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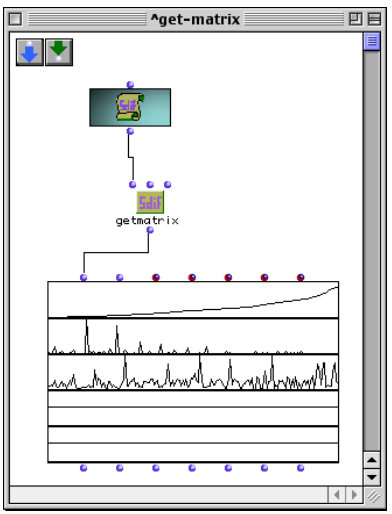
OpenMusic

SDIF Library



First Edition, September 2000

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Pompidou

This documentation was written by Carlos Agon, and was produced under the editorial responsibility of Marc Battier, Marketing Office, Ircam.

OpenMusic was conceived and programmed by Gérard Assayag and Carlos Agon.

The SDIF library was conceived and programmed by Carlos Agon.

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This documentation corresponds to version 1.0 of the SDIF library, and to version 2.0 or higher of OpenMusic.

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Groupe d'utilisateurs Ircam

L'utilisation de ce programme et de sa documentation est strictement réservée aux membres des groupes d'utilisateurs de logiciels Ircam. Pour tout renseignement supplémentaire, contactez :

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Content

1. Presentation

What is SDIF ?

" The general idea of SDIF is to store information related to signal processing and specifically of sound, in files, according to a common format to all data types. Thus, it is possible to store results or parameters of analyses, syntheses... " (1)

This new library allow OpenMusic to read and write SDIF files.

What do you need ?

If you do not know the SDIF specification, and in order to be familiar with the SDIF concepts, go to :

http://www.ircam.fr/equipes/analyse-synthese/sdif/

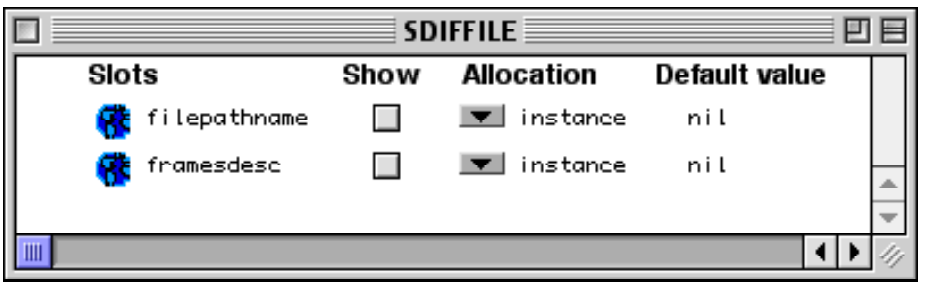
OpenMusic use the Ircam SDIF library 'Sdif 3.1.0.DLL' which is in the image folder. The SDIF library needs to know the description of all type definitions. This descriptions are in the 'SdifTypes.STYP' which is in the image folder. If you have the above files you can use the OpenMusic SDIF library in a usual way.

2. Reference

2.1 Classes

The SDIF file class is represented by the next icon :

The SDIF file has two slots : the pathname of the sdif file *'filepathname'* and an internal representation of the file *'framesdesc'* this slots are not visibles in the factory box.



When you eval a SDIF file factory a choose file dialog appears in order to bound the *'filepathname'* slot and then the slot 'framedesc' is set with one list discribing the frame and matrix structure of the file.

You can connect a pathname to the coerce input of the factory in order to avoid the choose file dialog.

2.2 Generic Functions

There are some generic functions to inspect and get values from a SDIF file, here is the list :

SDIFINFO

Syntax

sdifinfo self

[generic-function]

Description

Print a description of different frames in a SDIF file

Input

Self a SDIF file

Output

NIL. But print in the listener the file description.

