FileFormat = <FileFormat.TEXT: 0>*) → None

save_as_binary_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_short_text_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_text_file(*self:* parselmouth.Data, *file_path: str*) → None

scale_times_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_times_to(*self:* parselmouth.Function, *new_start_time: float*, *new_end_time: float*) → None

scale_x_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_x_to(*self:* parselmouth.Function, *new_xmin: float*, *new_xmax: float*) → None

shift_times_by(*self:* parselmouth.Function, *seconds: float*) → None

shift_times_to(*self:* parselmouth.Function, *time: float*, *new_time: float*) → None
shift_times_to(*self:* parselmouth.Function, *time: str*, *new_time: float*) → None

shift_x_by(*self:* parselmouth.Function, *shift: float*) → None

shift_x_to(*self:* parselmouth.Function, *x: float*, *new_x: float*) → None

smooth(*self:* parselmouth.Pitch, *bandwidth: Positive[float] = 10.0*) → *parselmouth.Pitch*

step(*self:* parselmouth.Pitch, *step: float*, *precision: Positive[float] = 0.1*, *from_time: float | None = None*, *to_time: float | None = None*) → None

subtract_linear_fit(*self: parselmouth.Pitch*, *unit: parselmouth.PitchUnit = <PitchUnit.HERTZ: 0>*) → *parselmouth.Pitch*

t_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

t_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

time_to_frame_number(*self:* parselmouth.Sampled, *time: float*) → float

to_array(*self:* parselmouth.Pitch) → numpy.ndarray[*parselmouth.Pitch.Candidate*]

to_matrix(*self:* parselmouth.Pitch) → *parselmouth.Matrix*

to_sound_hum(*self:* parselmouth.Pitch, *from_time: float | None = None*, *to_time: float | None = None*) → *parselmouth.Sound*

to_sound_pulses(*self:* parselmouth.Pitch, *from_time: float | None = None*, *to_time: float | None = None*) → *parselmouth.Sound*

to_sound_sine(*self:* parselmouth.Pitch, *from_time: float | None = None*, *to_time: float | None = None*, *sampling_frequency: Positive[float] = 44100.0*, *round_to_nearest_zero_crossing: float = True*) → *parselmouth.Sound*

ts(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

unvoice(*self:* parselmouth.Pitch, *from_time: float | None = None*, *to_time: float | None = None*) → None

x_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

xs(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

__hash__ = None

property ceiling

property centre_time

property class_name

property dt

property duration

property dx

property end_time

property full_name

property max_n_candidates

property n_frames

property name

property nt

property nx

property selected

property selected_array

property start_time

property t1

property time_range

property time_step

property tmax

property tmin

property total_duration

property trange

property x1

property xmax

property xmin

property xrange

3.1.14 parselmouth.PitchUnit

class parselmouth.**PitchUnit**

Bases: pybind11_object

Methods

__init__

Attributes

ERB
HERTZ
HERTZ_LOGARITHMIC
LOG_HERTZ
MEL
SEMITONES_1
SEMITONES_100
SEMITONES_200
SEMITONES_440
name
value

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.PitchUnit) → int

__init__(*self:* parselmouth.PitchUnit, *value: int*) → None
__init__(*self:* parselmouth.PitchUnit, *arg0: str*) → None

__int__(*self:* parselmouth.PitchUnit) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()
name(self: handle) -> str

ERB = <PitchUnit.ERB: 8>

HERTZ = <PitchUnit.HERTZ: 0>

HERTZ_LOGARITHMIC = <PitchUnit.HERTZ_LOGARITHMIC: 1>

LOG_HERTZ = <PitchUnit.LOG_HERTZ: 3>

MEL = <PitchUnit.MEL: 2>

SEMITONES_1 = <PitchUnit.SEMITONES_1: 4>

SEMITONES_100 = <PitchUnit.SEMITONES_100: 5>

SEMITONES_200 = <PitchUnit.SEMITONES_200: 6>

SEMITONES_440 = <PitchUnit.SEMITONES_440: 7>

property name

property value

3.1.15 parselmouth.Sampled

class parselmouth.**Sampled**

Bases: *Function*

Methods

__init__	
copy	
info	
read	Read a file into a *parselmouth.Data* object.
save	
save_as_binary_file	
save_as_short_text_file	
save_as_text_file	
scale_x_by	
scale_x_to	
shift_x_by	
shift_x_to	
x_bins	
x_grid	
xs	

Attributes

class_name
dx
full_name
name
nx
x1
xmax
xmin
xrange

class FileFormat

Bases: pybind11_object

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.Data.FileFormat) → int

__init__(*self:* parselmouth.Data.FileFormat, *value: int*) → None
__init__(*self:* parselmouth.Data.FileFormat, *arg0: str*) → None

__int__(*self:* parselmouth.Data.FileFormat) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()
name(self: handle) -> str

BINARY = <FileFormat.BINARY: 2>

SHORT_TEXT = <FileFormat.SHORT_TEXT: 1>

TEXT = <FileFormat.TEXT: 0>

property name

property value

__copy__(*self:* parselmouth.Data) → *parselmouth.Data*

__deepcopy__(*self:* parselmouth.Data, *memo: dict*) → *parselmouth.Data*

__eq__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__init__(**args*, ***kwargs*)

__len__(*self:* parselmouth.Sampled) → int

__ne__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__new__(***kwargs*)

__str__(*self:* parselmouth.Thing) → str

copy(*self:* parselmouth.Data) → *parselmouth.Data*

info(*self:* parselmouth.Thing) → str

static read(*file_path: str*) → *parselmouth.Data*

Read a file into a `parselmouth.Data` object.

Parameters
file_path (`str`) – The path of the file on disk to read.

Returns
The Praat Data object that was read.

Return type
parselmouth.Data

See also:

Praat: "Read from file…"

save(*self: parselmouth.Data*, *file_path: str*, *format: parselmouth.Data.FileFormat = <FileFormat.TEXT: 0>*) → None

save_as_binary_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_short_text_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_text_file(*self:* parselmouth.Data, *file_path: str*) → None

scale_x_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_x_to(*self:* parselmouth.Function, *new_xmin: float*, *new_xmax: float*) → None

shift_x_by(*self:* parselmouth.Function, *shift: float*) → None

shift_x_to(*self:* parselmouth.Function, *x: float*, *new_x: float*) → None

x_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

xs(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

__hash__ = None

property class_name

property dx

property full_name

property name

property nx

property x1

property xmax

property xmin

property xrange

3.1.16 parselmouth.SampledXY

class parselmouth.**SampledXY**

Bases: *Sampled*

Methods

__init__	
copy	
info	
read	Read a file into a *parselmouth.Data* object.
save	
save_as_binary_file	
save_as_short_text_file	
save_as_text_file	
scale_x_by	
scale_x_to	
shift_x_by	
shift_x_to	
x_bins	
x_grid	
xs	
y_bins	
y_grid	
ys	

Attributes

class_name
dx
dy
full_name
name
nx
ny
x1
xmax
xmin
xrange
y1
ymax
ymin
yrange

class FileFormat

Bases: pybind11_object

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.Data.FileFormat) → int

__init__(*self:* parselmouth.Data.FileFormat, *value: int*) → None

__init__(*self:* parselmouth.Data.FileFormat, *arg0: str*) → None

__int__(*self:* parselmouth.Data.FileFormat) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()
name(self: handle) -> str

BINARY = <FileFormat.BINARY: 2>

SHORT_TEXT = <FileFormat.SHORT_TEXT: 1>

TEXT = <FileFormat.TEXT: 0>

property name

property value

__copy__(*self:* parselmouth.Data) → *parselmouth.Data*

__deepcopy__(*self:* parselmouth.Data, *memo: dict*) → *parselmouth.Data*

__eq__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__init__(**args*, ***kwargs*)

__len__(*self:* parselmouth.Sampled) → int

__ne__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__new__(***kwargs*)

__str__(*self:* parselmouth.Thing) → str

copy(*self:* parselmouth.Data) → *parselmouth.Data*

info(*self:* parselmouth.Thing) → str

static read(*file_path: str*) → *parselmouth.Data*

Read a file into a `parselmouth.Data` object.

Parameters
file_path (`str`) – The path of the file on disk to read.

Returns
The Praat Data object that was read.

Return type
parselmouth.Data

See also:

Praat: "Read from file…"

save(*self: parselmouth.Data*, *file_path: str*, *format: parselmouth.Data.FileFormat = <FileFormat.TEXT: 0>*) → None

save_as_binary_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_short_text_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_text_file(*self:* parselmouth.Data, *file_path: str*) → None

scale_x_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_x_to(*self:* parselmouth.Function, *new_xmin: float*, *new_xmax: float*) → None

shift_x_by(*self:* parselmouth.Function, *shift:* *float*) → None

shift_x_to(*self:* parselmouth.Function, *x:* *float*, *new_x:* *float*) → None

x_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

xs(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

y_bins(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

y_grid(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

ys(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

__hash__ = None

property class_name

property dx

property dy

property full_name

property name

property nx

property ny

property x1

property xmax

property xmin

property xrange

property y1

property ymax

property ymin

property yrange

3.1.17 parselmouth.SignalOutsideTimeDomain

class parselmouth.**SignalOutsideTimeDomain**

Bases: pybind11_object

Methods

__init__

Attributes

SIMILAR
ZERO
name
value

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.SignalOutsideTimeDomain) → int

__init__(*self:* parselmouth.SignalOutsideTimeDomain, *value: int*) → None
__init__(*self:* parselmouth.SignalOutsideTimeDomain, *arg0: str*) → None

__int__(*self:* parselmouth.SignalOutsideTimeDomain) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()
name(self: handle) -> str

SIMILAR = <SignalOutsideTimeDomain.SIMILAR: 2>

ZERO = <SignalOutsideTimeDomain.ZERO: 1>

property name

property value

3.1.18 parselmouth.Sound

class parselmouth.**Sound**

Bases: *TimeFrameSampled*, *Vector*

A fragment of audio, represented by one or multiple channels of floating point values between -1 and 1, sampled at a fixed sampling frequency.

Corresponds to a *Praat: "Sound"* object.

