# salford_mic_arc Class Diagram

***Red: functionality not implemented***

**class_name**

attribute1 : *attr1_type*
attribute2 : *attr2_type*

method1()
method2()

**SingleFileTimeSeries**

filename : *str*

mic_channel_names : *list*
other_channel_names *: list*

T : *float*
fs : *int*
fs2 : *int*
t : (T*fs,) *array*
t2 : (T*fs2,) *array*

N_ch : *int*
mic_data : (N_ch, T*fs) *array*

*other_channels : (N_ch, T*fs) array*
*or (N_ch, T*fs2) array*

_read_mic_chs()
_read_other_chs()

calc_channel_mean()

filter_data()
estimate_peak_freq()

calc_PSDs()
export_wavs()

**MultiFileTimeSeries**

filenames : list of *str*
N_files : *int*

mic_channel_names : *list*
other_channel_names *: list*

T : *float*
fs : *int*
fs2 : *int*
t : (T*fs,) *array*
t2 : (T*fs2,) *array*

N_ch : *int*

files : (N_files,) *list of* 'SingleFileTimeSeries'

filter_data()

calc_channel_mean()

**SingleFilePSD**

filename : *str*

N_ch : *int*
Noverlap : *int*
window : *str*
psd : (N_ch, Ndft//2+1) *array*

df : *float*
fs : *int*
Ndft : *int*
freq : (Ndft//2+1,) *array*

psd_broadband : (N_ch, Ndft//2+1) *array*

peak_indices : (N_ch, N_peaks) *array*
peak_lims : (N_ch, N_peaks, 2) *array*

overall_SPL : (N_ch,) *array*
broadband_SPL : (N_ch,) *array*

peaks_SPL : (N_ch, N_peaks) *array*
tonal_SPL : (N_ch,) *array*

calc_broadband_PSD()

calc_overall_SPL()
calc_broadband_SPL()

find_peaks()
_find_peak_lims()

calc_tonal_SPL()
_calc_peaks_SPL()

**MultiFilePSD**

filenames : *list*
N_files : *int*

Ndft : *int*
Noverlap : *int*
window : *str*

psd: (N_files,) *list of* 'SingleFilePSD'

N_ch : *int*
df : *float*
fs : *int*
freq : (Ndft//2+1,) *array*

broadband_SPL : (N_files, N_ch) *array*
overall_SPL : (N_files, N_ch) *array*

peak_indices : (N_files, N_ch, N_peaks) *array*
peak_lims : (N_files, N_ch, N_peaks, 2) *array*

tonal_SPL : (N_azim, N_ch,)- *array*

calc_PSDs()

calc_overall_SPL()
calc_broadband_SPL()

find_peaks()
calc_peaks_SPL()
calc_tonal_SPL()

SPL_to_polar()

**root namespace**

P_REF : *float*
DEFAULT_NDFT : *int*
DEFAULT_NOVERLAP : *int*
DEFAULT_WINDOW : *str*

_calc_spectral_centroid()
calc_ac_power()

References on UML / Class Diagrams:

https://www.visual-paradigm.com/guide/uml-unified-modeling-language/uml-class-diagram-tutorial/

https://www.tutorialspoint.com/uml/uml_class_diagram.htm

***TO DO:***
*- class for rotating machinery*
*- N_blades, f_shaft, BPF*
*- recirculation_test*

*- class for reading multiple files*
*- enable filter_data method (iterate over multiple DSRawTimeSeries?)*

| *salford_mic_arc* Class Diagram | |
|---|---|
| Author | Fabio Casagrande Hirono |
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