NUMFRAMES

Syntax

numframes self

[generic-function]

Description

Count the frames number in a SDIF file

Input

Self a SDIF file

Output

Integer

FRAMEINFO

Syntax

frameinfo self i

[generic-function]

Description

Describe the i-eme frame of a SDIF file

Input

Self a SDIF file

i the frame index (0 for the first frmae)

Output

-Signature

-Time

-StreamId

-Number of matrix

MATRIXINFO

Syntax

matrixinfo self i j

[generic-function]

Description

Describe the j-eme matrix of the i-eme frame in a SDIF file

Input

Self a SDIF file

i	the frame index (0 for the first frame)
j	the matrix index (0 for the first matrix)

Output

-Signature

-Numrows

-Numcols

-Date-type

GETROW

Syntax

getrow self i j k

[generic-function]

Description

Get as a list the k-eme row of the j-eme matrix of the i-eme frame in a SDIF file

Input

Self a SDIF file

i	the frame index (0 for the first frame)
j	the matrix index (0 for the first matrix)
k	the row index (0 for the first row)

Output

List

GETCOL

Syntax

getcol self i j k

[generic-function]

Description

Get as a list the k-eme column of the j-eme matrix of the i-eme frame in a SDIF file

Input

Self a SDIF file

i	the frame index (0 for the first frame)
j	the matrix index (0 for the first matrix)
k	the column index (0 for the first column)

Output

List

GETVAL

Syntax

getval self i j k r

[generic-function]

Description

Get the [k,r] value of the j-eme matrix of the i-eme frame in a SDIF file

Input

Self a SDIF file

i	the frame index (0 for the first frame)
j	the matrix index (0 for the first matrix)
k	the row index (0 for the first row)
r	the row index (0 for the first column)

Output

A value

BIN2ASCII

Syntax

bin2ascii self

[generic-function]

Description

Convert a binary SDIF file into a text pseudo-sdif file.

Input

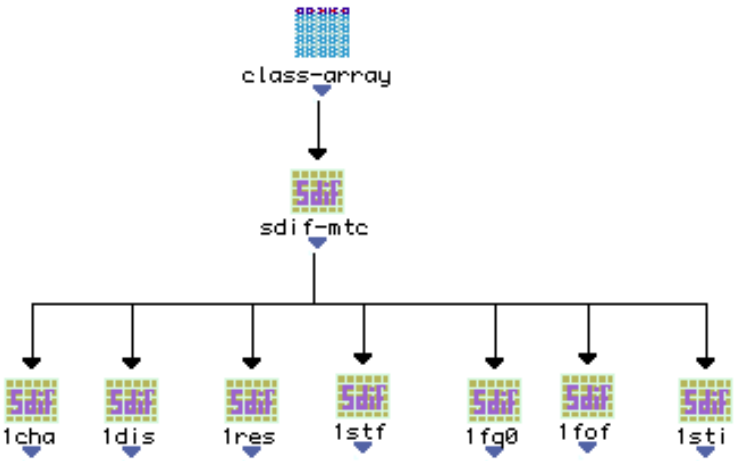
Self a SDIF file

Output

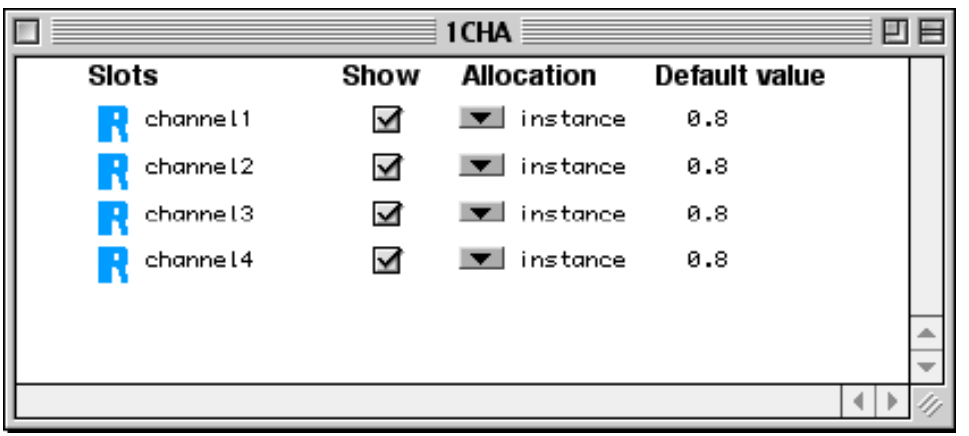
T

2.3 Predefine SDIF arrays

Some defined types in the SDIF specification are been implemented as array in OpenMusic