See also:

Praat: "Sound", *Praat: "Sound files"*, *Praat: "Sound files 1. General structure"*

Methods

__init__	Create a new *Sound* object.
add	
as_array	
at_xy	
autocorrelate	
combine_to_stereo	
concatenate	
convert_to_mono	
convert_to_stereo	
convolve	
copy	
cross_correlate	
de_emphasize	
deepen_band_modulation	
divide	
extract_all_channels	
extract_channel	
extract_left_channel	
extract_part	

continues on next page

Table 10 – continued from previous page

extract_part_for_overlap
extract_right_channel
formula
frame_number_to_time
get_column_distance
get_end_time
get_energy
get_energy_in_air
get_frame_number_from_time
get_highest_x
get_highest_y
get_index_from_time
get_intensity
get_lowest_x
get_lowest_y
get_maximum
get_minimum
get_nearest_zero_crossing
get_number_of_channels
get_number_of_columns
get_number_of_frames
get_number_of_rows
get_number_of_samples
get_power
get_power_in_air
get_rms

continues on next page

Table 10 – continued from previous page

get_root_mean_square	
get_row_distance	
get_sampling_frequency	
get_sampling_period	
get_start_time	
get_sum	
get_time_from_frame_number	
get_time_from_index	
get_time_step	
get_total_duration	
get_value	
get_value_at_xy	
get_value_in_cell	
get_x_of_column	
get_y_of_row	
info	
lengthen	
multiply	
multiply_by_window	
override_sampling_frequency	
pre_emphasize	
read	Read a file into a *parselmouth.Data* object.
resample	
reverse	
save	Save a *Sound* object to an audio file on disk.
save_as_binary_file	
save_as_headerless_spreadsheet_file	

continues on next page

Table 10 – continued from previous page

save_as_matrix_text_file
save_as_short_text_file
save_as_text_file
scale
scale_intensity
scale_peak
scale_times_by
scale_times_to
scale_x_by
scale_x_to
set_to_zero
set_value
shift_times_by
shift_times_to
shift_x_by
shift_x_to
subtract
subtract_mean
t_bins
t_grid
time_to_frame_number
to_formant_burg
to_harmonicity
to_harmonicity_ac
to_harmonicity_cc
to_harmonicity_gne

continues on next page

Table 10 – continued from previous page

to_intensity
to_mfcc
to_pitch
to_pitch_ac
to_pitch_cc
to_pitch_shs
to_pitch_spinet
to_spectrogram
to_spectrum
ts
x_bins
x_grid
xs
y_bins
y_grid
ys

Attributes

centre_time
class_name
dt
duration
dx
dy
end_time

continues on next page

Table 11 – continued from previous page

full_name
n_channels
n_columns
n_frames
n_rows
n_samples
name
nt
nx
ny
sampling_frequency
sampling_period
start_time
t1
time_range
time_step
tmax
tmin
total_duration
trange
values
x1
xmax
xmin
xrange
y1

continues on next page

Table 11 – continued from previous page

ymax
ymin
yrange

class FileFormat

Bases: pybind11_object

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.Data.FileFormat) → int

__init__(*self:* parselmouth.Data.FileFormat, *value: int*) → None
__init__(*self:* parselmouth.Data.FileFormat, *arg0: str*) → None

__int__(*self:* parselmouth.Data.FileFormat) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()
name(self: handle) -> str

BINARY = <FileFormat.BINARY: 2>

SHORT_TEXT = <FileFormat.SHORT_TEXT: 1>

TEXT = <FileFormat.TEXT: 0>

property name

property value

class ToHarmonicityMethod

Bases: pybind11_object

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.Sound.ToHarmonicityMethod) → int

__init__(*self:* parselmouth.Sound.ToHarmonicityMethod, *value: int*) → None
__init__(*self:* parselmouth.Sound.ToHarmonicityMethod, *arg0: str*) → None

__int__(*self:* parselmouth.Sound.ToHarmonicityMethod) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()
name(self: handle) -> str

AC = <ToHarmonicityMethod.AC: 1>

CC = <ToHarmonicityMethod.CC: 0>

GNE = <ToHarmonicityMethod.GNE: 2>

property name

property value

class ToPitchMethod
Bases: pybind11_object

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.Sound.ToPitchMethod) → int

__init__(*self:* parselmouth.Sound.ToPitchMethod, *value: int*) → None
__init__(*self:* parselmouth.Sound.ToPitchMethod, *arg0: str*) → None

__int__(*self:* parselmouth.Sound.ToPitchMethod) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()
name(self: handle) -> str

AC = <ToPitchMethod.AC: 0>

CC = <ToPitchMethod.CC: 1>

SHS = <ToPitchMethod.SHS: 3>

SPINET = <ToPitchMethod.SPINET: 2>

property name

property value

__add__(*self:* parselmouth.Vector, *number: float*) → *parselmouth.Vector*

__copy__(*self:* parselmouth.Data) → *parselmouth.Data*

__deepcopy__(*self:* parselmouth.Data, *memo: dict*) → *parselmouth.Data*

__eq__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__iadd__(*self:* parselmouth.Vector, *number: float*) → *parselmouth.Vector*

__imul__(*self:* parselmouth.Vector, *factor:* *float*) → *parselmouth.Vector*

__init__(*self:* parselmouth.Sound, *other:* parselmouth.Sound) → None

__init__(*self:* parselmouth.Sound, *values:* *numpy.ndarray[numpy.float64]*, *sampling_frequency:* *Positive[float] = 44100.0*, *start_time:* *float = 0.0*) → None

__init__(*self:* parselmouth.Sound, *file_path:* *str*) → None

Create a new *Sound* object.

The new object can be created: - as a copy of an existing *Sound* object, - from an array of samples and a sampling frequency, or - by reading an audio file from disk.

Parameters

- **other** (Sound) – The *Sound* object to copy.
- **samples** (*array_like[float]*) – The samples of the new *Sound* object.
- **sampling_frequency** (*float, optional*) – The sampling frequency of the new *Sound* object (default: 44100).
- **start_time** (*float, optional*) – The start time (*xmin*) of the new *Sound* object (default: 0).
- **file_name** (*str, optional*) – The file name of the audio file to load.
- **file_path** (*str*) – The file path of an audio file to load from disk.

See also:

Praat: "Sound files 2. File types", *Praat: "Sound files 3. Files that Praat can read"*

__isub__(*self:* parselmouth.Vector, *number:* *float*) → *parselmouth.Vector*

__itruediv__(*self:* parselmouth.Vector, *factor:* *float*) → *parselmouth.Vector*

__len__(*self:* parselmouth.Sampled) → int

__mul__(*self:* parselmouth.Vector, *factor:* *float*) → *parselmouth.Vector*

__ne__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__new__(***kwargs*)

__radd__(*self:* parselmouth.Vector, *number:* *float*) → *parselmouth.Vector*

__rmul__(*self:* parselmouth.Vector, *factor:* *float*) → *parselmouth.Vector*

__str__(*self:* parselmouth.Thing) → str

__sub__(*self:* parselmouth.Vector, *number:* *float*) → *parselmouth.Vector*

__truediv__(*self:* parselmouth.Vector, *factor:* *float*) → *parselmouth.Vector*

add(*self:* parselmouth.Vector, *number:* *float*) → None

as_array(*self:* parselmouth.Matrix) → numpy.ndarray[numpy.float64]

at_xy(*self:* parselmouth.Matrix, *x:* *float*, *y:* *float*) → float

autocorrelate(*self: parselmouth.Sound*, *scaling: parselmouth.AmplitudeScaling = <AmplitudeScaling.PEAK_0_99: 4>*, *signal_outside_time_domain: parselmouth.SignalOutsideTimeDomain = <SignalOutsideTimeDomain.ZERO: 1>*) → *parselmouth.Sound*

static combine_to_stereo(*sounds: List[*parselmouth.Sound*]*) → *parselmouth.Sound*

static concatenate(*sounds: List[*parselmouth.Sound*]*, *overlap: NonNegative[float] = 0.0*) → *parselmouth.Sound*

convert_to_mono(*self:* parselmouth.Sound) → *parselmouth.Sound*

convert_to_stereo(*self:* parselmouth.Sound) → *parselmouth.Sound*

convolve(*self: parselmouth.Sound*, *other: parselmouth.Sound*, *scaling: parselmouth.AmplitudeScaling = <AmplitudeScaling.PEAK_0_99: 4>*, *signal_outside_time_domain: parselmouth.SignalOutsideTimeDomain = <SignalOutsideTimeDomain.ZERO: 1>*) → *parselmouth.Sound*

copy(*self:* parselmouth.Data) → *parselmouth.Data*

cross_correlate(*self: parselmouth.Sound*, *other: parselmouth.Sound*, *scaling: parselmouth.AmplitudeScaling = <AmplitudeScaling.PEAK_0_99: 4>*, *signal_outside_time_domain: parselmouth.SignalOutsideTimeDomain = <SignalOutsideTimeDomain.ZERO: 1>*) → *parselmouth.Sound*

de_emphasize(*self:* parselmouth.Sound, *from_frequency: float = 50.0*, *normalize: bool = True*) → None

deepen_band_modulation(*self:* parselmouth.Sound, *enhancement: Positive[float] = 20.0*, *from_frequency: Positive[float] = 300.0*, *to_frequency: Positive[float] = 8000.0*, *slow_modulation: Positive[float] = 3.0*, *fast_modulation: Positive[float] = 30.0*, *band_smoothing: Positive[float] = 100.0*) → *parselmouth.Sound*

divide(*self:* parselmouth.Vector, *factor: float*) → None

extract_all_channels(*self:* parselmouth.Sound) → List[*parselmouth.Sound*]

extract_channel(*self:* parselmouth.Sound, *channel: int*) → *parselmouth.Sound*

extract_channel(*self:* parselmouth.Sound, *arg0: str*) → *parselmouth.Sound*

extract_left_channel(*self:* parselmouth.Sound) → *parselmouth.Sound*

extract_part(*self: parselmouth.Sound*, *from_time: Optional[float] = None*, *to_time: Optional[float] = None*, *window_shape: parselmouth.WindowShape = <WindowShape.RECTANGULAR: 0>*, *relative_width: Positive[float] = 1.0*, *preserve_times: bool = False*) → *parselmouth.Sound*

extract_part_for_overlap(*self: parselmouth.Sound, from_time: Optional[float] = None, to_time: Optional[float] = None, overlap: Positive[float]*) → *parselmouth.Sound*

extract_right_channel(*self:* parselmouth.Sound) → *parselmouth.Sound*

formula(*self:* parselmouth.Matrix, *formula: str*, *from_x: float | None = None*, *to_x: float | None = None*, *from_y: float | None = None*, *to_y: float | None = None*) → None

formula(*self:* parselmouth.Matrix, *formula: str*, *x_range: Tuple[float | None, float | None] = (None, None)*, *y_range: Tuple[float | None, float | None] = (None, None)*) → None

frame_number_to_time(*self:* parselmouth.Sampled, *frame_number: Positive[int]*) → float

get_column_distance(*self:* parselmouth.Matrix) → float

get_end_time(*self:* parselmouth.Function) → float

get_energy(*self:* parselmouth.Sound, *from_time: float | None = None*, *to_time: float | None = None*) → float

get_energy_in_air(*self:* parselmouth.Sound) → float

get_frame_number_from_time(*self:* parselmouth.Sampled, *time: float*) → float

get_highest_x(*self:* parselmouth.Matrix) → float

get_highest_y(*self:* parselmouth.Matrix) → float

get_index_from_time(*self:* parselmouth.Sound, *time: float*) → float

get_intensity(*self:* parselmouth.Sound) → float

get_lowest_x(*self:* parselmouth.Matrix) → float

get_lowest_y(*self:* parselmouth.Matrix) → float

get_maximum(*self:* parselmouth.Matrix) → float

get_minimum(*self:* parselmouth.Matrix) → float

get_nearest_zero_crossing(*self:* parselmouth.Sound, *time: float*, *channel: int = 1*) → float

get_number_of_channels(*self:* parselmouth.Sound) → int

get_number_of_columns(*self:* parselmouth.Matrix) → int

get_number_of_frames(*self:* parselmouth.Sampled) → int

get_number_of_rows(*self:* parselmouth.Matrix) → int

get_number_of_samples(*self:* parselmouth.Sound) → int

get_power(*self:* parselmouth.Sound, *from_time: float | None = None*, *to_time: float | None = None*) → float

get_power_in_air(*self:* parselmouth.Sound) → float

get_rms(*self:* parselmouth.Sound, *from_time: float | None = None*, *to_time: float | None = None*) → float

get_root_mean_square(*self:* parselmouth.Sound, *from_time: float | None = None*, *to_time: float | None = None*) → float

get_row_distance(*self:* parselmouth.Matrix) → float

get_sampling_frequency(*self:* parselmouth.Sound) → float

get_sampling_period(*self:* parselmouth.Sound) → float

get_start_time(*self:* parselmouth.Function) → float

get_sum(*self:* parselmouth.Matrix) → float

get_time_from_frame_number(*self:* parselmouth.Sampled, *frame_number: Positive[int]*) → float

get_time_from_index(*self:* parselmouth.Sound, *sample: int*) → float

get_time_step(*self:* parselmouth.Sampled) → float

get_total_duration(*self:* parselmouth.Function) → float

get_value(*self: parselmouth.Vector*, *x: float*, *channel: Optional[int] = None*, *interpolation: parselmouth.ValueInterpolation = <ValueInterpolation.CUBIC: 2>*) → float

get_value_at_xy(*self:* parselmouth.Matrix, *x: float*, *y: float*) → float

get_value_in_cell(*self:* parselmouth.Matrix, *row_number: Positive[int]*, *column_number: Positive[int]*) → float

get_x_of_column(*self:* parselmouth.Matrix, *column_number: Positive[int]*) → float

get_y_of_row(*self:* parselmouth.Matrix, *row_number: Positive[int]*) → float

info(*self:* parselmouth.Thing) → str

lengthen(*self: parselmouth.Sound, minimum_pitch: Positive[float] = 75.0, maximum_pitch: Positive[float] = 600.0, factor: Positive[float]*) → *parselmouth.Sound*

multiply(*self:* parselmouth.Vector, *factor: float*) → None

multiply_by_window(*self:* parselmouth.Sound, *window_shape:* parselmouth.WindowShape) → None

override_sampling_frequency(*self:* parselmouth.Sound, *new_frequency: Positive[float]*) → None

pre_emphasize(*self:* parselmouth.Sound, *from_frequency: float = 50.0*, *normalize: bool = True*) → None

static read(*file_path: str*) → *parselmouth.Data*

Read a file into a `parselmouth.Data` object.

Parameters
file_path (*str*) – The path of the file on disk to read.

Returns
The Praat Data object that was read.

Return type
parselmouth.Data

See also:

Praat: "Read from file..."

resample(*self:* parselmouth.Sound, *new_frequency: float*, *precision: int = 50*) → *parselmouth.Sound*

reverse(*self:* parselmouth.Sound, *from_time: float | None = None*, *to_time: float | None = None*) → None

save(*self:* parselmouth.Sound, *file_path: str*, *format:* parselmouth.SoundFileFormat) → None

Save a *Sound* object to an audio file on disk.

Parameters

- **file_path** (*str*) – The file path of the audio file to save to disk.
- **file_format** (*SoundFileFormat*) – The audio file format to write to. This can either be a *SoundFileFormat* value (e.g., *SoundFileFormat.WAV*), or the string representation of the value (e.g., `"WAV"`).

See also:

Praat: "Sound files 2. File types", *Praat: "Sound files 4. Files that Praat can write"*

save_as_binary_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_headerless_spreadsheet_file(*self:* parselmouth.Matrix, *file_path: str*) → None

save_as_matrix_text_file(*self:* parselmouth.Matrix, *file_path: str*) → None

save_as_short_text_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_text_file(*self:* parselmouth.Data, *file_path: str*) → None

scale(*self:* parselmouth.Vector, *scale: Positive[float]*) → None

scale_intensity(*self:* parselmouth.Sound, *new_average_intensity: float*) → None

scale_peak(*self:* parselmouth.Vector, *new_peak: Positive[float] = 0.99*) → None

scale_times_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_times_to(*self:* parselmouth.Function, *new_start_time: float*, *new_end_time: float*) → None

scale_x_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_x_to(*self:* parselmouth.Function, *new_xmin: float*, *new_xmax: float*) → None

set_to_zero(*self:* parselmouth.Sound, *from_time: float | None = None*, *to_time: float | None = None*, *round_to_nearest_zero_crossing: bool = True*) → None

set_value(*self:* parselmouth.Matrix, *row_number: Positive[int]*, *column_number: Positive[int]*, *new_value: float*) → None

shift_times_by(*self:* parselmouth.Function, *seconds: float*) → None

shift_times_to(*self:* parselmouth.Function, *time: float*, *new_time: float*) → None

shift_times_to(*self:* parselmouth.Function, *time: str*, *new_time: float*) → None

shift_x_by(*self:* parselmouth.Function, *shift: float*) → None

shift_x_to(*self:* parselmouth.Function, *x: float*, *new_x: float*) → None

subtract(*self:* parselmouth.Vector, *number: float*) → None

subtract_mean(*self:* parselmouth.Vector) → None

t_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

t_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

time_to_frame_number(*self:* parselmouth.Sampled, *time: float*) → float

to_formant_burg(*self:* parselmouth.Sound, *time_step: Positive[float] | None = None*, *max_number_of_formants: Positive[float] = 5.0*, *maximum_formant: float = 5500.0*, *window_length: Positive[float] = 0.025*, *pre_emphasis_from: Positive[float] = 50.0*) → *parselmouth.Formant*

to_harmonicity(*self: parselmouth.Sound*, *method: parselmouth.Sound.ToHarmonicityMethod = <ToHarmonicityMethod.CC: 0>*, **args*, ***kwargs*) → object

to_harmonicity_ac(*self:* parselmouth.Sound, *time_step: Positive[float] = 0.01*, *minimum_pitch: Positive[float] = 75.0*, *silence_threshold: float = 0.1*, *periods_per_window: Positive[float] = 1.0*) → *parselmouth.Harmonicity*

to_harmonicity_cc(*self:* parselmouth.Sound, *time_step: Positive[float] = 0.01*, *minimum_pitch: Positive[float] = 75.0*, *silence_threshold: float = 0.1*, *periods_per_window: Positive[float] = 1.0*) → *parselmouth.Harmonicity*

to_harmonicity_gne(*self:* parselmouth.Sound, *minimum_frequency: Positive[float] = 500.0*, *maximum_frequency: Positive[float] = 4500.0*, *bandwidth: Positive[float] = 1000.0*, *step: Positive[float] = 80.0*) → *parselmouth.Matrix*

to_intensity(*self:* parselmouth.Sound, *minimum_pitch: Positive[float] = 100.0*, *time_step: Positive[float] | None = None*, *subtract_mean: bool = True*) → *parselmouth.Intensity*

to_mfcc(*self:* parselmouth.Sound, *number_of_coefficients: Positive[int] = 12*, *window_length: Positive[float] = 0.015*, *time_step: Positive[float] = 0.005*, *firstFilterFreqency: Positive[float] = 100.0*, *distance_between_filters: Positive[float] = 100.0*, *maximum_frequency: Positive[float] | None = None*) → *parselmouth.MFCC*

to_pitch(*self:* parselmouth.Sound, *time_step: Positive[float] | None = None*, *pitch_floor: Positive[float] = 75.0*, *pitch_ceiling: Positive[float] = 600.0*) → *parselmouth.Pitch*

to_pitch(*self:* parselmouth.Sound, *method:* parselmouth.Sound.ToPitchMethod, **args*, ***kwargs*) → object

to_pitch_ac(*self:* parselmouth.Sound, *time_step: Positive[float] | None = None*, *pitch_floor: Positive[float] = 75.0*, *max_number_of_candidates: Positive[int] = 15*, *very_accurate: bool = False*, *silence_threshold: float = 0.03*, *voicing_threshold: float = 0.45*, *octave_cost: float = 0.01*, *octave_jump_cost: float = 0.35*, *voiced_unvoiced_cost: float = 0.14*, *pitch_ceiling: Positive[float] = 600.0*) → *parselmouth.Pitch*

to_pitch_cc(*self:* parselmouth.Sound, *time_step: Positive[float] | None = None*, *pitch_floor: Positive[float] = 75.0*, *max_number_of_candidates: Positive[int] = 15*, *very_accurate: bool = False*, *silence_threshold: float = 0.03*, *voicing_threshold: float = 0.45*, *octave_cost: float = 0.01*, *octave_jump_cost: float = 0.35*, *voiced_unvoiced_cost: float = 0.14*, *pitch_ceiling: Positive[float] = 600.0*) → *parselmouth.Pitch*

to_pitch_shs(*self:* parselmouth.Sound, *time_step: Positive[float] = 0.01*, *minimum_pitch: Positive[float] = 50.0*, *max_number_of_candidates: Positive[int] = 15*, *maximum_frequency_component: Positive[float] = 1250.0*, *max_number_of_subharmonics: Positive[int] = 15*, *compression_factor: Positive[float] = 0.84*, *ceiling: Positive[float] = 600.0*, *number_of_points_per_octave: Positive[int] = 48*) → *parselmouth.Pitch*

to_pitch_spinet(*self:* parselmouth.Sound, *time_step: Positive[float] = 0.005*, *window_length: Positive[float] = 0.04*, *minimum_filter_frequency: Positive[float] = 70.0*, *maximum_filter_frequency: Positive[float] = 5000.0*, *number_of_filters: Positive[int] = 250*, *ceiling: Positive[float] = 500.0*, *max_number_of_candidates: Positive[int] = 15*) → *parselmouth.Pitch*

to_spectrogram(*self: parselmouth.Sound*, *window_length: Positive[float] = 0.005*, *maximum_frequency: Positive[float] = 5000.0*, *time_step: Positive[float] = 0.002*, *frequency_step: Positive[float] = 20.0*, *window_shape: parselmouth.SpectralAnalysisWindowShape = <SpectralAnalysisWindowShape.GAUSSIAN: 5>*) → *parselmouth.Spectrogram*

to_spectrum(*self:* parselmouth.Sound, *fast: bool = True*) → *parselmouth.Spectrum*

ts(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

xs(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

y_bins(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

y_grid(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

ys(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

__hash__ = None

property centre_time

property class_name

property dt

property duration

property dx

property dy

property end_time

property full_name

property n_channels

property n_columns

property n_frames

property n_rows

property n_samples

property name

property nt

property nx

property ny

property sampling_frequency

property sampling_period

property start_time

property t1

property time_range

property time_step

property tmax

property tmin

property total_duration

property trange

property values

property x1

property xmax

property xmin

property xrange

property y1

property ymax

property ymin

property yrange

3.1.19 parselmouth.SoundFileFormat

class parselmouth.**SoundFileFormat**

Bases: pybind11_object

Methods

__init__

Attributes

AIFC
AIFF
FLAC
KAY
NEXT_SUN
NIST
RAW_16_BE
RAW_16_LE
RAW_24_BE
RAW_24_LE
RAW_32_BE
RAW_32_LE
RAW_8_SIGNED
RAW_8_UNSIGNED
SESAM
WAV
WAV_24
WAV_32
name
value