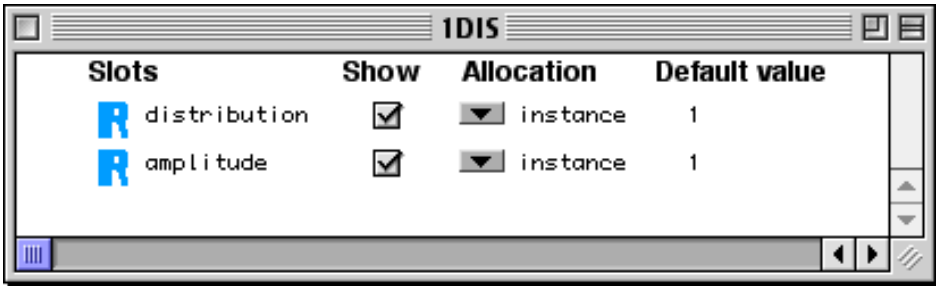


Here is a description for each array :



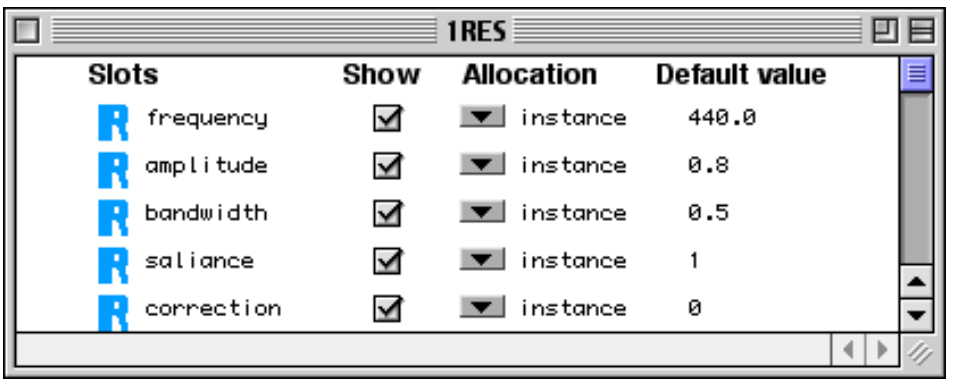
Channel i : Linear amplitude on the Channel X >0..

If there is more than 4 channels, it is enough to have types declaration frame and to make a completion of 1CHA: 1MTD 1CHA { Channel5, Channel6 } One can thus add the channels one as many than one wishes it.



Distribution : type of distribution (not yet definite but 0 means equi-distributed)

Amplitude : variance of the random process (amplitude). This type can be completed by higher order variances.



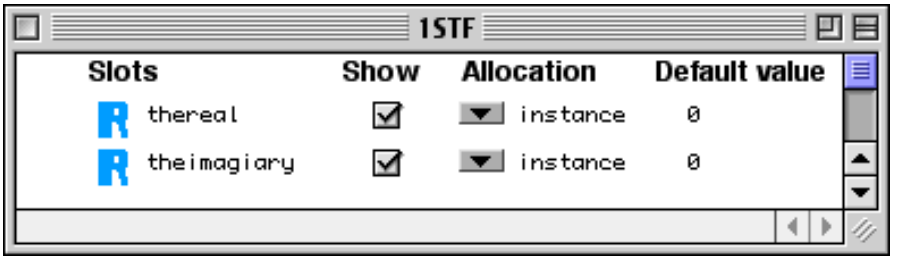
Frequency : Frequency of the resonant filter.

Amplitude : Lineary amplitude of the Filter.

BandWidth : Bandwidth of the Filter >0. (Hz).

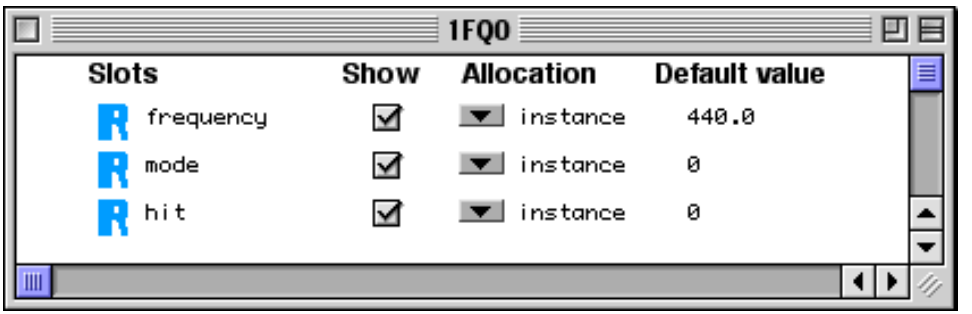
Saliance : percentage of error of the parameters 0.à 100.