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.SoundFileFormat) → int

__init__(*self:* parselmouth.SoundFileFormat, *value: int*) → None
__init__(*self:* parselmouth.SoundFileFormat, *arg0: str*) → None

__int__(*self:* parselmouth.SoundFileFormat) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()

name(self: handle) -> str

AIFC = <SoundFileFormat.AIFC: 2>

AIFF = <SoundFileFormat.AIFF: 1>

FLAC = <SoundFileFormat.FLAC: 5>

KAY = <SoundFileFormat.KAY: 6>

NEXT_SUN = <SoundFileFormat.NEXT_SUN: 3>

NIST = <SoundFileFormat.NIST: 4>

RAW_16_BE = <SoundFileFormat.RAW_16_BE: 12>

RAW_16_LE = <SoundFileFormat.RAW_16_LE: 13>

RAW_24_BE = <SoundFileFormat.RAW_24_BE: 14>

RAW_24_LE = <SoundFileFormat.RAW_24_LE: 15>

RAW_32_BE = <SoundFileFormat.RAW_32_BE: 16>

RAW_32_LE = <SoundFileFormat.RAW_32_LE: 17>

RAW_8_SIGNED = <SoundFileFormat.RAW_8_SIGNED: 10>

RAW_8_UNSIGNED = <SoundFileFormat.RAW_8_UNSIGNED: 11>

SESAM = <SoundFileFormat.SESAM: 7>

WAV = <SoundFileFormat.WAV: 0>

WAV_24 = <SoundFileFormat.WAV_24: 8>

WAV_32 = <SoundFileFormat.WAV_32: 9>

property name

property value

3.1.20 parselmouth.SpectralAnalysisWindowShape

class parselmouth.**SpectralAnalysisWindowShape**

Bases: pybind11_object

Methods

__init__

Attributes

BARTLETT
GAUSSIAN
HAMMING
HANNING
SQUARE
WELCH
name
value

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.SpectralAnalysisWindowShape) → int

__init__(*self:* parselmouth.SpectralAnalysisWindowShape, *value: int*) → None

__init__(*self:* parselmouth.SpectralAnalysisWindowShape, *arg0: str*) → None

__int__(*self:* parselmouth.SpectralAnalysisWindowShape) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()

name(self: handle) -> str

BARTLETT = <SpectralAnalysisWindowShape.BARTLETT: 2>

GAUSSIAN = <SpectralAnalysisWindowShape.GAUSSIAN: 5>

HAMMING = <SpectralAnalysisWindowShape.HAMMING: 1>

HANNING = <SpectralAnalysisWindowShape.HANNING: 4>

SQUARE = <SpectralAnalysisWindowShape.SQUARE: 0>

WELCH = <SpectralAnalysisWindowShape.WELCH: 3>

property name

property value

3.1.21 parselmouth.Spectrogram

class parselmouth.**Spectrogram**

Bases: *TimeFrameSampled*, *Matrix*

Methods

__init__
as_array
at_xy
copy
formula
frame_number_to_time
get_column_distance
get_end_time
get_frame_number_from_time
get_highest_x
get_highest_y
get_lowest_x
get_lowest_y
get_maximum
get_minimum
get_number_of_columns
get_number_of_frames
get_number_of_rows

continues on next page

Table 12 – continued from previous page

get_power_at	
get_row_distance	
get_start_time	
get_sum	
get_time_from_frame_number	
get_time_step	
get_total_duration	
get_value_at_xy	
get_value_in_cell	
get_x_of_column	
get_y_of_row	
info	
read	Read a file into a *parselmouth.Data* object.
save	
save_as_binary_file	
save_as_headerless_spreadsheet_file	
save_as_matrix_text_file	
save_as_short_text_file	
save_as_text_file	
scale_times_by	
scale_times_to	
scale_x_by	
scale_x_to	
set_value	
shift_times_by	
shift_times_to	

continues on next page

Table 12 – continued from previous page

shift_x_by
shift_x_to
synthesize_sound
t_bins
t_grid
time_to_frame_number
to_sound
to_spectrum_slice
ts
x_bins
x_grid
xs
y_bins
y_grid
ys

Attributes

centre_time
class_name
dt
duration
dx
dy
end_time
full_name

continues on next page

Table 13 – continued from previous page

n_columns
n_frames
n_rows
name
nt
nx
ny
start_time
t1
time_range
time_step
tmax
tmin
total_duration
trange
values
x1
xmax
xmin
xrange
y1
ymax
ymin
yrange

class FileFormat

Bases: pybind11_object

__eq__(*self:* *object*, *other:* *object*) → bool

__hash__(*self:* *object*) → int

__index__(*self:* parselmouth.Data.FileFormat) → int

__init__(*self:* parselmouth.Data.FileFormat, *value:* *int*) → None
__init__(*self:* parselmouth.Data.FileFormat, *arg0:* *str*) → None

__int__(*self:* parselmouth.Data.FileFormat) → int

__ne__(*self:* *object*, *other:* *object*) → bool

__new__(***kwargs*)

__repr__(*self:* *object*) → str

__str__()
name(self: handle) -> str

BINARY = <FileFormat.BINARY: 2>

SHORT_TEXT = <FileFormat.SHORT_TEXT: 1>

TEXT = <FileFormat.TEXT: 0>

property name

property value

__copy__(*self:* parselmouth.Data) → *parselmouth.Data*

__deepcopy__(*self:* parselmouth.Data, *memo:* *dict*) → *parselmouth.Data*

__eq__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__init__(**args*, ***kwargs*)

__len__(*self:* parselmouth.Sampled) → int

__ne__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__new__(***kwargs*)

__str__(*self:* parselmouth.Thing) → str

as_array(*self:* parselmouth.Matrix) → numpy.ndarray[numpy.float64]

at_xy(*self:* parselmouth.Matrix, *x:* *float*, *y:* *float*) → float

copy(*self:* parselmouth.Data) → *parselmouth.Data*

formula(*self:* parselmouth.Matrix, *formula:* *str*, *from_x:* *float* | *None* = None, *to_x:* *float* | *None* = None, *from_y:* *float* | *None* = None, *to_y:* *float* | *None* = None) → None

formula(*self:* parselmouth.Matrix, *formula:* *str*, *x_range:* *Tuple[float* | *None*, *float* | *None]* = (None, None), *y_range:* *Tuple[float* | *None*, *float* | *None]* = (None, None)) → None

frame_number_to_time(*self:* parselmouth.Sampled, *frame_number:* *Positive[int]*) → float

get_column_distance(*self:* parselmouth.Matrix) → float

get_end_time(*self:* parselmouth.Function) → float

get_frame_number_from_time(*self:* parselmouth.Sampled, *time: float*) → float

get_highest_x(*self:* parselmouth.Matrix) → float

get_highest_y(*self:* parselmouth.Matrix) → float

get_lowest_x(*self:* parselmouth.Matrix) → float

get_lowest_y(*self:* parselmouth.Matrix) → float

get_maximum(*self:* parselmouth.Matrix) → float

get_minimum(*self:* parselmouth.Matrix) → float

get_number_of_columns(*self:* parselmouth.Matrix) → int

get_number_of_frames(*self:* parselmouth.Sampled) → int

get_number_of_rows(*self:* parselmouth.Matrix) → int

get_power_at(*self:* parselmouth.Spectrogram, *time: float*, *frequency: float*) → float

get_row_distance(*self:* parselmouth.Matrix) → float

get_start_time(*self:* parselmouth.Function) → float

get_sum(*self:* parselmouth.Matrix) → float

get_time_from_frame_number(*self:* parselmouth.Sampled, *frame_number: Positive[int]*) → float

get_time_step(*self:* parselmouth.Sampled) → float

get_total_duration(*self:* parselmouth.Function) → float

get_value_at_xy(*self:* parselmouth.Matrix, *x: float*, *y: float*) → float

get_value_in_cell(*self:* parselmouth.Matrix, *row_number: Positive[int]*, *column_number: Positive[int]*) → float

get_x_of_column(*self:* parselmouth.Matrix, *column_number: Positive[int]*) → float

get_y_of_row(*self:* parselmouth.Matrix, *row_number: Positive[int]*) → float

info(*self:* parselmouth.Thing) → str

static read(*file_path: str*) → *parselmouth.Data*

Read a file into a `parselmouth.Data` object.

Parameters
file_path (`str`) – The path of the file on disk to read.

Returns
The Praat Data object that was read.

Return type
parselmouth.Data

See also:

Praat: "Read from file…"

save(*self: parselmouth.Data*, *file_path: str*, *format: parselmouth.Data.FileFormat = <FileFormat.TEXT: 0>*) → None

save_as_binary_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_headerless_spreadsheet_file(*self:* parselmouth.Matrix, *file_path: str*) → None

save_as_matrix_text_file(*self:* parselmouth.Matrix, *file_path: str*) → None

save_as_short_text_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_text_file(*self:* parselmouth.Data, *file_path: str*) → None

scale_times_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_times_to(*self:* parselmouth.Function, *new_start_time: float*, *new_end_time: float*) → None

scale_x_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_x_to(*self:* parselmouth.Function, *new_xmin: float*, *new_xmax: float*) → None

set_value(*self:* parselmouth.Matrix, *row_number: Positive[int]*, *column_number: Positive[int]*, *new_value: float*) → None

shift_times_by(*self:* parselmouth.Function, *seconds: float*) → None

shift_times_to(*self:* parselmouth.Function, *time: float*, *new_time: float*) → None

shift_times_to(*self:* parselmouth.Function, *time: str*, *new_time: float*) → None

shift_x_by(*self:* parselmouth.Function, *shift: float*) → None

shift_x_to(*self:* parselmouth.Function, *x: float*, *new_x: float*) → None

synthesize_sound(*self:* parselmouth.Spectrogram, *sampling_frequency: Positive[float] = 44100.0*) → *parselmouth.Sound*

t_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

t_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

time_to_frame_number(*self:* parselmouth.Sampled, *time: float*) → float

to_sound(*self:* parselmouth.Spectrogram, *sampling_frequency: Positive[float] = 44100.0*) → *parselmouth.Sound*

to_spectrum_slice(*self:* parselmouth.Spectrogram, *time: float*) → *parselmouth.Spectrum*

ts(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

xs(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

y_bins(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

y_grid(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

ys(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

```
__hash__ = None

property centre_time

property class_name

property dt

property duration

property dx

property dy

property end_time

property full_name

property n_columns

property n_frames

property n_rows

property name

property nt

property nx

property ny

property start_time

property t1

property time_range

property time_step

property tmax

property tmin

property total_duration

property trange

property values

property x1

property xmax

property xmin

property xrange

property y1

property ymax
```

property ymin

property yrange

3.1.22 parselmouth.Spectrum

class parselmouth.**Spectrum**

Bases: *Matrix*

Methods

__init__
as_array
at_xy
cepstral_smoothing
copy
formula
get_band_density
get_band_density_difference
get_band_energy
get_band_energy_difference
get_bin_number_from_frequency
get_bin_width
get_center_of_gravity
get_central_moment
get_centre_of_gravity
get_column_distance
get_frequency_from_bin_number
get_highest_frequency
get_highest_x

continues on next page

Table 14 – continued from previous page

get_highest_y	
get_imaginary_value_in_bin	
get_kurtosis	
get_lowest_frequency	
get_lowest_x	
get_lowest_y	
get_maximum	
get_minimum	
get_number_of_bins	
get_number_of_columns	
get_number_of_rows	
get_real_value_in_bin	
get_row_distance	
get_skewness	
get_standard_deviation	
get_sum	
get_value_at_xy	
get_value_in_bin	
get_value_in_cell	
get_x_of_column	
get_y_of_row	
info	
lpc_smoothing	
read	Read a file into a *parselmouth.Data* object.
save	
save_as_binary_file	

continues on next page

Table 14 – continued from previous page

save_as_headerless_spreadsheet_file
save_as_matrix_text_file
save_as_short_text_file
save_as_text_file
scale_x_by
scale_x_to
set_imaginary_value_in_bin
set_real_value_in_bin
set_value
set_value_in_bin
shift_x_by
shift_x_to
to_sound
to_spectrogram
x_bins
x_grid
xs
y_bins
y_grid
ys

Attributes

bin_width
class_name
df
dx
dy
fmax
fmin
full_name
highest_frequency
lowest_frequency
n_bins
n_columns
n_rows
name
nf
nx
ny
values
x1
xmax
xmin
xrange
y1
ymax
ymin
yrange

class FileFormat

Bases: pybind11_object

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.Data.FileFormat) → int

__init__(*self:* parselmouth.Data.FileFormat, *value: int*) → None
__init__(*self:* parselmouth.Data.FileFormat, *arg0: str*) → None

__int__(*self:* parselmouth.Data.FileFormat) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()

name(self: handle) -> str

BINARY = <FileFormat.BINARY: 2>

SHORT_TEXT = <FileFormat.SHORT_TEXT: 1>

TEXT = <FileFormat.TEXT: 0>

property name

property value

__copy__(*self:* parselmouth.Data) → *parselmouth.Data*

__deepcopy__(*self:* parselmouth.Data, *memo: dict*) → *parselmouth.Data*

__eq__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__getitem__(*self:* parselmouth.Spectrum, *index: int*) → complex

__init__(*self:* parselmouth.Spectrum, *values: numpy.ndarray[numpy.float64]*, *maximum_frequency: Positive[float]*) → None

__init__(*self:* parselmouth.Spectrum, *values: numpy.ndarray[numpy.complex128]*, *maximum_frequency: Positive[float]*) → None

__len__(*self:* parselmouth.Sampled) → int

__ne__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__new__(***kwargs*)

__setitem__(*self:* parselmouth.Spectrum, *index: int*, *value: complex*) → None

__str__(*self:* parselmouth.Thing) → str

as_array(*self:* parselmouth.Matrix) → numpy.ndarray[numpy.float64]

at_xy(*self:* parselmouth.Matrix, *x: float*, *y: float*) → float

cepstral_smoothing(*self:* parselmouth.Spectrum, *bandwidth: Positive[float] = 500.0*) → *parselmouth.Spectrum*

copy(*self:* parselmouth.Data) → *parselmouth.Data*

formula(*self:* parselmouth.Matrix, *formula: str*, *from_x: float | None = None*, *to_x: float | None = None*, *from_y: float | None = None*, *to_y: float | None = None*) → None

formula(*self:* parselmouth.Matrix, *formula: str*, *x_range: Tuple[float | None, float | None] = (None, None)*, *y_range: Tuple[float | None, float | None] = (None, None)*) → None

get_band_density(*self:* parselmouth.Spectrum, *band_floor: float | None = None*, *band_ceiling: float | None = None*) → float

get_band_density(*self:* parselmouth.Spectrum, *band: Tuple[float | None, float | None] = (None, None)*) → float

get_band_density_difference(*self:* parselmouth.Spectrum, *low_band_floor: float | None = None*, *low_band_ceiling: float | None = None*, *high_band_floor: float | None = None*, *high_band_ceiling: float | None = None*) → float

get_band_density_difference(*self:* parselmouth.Spectrum, *low_band: Tuple[float | None, float | None] = (None, None)*, *high_band: Tuple[float | None, float | None] = (None, None)*) → float

get_band_energy(*self:* parselmouth.Spectrum, *band_floor: float | None = None*, *band_ceiling: float | None = None*) → float

get_band_energy(*self:* parselmouth.Spectrum, *band: Tuple[float | None, float | None] = (None, None)*) → float

get_band_energy_difference(*self:* parselmouth.Spectrum, *low_band_floor: float | None = None*, *low_band_ceiling: float | None = None*, *high_band_floor: float | None = None*, *high_band_ceiling: float | None = None*) → float

get_band_energy_difference(*self:* parselmouth.Spectrum, *low_band: Tuple[float | None, float | None] = (None, None)*, *high_band: Tuple[float | None, float | None] = (None, None)*) → float

get_bin_number_from_frequency(*self:* parselmouth.Spectrum, *frequency: float*) → float

get_bin_width(*self:* parselmouth.Spectrum) → float

get_center_of_gravity(*self:* parselmouth.Spectrum, *power: Positive[float] = 2.0*) → float

get_central_moment(*self:* parselmouth.Spectrum, *moment: Positive[float]*, *power: Positive[float] = 2.0*) → float

get_centre_of_gravity(*self:* parselmouth.Spectrum, *power: Positive[float] = 2.0*) → float

get_column_distance(*self:* parselmouth.Matrix) → float

get_frequency_from_bin_number(*self:* parselmouth.Spectrum, *band_number: Positive[int]*) → float

get_highest_frequency(*self:* parselmouth.Spectrum) → float

get_highest_x(*self:* parselmouth.Matrix) → float

get_highest_y(*self:* parselmouth.Matrix) → float

get_imaginary_value_in_bin(*self:* parselmouth.Spectrum, *bin_number: Positive[int]*) → float

get_kurtosis(*self:* parselmouth.Spectrum, *power: Positive[float] = 2.0*) → float

get_lowest_frequency(*self:* parselmouth.Spectrum) → float

get_lowest_x(*self:* parselmouth.Matrix) → float

get_lowest_y(*self:* parselmouth.Matrix) → float

get_maximum(*self:* parselmouth.Matrix) → float

get_minimum(*self:* parselmouth.Matrix) → float

get_number_of_bins(*self:* parselmouth.Spectrum) → int

get_number_of_columns(*self:* parselmouth.Matrix) → int

get_number_of_rows(*self:* parselmouth.Matrix) → int

get_real_value_in_bin(*self:* parselmouth.Spectrum, *bin_number: Positive[int]*) → float

get_row_distance(*self:* parselmouth.Matrix) → float

get_skewness(*self:* parselmouth.Spectrum, *power: Positive[float] = 2.0*) → float

get_standard_deviation(*self:* parselmouth.Spectrum, *power: Positive[float] = 2.0*) → float

get_sum(*self:* parselmouth.Matrix) → float

get_value_at_xy(*self:* parselmouth.Matrix, *x: float*, *y: float*) → float

get_value_in_bin(*self:* parselmouth.Spectrum, *bin_number: Positive[int]*) → complex

get_value_in_cell(*self:* parselmouth.Matrix, *row_number: Positive[int]*, *column_number: Positive[int]*) → float

get_x_of_column(*self:* parselmouth.Matrix, *column_number: Positive[int]*) → float

get_y_of_row(*self:* parselmouth.Matrix, *row_number: Positive[int]*) → float

info(*self:* parselmouth.Thing) → str

lpc_smoothing(*self:* parselmouth.Spectrum, *num_peaks: Positive[int] = 5*, *pre_emphasis_from: Positive[float] = 50.0*) → *parselmouth.Spectrum*

static read(*file_path: str*) → *parselmouth.Data*

Read a file into a `parselmouth.Data` object.

Parameters
file_path (`str`) – The path of the file on disk to read.

Returns
The Praat Data object that was read.

Return type
parselmouth.Data

See also:

Praat: "Read from file…"

save(*self: parselmouth.Data*, *file_path: str*, *format: parselmouth.Data.FileFormat = <FileFormat.TEXT: 0>*) → None

save_as_binary_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_headerless_spreadsheet_file(*self:* parselmouth.Matrix, *file_path: str*) → None

save_as_matrix_text_file(*self:* parselmouth.Matrix, *file_path: str*) → None

save_as_short_text_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_text_file(*self:* parselmouth.Data, *file_path: str*) → None

scale_x_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_x_to(*self:* parselmouth.Function, *new_xmin: float*, *new_xmax: float*) → None

set_imaginary_value_in_bin(*self:* parselmouth.Spectrum, *bin_number: Positive[int]*, *value: float*) → None

set_real_value_in_bin(*self:* parselmouth.Spectrum, *bin_number: Positive[int]*, *value: float*) → None

set_value(*self:* parselmouth.Matrix, *row_number: Positive[int]*, *column_number: Positive[int]*, *new_value: float*) → None

set_value_in_bin(*self:* parselmouth.Spectrum, *bin_number: Positive[int]*, *value: complex*) → None

shift_x_by(*self:* parselmouth.Function, *shift: float*) → None

shift_x_to(*self:* parselmouth.Function, *x: float*, *new_x: float*) → None

to_sound(*self:* parselmouth.Spectrum) → *parselmouth.Sound*

to_spectrogram(*self:* parselmouth.Spectrum) → *parselmouth.Spectrogram*

x_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

xs(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

y_bins(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

y_grid(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

ys(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

__hash__ = None

property bin_width

property class_name

property df

property dx

property dy

property fmax

property fmin

property full_name

property highest_frequency

property lowest_frequency

property n_bins

property n_columns

property n_rows

property name

property nf

property nx

property ny

property values

property x1

property xmax

property xmin

property xrange

property y1

property ymax

property ymin

property yrange

3.1.23 parselmouth.TextGrid

class parselmouth.**TextGrid**

Bases: *Function*

Methods

__init__	
copy	
from_tgt	
info	
read	Read a file into a *parselmouth.Data* object.
save	
save_as_binary_file	
save_as_short_text_file	
save_as_text_file	
scale_x_by	
scale_x_to	
shift_x_by	
shift_x_to	
to_tgt	

Attributes

class_name	
full_name	
name	
xmax	
xmin	
xrange	

class FileFormat

Bases: pybind11_object

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.Data.FileFormat) → int

__init__(*self:* parselmouth.Data.FileFormat, *value: int*) → None
__init__(*self:* parselmouth.Data.FileFormat, *arg0: str*) → None

__int__(*self:* parselmouth.Data.FileFormat) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()
name(self: handle) -> str

BINARY = <FileFormat.BINARY: 2>

SHORT_TEXT = <FileFormat.SHORT_TEXT: 1>

TEXT = <FileFormat.TEXT: 0>

property name

property value

__copy__(*self:* parselmouth.Data) → *parselmouth.Data*

__deepcopy__(*self:* parselmouth.Data, *memo: dict*) → *parselmouth.Data*

__eq__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__init__(*self:* parselmouth.TextGrid, *start_time: float*, *end_time: float*, *tier_names: str*, *point_tier_names: str*) → None
__init__(*self:* parselmouth.TextGrid, *start_time: float*, *end_time: float*, *tier_names: List[str] = []*, *point_tier_names: List[str] = []*) → None
__init__(*self:* parselmouth.TextGrid, *tgt_text_grid: tgt.core.TextGrid*) → None

__ne__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__new__(***kwargs*)

__str__(*self:* parselmouth.Thing) → str

copy(*self:* parselmouth.Data) → *parselmouth.Data*

static from_tgt(*tgt_text_grid: tgt.core.TextGrid*) → *parselmouth.TextGrid*

info(*self:* parselmouth.Thing) → str

static read(*file_path: str*) → *parselmouth.Data*
Read a file into a `parselmouth.Data` object.

Parameters
file_path (`str`) – The path of the file on disk to read.

Returns
The Praat Data object that was read.

Return type
parselmouth.Data

See also:

Praat: "Read from file…"

save(*self: parselmouth.Data*, *file_path: str*, *format: parselmouth.Data.FileFormat = <FileFormat.TEXT: 0>*) → None

save_as_binary_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_short_text_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_text_file(*self:* parselmouth.Data, *file_path: str*) → None

scale_x_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_x_to(*self:* parselmouth.Function, *new_xmin: float*, *new_xmax: float*) → None

shift_x_by(*self:* parselmouth.Function, *shift: float*) → None

shift_x_to(*self:* parselmouth.Function, *x: float*, *new_x: float*) → None

to_tgt(*self:* parselmouth.TextGrid, *, *include_empty_intervals: bool = False*) → tgt.core.TextGrid

__hash__ = None

property class_name

property full_name

property name

property xmax

property xmin

property xrange

3.1.24 parselmouth.Thing

class parselmouth.**Thing**

Bases: pybind11_object

Methods

__init__
info

Attributes

class_name
full_name
name

__init__(**args*, ***kwargs*)

__new__(***kwargs*)

__str__(*self:* parselmouth.Thing) → str

info(*self:* parselmouth.Thing) → str

property class_name

property full_name

property name

3.1.25 parselmouth.TimeFrameSampled

class parselmouth.**TimeFrameSampled**

Bases: *TimeFunction*, *Sampled*

Methods

__init__
copy
frame_number_to_time
get_end_time
get_frame_number_from_time
get_number_of_frames
get_start_time
get_time_from_frame_number
get_time_step
get_total_duration

continues on next page

Table 15 – continued from previous page

info	
read	Read a file into a *parselmouth.Data* object.
save	
save_as_binary_file	
save_as_short_text_file	
save_as_text_file	
scale_times_by	
scale_times_to	
scale_x_by	
scale_x_to	
shift_times_by	
shift_times_to	
shift_x_by	
shift_x_to	
t_bins	
t_grid	
time_to_frame_number	
ts	
x_bins	
x_grid	
xs	

Attributes

centre_time
class_name
dt
duration
dx
end_time
full_name
n_frames
name
nt
nx
start_time
t1
time_range
time_step
tmax
tmin
total_duration
trange
x1
xmax
xmin
xrange

class FileFormat

Bases: pybind11_object

__eq__(*self: object*, *other: object*) → bool

__hash__(*self:* *object*) → int

__index__(*self:* parselmouth.Data.FileFormat) → int

__init__(*self:* parselmouth.Data.FileFormat, *value:* *int*) → None
__init__(*self:* parselmouth.Data.FileFormat, *arg0:* *str*) → None

__int__(*self:* parselmouth.Data.FileFormat) → int

__ne__(*self:* *object*, *other:* *object*) → bool

__new__(**kwargs*)

__repr__(*self:* *object*) → str

__str__()
name(self: handle) -> str

BINARY = <FileFormat.BINARY: 2>

SHORT_TEXT = <FileFormat.SHORT_TEXT: 1>

TEXT = <FileFormat.TEXT: 0>

property name

property value

__copy__(*self:* parselmouth.Data) → *parselmouth.Data*

__deepcopy__(*self:* parselmouth.Data, *memo:* *dict*) → *parselmouth.Data*

__eq__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__init__(**args*, ***kwargs*)

__len__(*self:* parselmouth.Sampled) → int

__ne__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__new__(**kwargs*)

__str__(*self:* parselmouth.Thing) → str

copy(*self:* parselmouth.Data) → *parselmouth.Data*

frame_number_to_time(*self:* parselmouth.Sampled, *frame_number: Positive[int]*) → float

get_end_time(*self:* parselmouth.Function) → float

get_frame_number_from_time(*self:* parselmouth.Sampled, *time:* *float*) → float

get_number_of_frames(*self:* parselmouth.Sampled) → int

get_start_time(*self:* parselmouth.Function) → float

get_time_from_frame_number(*self:* parselmouth.Sampled, *frame_number: Positive[int]*) → float

get_time_step(*self:* parselmouth.Sampled) → float

get_total_duration(*self:* parselmouth.Function) → float

info(*self:* parselmouth.Thing) → str

static read(*file_path: str*) → *parselmouth.Data*

Read a file into a `parselmouth.Data` object.

Parameters
file_path (*str*) – The path of the file on disk to read.

Returns
The Praat Data object that was read.

Return type
parselmouth.Data

See also:

Praat: "Read from file…"

save(*self: parselmouth.Data*, *file_path: str*, *format: parselmouth.Data.FileFormat = <FileFormat.TEXT: 0>*) → None

save_as_binary_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_short_text_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_text_file(*self:* parselmouth.Data, *file_path: str*) → None

scale_times_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_times_to(*self:* parselmouth.Function, *new_start_time: float*, *new_end_time: float*) → None

scale_x_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_x_to(*self:* parselmouth.Function, *new_xmin: float*, *new_xmax: float*) → None

shift_times_by(*self:* parselmouth.Function, *seconds: float*) → None

shift_times_to(*self:* parselmouth.Function, *time: float*, *new_time: float*) → None
shift_times_to(*self:* parselmouth.Function, *time: str*, *new_time: float*) → None

shift_x_by(*self:* parselmouth.Function, *shift: float*) → None

shift_x_to(*self:* parselmouth.Function, *x: float*, *new_x: float*) → None

t_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

t_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

time_to_frame_number(*self:* parselmouth.Sampled, *time: float*) → float

ts(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

xs(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

__hash__ = None

property centre_time

property class_name

property dt

property duration

property dx

property end_time

property full_name

property n_frames

property name

property nt

property nx

property start_time

property t1

property time_range

property time_step

property tmax

property tmin

property total_duration

property trange

property x1

property xmax

property xmin

property xrange

3.1.26 parselmouth.TimeFunction

class parselmouth.TimeFunction

Bases: *Function*

Methods

__init__	
copy	
get_end_time	
get_start_time	
get_total_duration	
info	
read	Read a file into a *parselmouth.Data* object.
save	
save_as_binary_file	
save_as_short_text_file	
save_as_text_file	
scale_times_by	
scale_times_to	
scale_x_by	
scale_x_to	
shift_times_by	
shift_times_to	
shift_x_by	
shift_x_to	

Attributes

centre_time
class_name
duration
end_time
full_name
name
start_time
time_range
tmax
tmin
total_duration
trange
xmax
xmin
xrange

class FileFormat

Bases: pybind11_object

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.Data.FileFormat) → int

__init__(*self:* parselmouth.Data.FileFormat, *value: int*) → None

__init__(*self:* parselmouth.Data.FileFormat, *arg0: str*) → None

__int__(*self:* parselmouth.Data.FileFormat) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()
name(self: handle) -> str

BINARY = <FileFormat.BINARY: 2>

SHORT_TEXT = <FileFormat.SHORT_TEXT: 1>

TEXT = <FileFormat.TEXT: 0>

property name

property value

__copy__(*self:* parselmouth.Data) → *parselmouth.Data*

__deepcopy__(*self:* parselmouth.Data, *memo:* *dict*) → *parselmouth.Data*

__eq__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__init__(**args*, ***kwargs*)

__ne__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__new__(***kwargs*)

__str__(*self:* parselmouth.Thing) → str

copy(*self:* parselmouth.Data) → *parselmouth.Data*

get_end_time(*self:* parselmouth.Function) → float

get_start_time(*self:* parselmouth.Function) → float

get_total_duration(*self:* parselmouth.Function) → float

info(*self:* parselmouth.Thing) → str

static read(*file_path: str*) → *parselmouth.Data*

Read a file into a `parselmouth.Data` object.

Parameters
file_path (*str*) – The path of the file on disk to read.

Returns
The Praat Data object that was read.

Return type
parselmouth.Data

See also:

Praat: "Read from file…"

save(*self: parselmouth.Data*, *file_path: str*, *format: parselmouth.Data.FileFormat = <FileFormat.TEXT: 0>*) → None

save_as_binary_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_short_text_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_text_file(*self:* parselmouth.Data, *file_path: str*) → None

scale_times_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_times_to(*self:* parselmouth.Function, *new_start_time: float*, *new_end_time: float*) → None

scale_x_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_x_to(*self:* parselmouth.Function, *new_xmin: float*, *new_xmax: float*) → None

shift_times_by(*self:* parselmouth.Function, *seconds: float*) → None

shift_times_to(*self:* parselmouth.Function, *time: float*, *new_time: float*) → None
shift_times_to(*self:* parselmouth.Function, *time: str*, *new_time: float*) → None

shift_x_by(*self:* parselmouth.Function, *shift: float*) → None

shift_x_to(*self:* parselmouth.Function, *x: float*, *new_x: float*) → None

__hash__ = None

property centre_time

property class_name

property duration

property end_time

property full_name

property name

property start_time

property time_range

property tmax

property tmin

property total_duration

property trange

property xmax

property xmin

property xrange

3.1.27 parselmouth.ValueInterpolation

class parselmouth.**ValueInterpolation**

Bases: pybind11_object

Methods

__init__

Attributes

CUBIC
LINEAR
NEAREST
SINC70
SINC700
name
value

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.ValueInterpolation) → int

__init__(*self:* parselmouth.ValueInterpolation, *value: int*) → None
__init__(*self:* parselmouth.ValueInterpolation, *arg0: str*) → None

__int__(*self:* parselmouth.ValueInterpolation) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()
name(self: handle) -> str

CUBIC = <ValueInterpolation.CUBIC: 2>

LINEAR = <ValueInterpolation.LINEAR: 1>

NEAREST = <ValueInterpolation.NEAREST: 0>

SINC70 = <ValueInterpolation.SINC70: 3>

SINC700 = <ValueInterpolation.SINC700: 4>

property name

property value

3.1.28 parselmouth.Vector

class parselmouth.**Vector**

Bases: *Matrix*

Methods

__init__
add
as_array
at_xy
copy
divide
formula
get_column_distance
get_highest_x
get_highest_y
get_lowest_x
get_lowest_y
get_maximum
get_minimum
get_number_of_columns
get_number_of_rows
get_row_distance
get_sum
get_value
get_value_at_xy
get_value_in_cell
get_x_of_column

continues on next page

Table 16 – continued from previous page

get_y_of_row	
info	
multiply	
read	Read a file into a *parselmouth.Data* object.
save	
save_as_binary_file	
save_as_headerless_spreadsheet_file	
save_as_matrix_text_file	
save_as_short_text_file	
save_as_text_file	
scale	
scale_peak	
scale_x_by	
scale_x_to	
set_value	
shift_x_by	
shift_x_to	
subtract	
subtract_mean	
x_bins	
x_grid	
xs	
y_bins	
y_grid	
ys	

Attributes

class_name
dx
dy
full_name
n_columns
n_rows
name
nx
ny
values
x1
xmax
xmin
xrange
y1
ymax
ymin
yrange

class FileFormat

Bases: pybind11_object

__eq__(*self:* *object*, *other:* *object*) → bool

__hash__(*self:* *object*) → int

__index__(*self:* parselmouth.Data.FileFormat) → int

__init__(*self:* parselmouth.Data.FileFormat, *value:* *int*) → None

__init__(*self:* parselmouth.Data.FileFormat, *arg0:* *str*) → None

__int__(*self:* parselmouth.Data.FileFormat) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()

name(self: handle) -> str

BINARY = <FileFormat.BINARY: 2>

SHORT_TEXT = <FileFormat.SHORT_TEXT: 1>

TEXT = <FileFormat.TEXT: 0>

property name

property value

__add__(*self:* parselmouth.Vector, *number: float*) → *parselmouth.Vector*

__copy__(*self:* parselmouth.Data) → *parselmouth.Data*

__deepcopy__(*self:* parselmouth.Data, *memo: dict*) → *parselmouth.Data*

__eq__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__iadd__(*self:* parselmouth.Vector, *number: float*) → *parselmouth.Vector*

__imul__(*self:* parselmouth.Vector, *factor: float*) → *parselmouth.Vector*

__init__(**args*, ***kwargs*)

__isub__(*self:* parselmouth.Vector, *number: float*) → *parselmouth.Vector*

__itruediv__(*self:* parselmouth.Vector, *factor: float*) → *parselmouth.Vector*

__len__(*self:* parselmouth.Sampled) → int

__mul__(*self:* parselmouth.Vector, *factor: float*) → *parselmouth.Vector*

__ne__(*self:* parselmouth.Data, *other:* parselmouth.Data) → bool

__new__(***kwargs*)

__radd__(*self:* parselmouth.Vector, *number: float*) → *parselmouth.Vector*

__rmul__(*self:* parselmouth.Vector, *factor: float*) → *parselmouth.Vector*

__str__(*self:* parselmouth.Thing) → str

__sub__(*self:* parselmouth.Vector, *number: float*) → *parselmouth.Vector*

__truediv__(*self:* parselmouth.Vector, *factor: float*) → *parselmouth.Vector*

add(*self:* parselmouth.Vector, *number: float*) → None

as_array(*self:* parselmouth.Matrix) → numpy.ndarray[numpy.float64]

at_xy(*self:* parselmouth.Matrix, *x: float*, *y: float*) → float

copy(*self:* parselmouth.Data) → *parselmouth.Data*

divide(*self:* parselmouth.Vector, *factor: float*) → None

formula(*self:* parselmouth.Matrix, *formula: str*, *from_x: float | None = None*, *to_x: float | None = None*, *from_y: float | None = None*, *to_y: float | None = None*) → None

formula(*self:* parselmouth.Matrix, *formula: str*, *x_range: Tuple[float | None, float | None] = (None, None)*, *y_range: Tuple[float | None, float | None] = (None, None)*) → None

get_column_distance(*self:* parselmouth.Matrix) → float

get_highest_x(*self:* parselmouth.Matrix) → float

get_highest_y(*self:* parselmouth.Matrix) → float

get_lowest_x(*self:* parselmouth.Matrix) → float

get_lowest_y(*self:* parselmouth.Matrix) → float

get_maximum(*self:* parselmouth.Matrix) → float

get_minimum(*self:* parselmouth.Matrix) → float

get_number_of_columns(*self:* parselmouth.Matrix) → int

get_number_of_rows(*self:* parselmouth.Matrix) → int

get_row_distance(*self:* parselmouth.Matrix) → float

get_sum(*self:* parselmouth.Matrix) → float

get_value(*self: parselmouth.Vector*, *x: float*, *channel: Optional[int] = None*, *interpolation: parselmouth.ValueInterpolation = <ValueInterpolation.CUBIC: 2>*) → float

get_value_at_xy(*self:* parselmouth.Matrix, *x: float*, *y: float*) → float

get_value_in_cell(*self:* parselmouth.Matrix, *row_number: Positive[int]*, *column_number: Positive[int]*) → float

get_x_of_column(*self:* parselmouth.Matrix, *column_number: Positive[int]*) → float

get_y_of_row(*self:* parselmouth.Matrix, *row_number: Positive[int]*) → float

info(*self:* parselmouth.Thing) → str

multiply(*self:* parselmouth.Vector, *factor: float*) → None

static read(*file_path: str*) → *parselmouth.Data*

Read a file into a `parselmouth.Data` object.

Parameters
file_path (`str`) – The path of the file on disk to read.

Returns
The Praat Data object that was read.

Return type
parselmouth.Data

See also:

Praat: "Read from file…"

save(*self: parselmouth.Data*, *file_path: str*, *format: parselmouth.Data.FileFormat = <FileFormat.TEXT: 0>*) → None

save_as_binary_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_headerless_spreadsheet_file(*self:* parselmouth.Matrix, *file_path: str*) → None

save_as_matrix_text_file(*self:* parselmouth.Matrix, *file_path: str*) → None

save_as_short_text_file(*self:* parselmouth.Data, *file_path: str*) → None

save_as_text_file(*self:* parselmouth.Data, *file_path: str*) → None

scale(*self:* parselmouth.Vector, *scale: Positive[float]*) → None

scale_peak(*self:* parselmouth.Vector, *new_peak: Positive[float] = 0.99*) → None

scale_x_by(*self:* parselmouth.Function, *scale: Positive[float]*) → None

scale_x_to(*self:* parselmouth.Function, *new_xmin: float*, *new_xmax: float*) → None

set_value(*self:* parselmouth.Matrix, *row_number: Positive[int]*, *column_number: Positive[int]*, *new_value: float*) → None

shift_x_by(*self:* parselmouth.Function, *shift: float*) → None

shift_x_to(*self:* parselmouth.Function, *x: float*, *new_x: float*) → None

subtract(*self:* parselmouth.Vector, *number: float*) → None

subtract_mean(*self:* parselmouth.Vector) → None

x_bins(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

x_grid(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

xs(*self:* parselmouth.Sampled) → numpy.ndarray[numpy.float64]

y_bins(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

y_grid(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

ys(*self:* parselmouth.SampledXY) → numpy.ndarray[numpy.float64]

__hash__ = None

property class_name

property dx

property dy

property full_name

property n_columns

property n_rows

property name

property nx

property ny

property values

property x1

property xmax

property xmin

property xrange

property y1

property ymax

property ymin

property yrange

3.1.29 parselmouth.WindowShape

class parselmouth.**WindowShape**

Bases: pybind11_object

Methods

__init__

Attributes

GAUSSIAN1
GAUSSIAN2
GAUSSIAN3
GAUSSIAN4
GAUSSIAN5
HAMMING
HANNING
KAISER1
KAISER2
PARABOLIC
RECTANGULAR
TRIANGULAR
name
value

__eq__(*self: object*, *other: object*) → bool

__hash__(*self: object*) → int

__index__(*self:* parselmouth.WindowShape) → int

__init__(*self:* parselmouth.WindowShape, *value: int*) → None
__init__(*self:* parselmouth.WindowShape, *arg0: str*) → None

__int__(*self:* parselmouth.WindowShape) → int

__ne__(*self: object*, *other: object*) → bool

__new__(***kwargs*)

__repr__(*self: object*) → str

__str__()
name(self: handle) -> str

GAUSSIAN1 = <WindowShape.GAUSSIAN1: 5>

GAUSSIAN2 = <WindowShape.GAUSSIAN2: 6>

GAUSSIAN3 = <WindowShape.GAUSSIAN3: 7>

GAUSSIAN4 = <WindowShape.GAUSSIAN4: 8>

GAUSSIAN5 = <WindowShape.GAUSSIAN5: 9>

HAMMING = <WindowShape.HAMMING: 4>

HANNING = <WindowShape.HANNING: 3>

KAISER1 = <WindowShape.KAISER1: 10>

KAISER2 = <WindowShape.KAISER2: 11>

PARABOLIC = <WindowShape.PARABOLIC: 2>

RECTANGULAR = <WindowShape.RECTANGULAR: 0>

TRIANGULAR = <WindowShape.TRIANGULAR: 1>

property name

property value

Exceptions

PraatError
PraatFatal
PraatWarning

3.1.30 parselmouth.PraatError

exception parselmouth.**PraatError**

3.1.31 parselmouth.PraatFatal

exception parselmouth.**PraatFatal**

3.1.32 parselmouth.PraatWarning

exception parselmouth.**PraatWarning**

3.2 parselmouth.praat

Submodule with functions to call Praat commands and run Praat scripts.

In addition to the Python interface provided in the top-level `parselmouth` module, this module provides a Python interface to access any Praat command or action through the `parselmouth.praat.call` function from Python. Moreover, existing Praat scripts can be run through the `parselmouth.praat.run` and `parselmouth.praat.run_file` functions.

Note: Any command or script accessing the graphical user interface or other interactive functionality of Praat will not work, since the internal Praat source is in Parselmouth is run in *batch mode*. This is similar to running a Praat script from the command line (see *Praat: "Scripting 6.9. Calling from the command line"*).

Functions

`call`	Call a Praat command.
`run`	Run a Praat script.
`run_file`	Run a Praat script from file.

3.2.1 parselmouth.praat.call

`parselmouth.praat.call`(*command: str*, **args*, ***kwargs*) → object

`parselmouth.praat.call`(*object:* parselmouth.Data, *command: str*, **args*, ***kwargs*) → object

`parselmouth.praat.call`(*objects: List[*parselmouth.Data*]*, *command: str*, **args*, ***kwargs*) → object

Call a Praat command.

This function provides a Python interface to call available Praat commands based on the label in the Praat user interface and documentation, similar to the Praat scripting language.

Calling a Praat command through this function roughly corresponds to the following scenario in the Praat user interface or scripting language:

1. Zero, one, or multiple `parselmouth.Data` objects are put into Praat's global object list and are 'selected'.
2. The Python argument values are converted into Praat values; see below.
3. The Praat command is executed on the selected objects with the converted values as arguments.
4. The result of the command is returned. The type of the result depends on the result of the Praat command; see below.
5. Praat's object list is emptied again, such that a future execution of this function is independent from the current call.

The use of `call` is demonstrated in the *Pitch manipulation and Praat commands* example.

Parameters

- **object** (`parselmouth.Data`) – A single object to add to the Praat object list, which will be selected when the Praat command is called.
- **objects** (*List[*`parselmouth.Data`*]*) – Multiple objects to be added to the Praat object list, which will be selected when the Praat command is called.

- **command** (*str*) – The Praat action to call. This is the same command name as one would use in a Praat script and corresponds to the label on the button in the Praat user interface.
- ***args** – The list of values to be passed as arguments to the Praat command. Allowed types for these arguments are:
  - `int` or `float`: passed as a Praat numeric value
  - `bool`: converted into `"yes"`/`"no"`
  - `str`: passed as Praat string value
  - `numpy.ndarray`: passed as Praat vector or matrix, if the array contains numeric values and is 1D or 2D, respectively.

Keyword Arguments

- **extra_objects** (*List[parselmouth.Data]*) – Extra objects added to the Praat object list that will not be selected when the command is called (default value: `[]`).
- **return_string** (*bool*) – Return the raw string written in the Praat info window instead of the converted Python object (default value: `False`).

Returns

The result of the Praat command. The actual value returned depends on what the Praat command does. The following types can be returned:

- If `return_string=True` was passed, a `str` value is returned, which contains the text that would have been written to the Praat info window.
- A `float`, `int`, `bool`, or `complex` value is returned when the Praat command would write such a value to the Praat info window.
- A `numpy.ndarray` value is returned if the command returns a Praat vector or matrix.
- A *parselmouth.Data* object is returned if the command always creates exactly one object. If the actual type of the Praat object is available in Parselmouth, an object of a subtype of *parselmouth.Data* is returned.
- A list of *parselmouth.Data* objects is returned if the command can create multiple new objects (even if this particular execution of the command only added one object to the Praat object list).
- A `str` is returned when a string or info text would be written to the Praat info window.

Return type
object

See also:

parselmouth.praat.run, *parselmouth.praat.run_file*, *Praat: "Scripting"*

3.2.2 parselmouth.praat.run

parselmouth.praat.**run**(*script: str*, **args*, ***kwargs*) → object

parselmouth.praat.**run**(*object:* parselmouth.Data, *script: str*, **args*, ***kwargs*) → object

parselmouth.praat.**run**(*objects: List[*parselmouth.Data*]*, *script: str*, **args*, ***kwargs*) → object

Run a Praat script.

Given a string with the contents of a Praat script, run this script as if it was run inside Praat itself. Similarly to *parselmouth.praat.call*, Parselmouth objects and Python argument values can be passed into the script.

Calling this function roughly corresponds to the following sequence of steps in Praat:

1. Zero, one, or multiple *parselmouth.Data* objects are put into Praat's global object list and are 'selected'.
2. The Python argument values are converted into Praat values; see *call*.
3. The Praat script is opened and run with the converted values as arguments; see *Praat: "Scripting 6.1. Arguments to the script"*.
4. The results of the execution of the script are returned; see below.
5. Praat's object list is emptied again, such that a future execution of this function is independent from the current call.

Note that the script will be run in Praat's so-called 'batch' mode; see *Praat: "Scripting 6.9. Calling from the command line"*. Since the script is run from inside a Python program, the Praat functionality is run without graphical user interface and no windows (such as *"View & Edit"*) can be opened by the Praat script. However, the functionality in these windows is also available in different ways: for example, opening a *Sound* object in a *"View & Edit"* window, making a selection, and choosing *"Extract selected sound (windowed)..."* can also be achieved by directly using the *"Extract part..."* command of the *Sound* object.

Parameters

- **object** (parselmouth.Data) – A single object to add to the Praat object list, which will be selected when the Praat script is run.
- **objects** (*List[*parselmouth.Data*]*) – Multiple objects to be added to the Praat object list, which will be selected when the Praat script is run.
- **script** (*str*) – The content of the Praat script to be run.
- ***args** – The list of values to be passed as arguments to the Praat script. For more details on the allowed types of these argument, see *call*.

Keyword Arguments

- **extra_objects** (*List[*parselmouth.Data*]*) – Extra objects added to the Praat object list that will not be selected when the command is called (default value: `[]`).
- **capture_output** (*bool*) – Intercept and also return the output written to the Praat info window, instead of forwarding it to the Python standard output; see below (default value: `False`).
- **return_variables** (*bool*) – Also return a `dict` of the Praat variables and their values at the end of the script's execution; see below (default value: `False`).

Returns

A list of *parselmouth.Data* objects selected at the end of the script's execution.

Optionally, extra values are returned:

- A `str` containing the intercepted output if `capture_output=True` was passed.

- A `dict` mapping variable names (`str`) to their values (`object`) if `return_variables` is `True`. The values of Praat's variables get converted to Python values:
  - A Praat string variable, with a name ending in `$`, is returned as `str` value.
  - A Praat vector or matrix variable, respectively ending in `#` or `##`, is returned as `numpy.ndarray`.
  - A numeric variable, without variable name suffix, is converted to a Python `float`.

Return type
object

See also:

parselmouth.praat.run_file, *parselmouth.praat.call*, *Praat: "Scripting"*

3.2.3 parselmouth.praat.run_file

parselmouth.praat.**run_file**(*path: str*, **args*, ***kwargs*) → object

parselmouth.praat.**run_file**(*object:* parselmouth.Data, *path: str*, **args*, ***kwargs*) → object

parselmouth.praat.**run_file**(*objects: List[*parselmouth.Data*]*, *path: str*, **args*, ***kwargs*) → object

Run a Praat script from file.

Given the filename of a Praat script, the script is read and run the same way as a script string passed to *parselmouth.praat.run*. See *run* for details on the manner in which the script gets executed.

One thing to note is that relative filenames in the Praat script (including those in potential 'include' statements in the script; see *Praat: "Scripting 5.8. Including other scripts"*) will be resolved relative to the path of the script file, just like in Praat. Also note that Praat accomplishes this by temporarily changing the current working during the execution of the script.

Parameters

- **object** (*parselmouth.Data*) – A single object to add to the Praat object list, which will be selected when the Praat script is run.
- **objects** (*List[parselmouth.Data]*) – Multiple objects to be added to the Praat object list, which will be selected when the Praat script is run.
- **path** (*str*) – The filename of the Praat script to run.
- ***args** – The list of values to be passed as arguments to the Praat script. For more details on the allowed types of these argument, see *call*.

Keyword Arguments

- **keep_cwd** (*bool*) – Keep the current working directory (see `os.getcwd`) when running the script, rather than changing it to the script's parent directory, as Praat does by default (default value: `False`). Note that even when set to `True`, the filenames in the Praat script's include statements will be resolved relatively to the directory containing the script.
- ****kwargs** – See *parselmouth.praat.run*.

Returns
See *parselmouth.praat.run*.

Return type
object

See also:

parselmouth.praat.run, *parselmouth.praat.call*, *Praat: "Scripting"*

CHAPTER

FOUR

CITING PARSELMOUTH

A manuscript introducing Parselmouth (and supplementary material) has been published in the Journal of Phonetics. Scientific work and publications can for now cite Parselmouth in the following way:

> Jadoul, Y., Thompson, B., & de Boer, B. (2018). Introducing Parselmouth: A Python interface to Praat. *Journal of Phonetics*, *71*, 1-15. https://doi.org/10.1016/j.wocn.2018.07.001

```
@article{parselmouth,
    author = "Yannick Jadoul and Bill Thompson and Bart de Boer",
    title = "Introducing {P}arselmouth: A {P}ython interface to {P}raat",
    journal = "Journal of Phonetics",
    volume = "71",
    pages = "1--15",
    year = "2018",
    doi = "https://doi.org/10.1016/j.wocn.2018.07.001"
}
```

Since Parselmouth exposes existing Praat functionality and algorithm implementations, we suggest also citing Praat when using Parselmouth in scientific research:

> Boersma, P., & Weenink, D. (2021). Praat: doing phonetics by computer [Computer program]. Version 6.1.38, retrieved 2 January 2021 from http://www.praat.org/

```
@misc{praat,
    author = "Paul Boersma and David Weenink",
    title = "{P}raat: doing phonetics by computer [{C}omputer program]",
    howpublished = "Version 6.1.38, retrieved 2 January 2021 \url{http://www.praat.org/}
↪",
    year = "2021"
}
```

CHAPTER

FIVE

INDICES AND TABLES

- genindex
- modindex
- search

PYTHON MODULE INDEX

p

INDEX

Symbols

A

B

C

D

E

F

G

H

I

K

L

M

N

O

P

R

S

T

U

V

W

X

Y

Z