Correction : automatic correction of the amplitude compared to other parameters 0. to 1.



thereal : Real values.

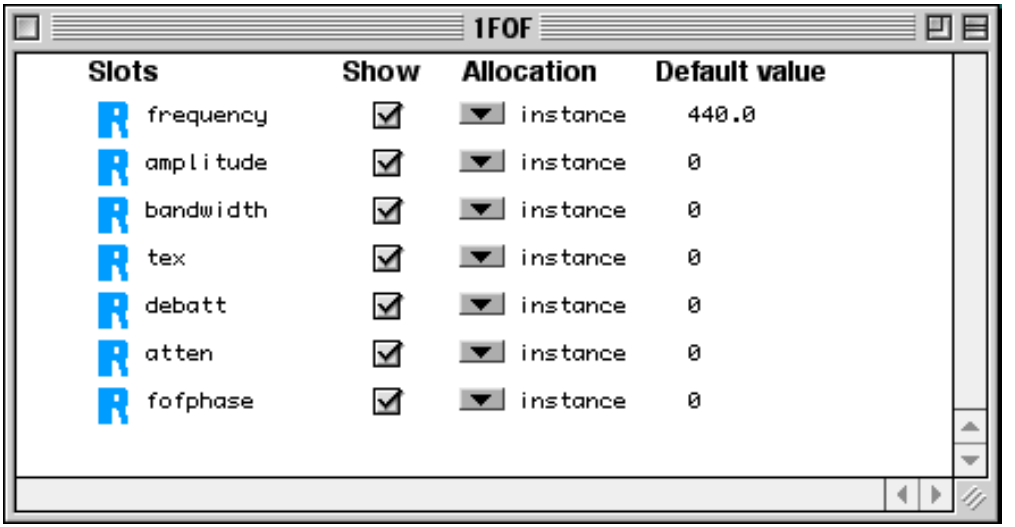
theimaginary : Imaginary Values.



Frequency : Fundamental frequency of a bank of fofs >0.(Hz).

Mode : Mode of excitation (0: Frequency, 1:Hit, 2:Both).

Hit : Excitation (Dirac) over a precise time (0: no excitation, 1: excitation).



Frequency : Frequency of the fof >0. (Hz).

Amplitude : Lineary amplitude of the envelope of the fof.

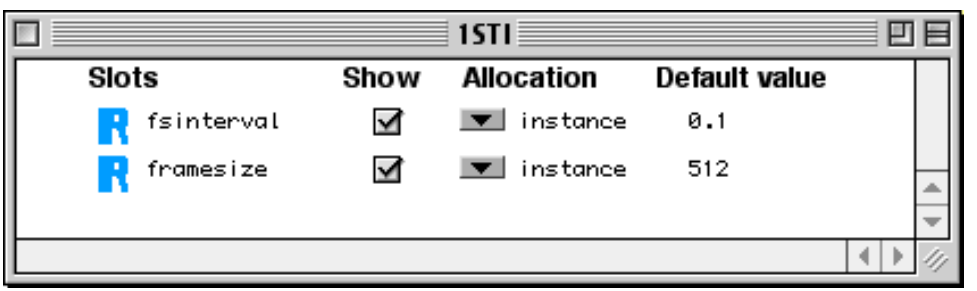
BandWidth : Bandwidth of Fof >0. (Hz).

Tex : Time of exitation >0. (seconds).

DebAtt : Moment of beginning of the attenuation of the envelope >0. (seconds).

Atten : Duration of the attenuation >0. (seconds).

FofPhase : Phase of the sinusoid of the fof 0. with 2pi rad.



Use the function get-matrix in order to create automaticly one matrix from a SDIF file

GET-MATRIX

Syntax

bin2ascii sel fi j

[generic-function]

Description

If the signature of the j-eme matrix of the i-eme frame in the SDIF file has an equivalent array in OpenMusic it function return one instance of this matrix getting the values from the file.

Input

Self a SDIF file

i	frame number
j	matrix number

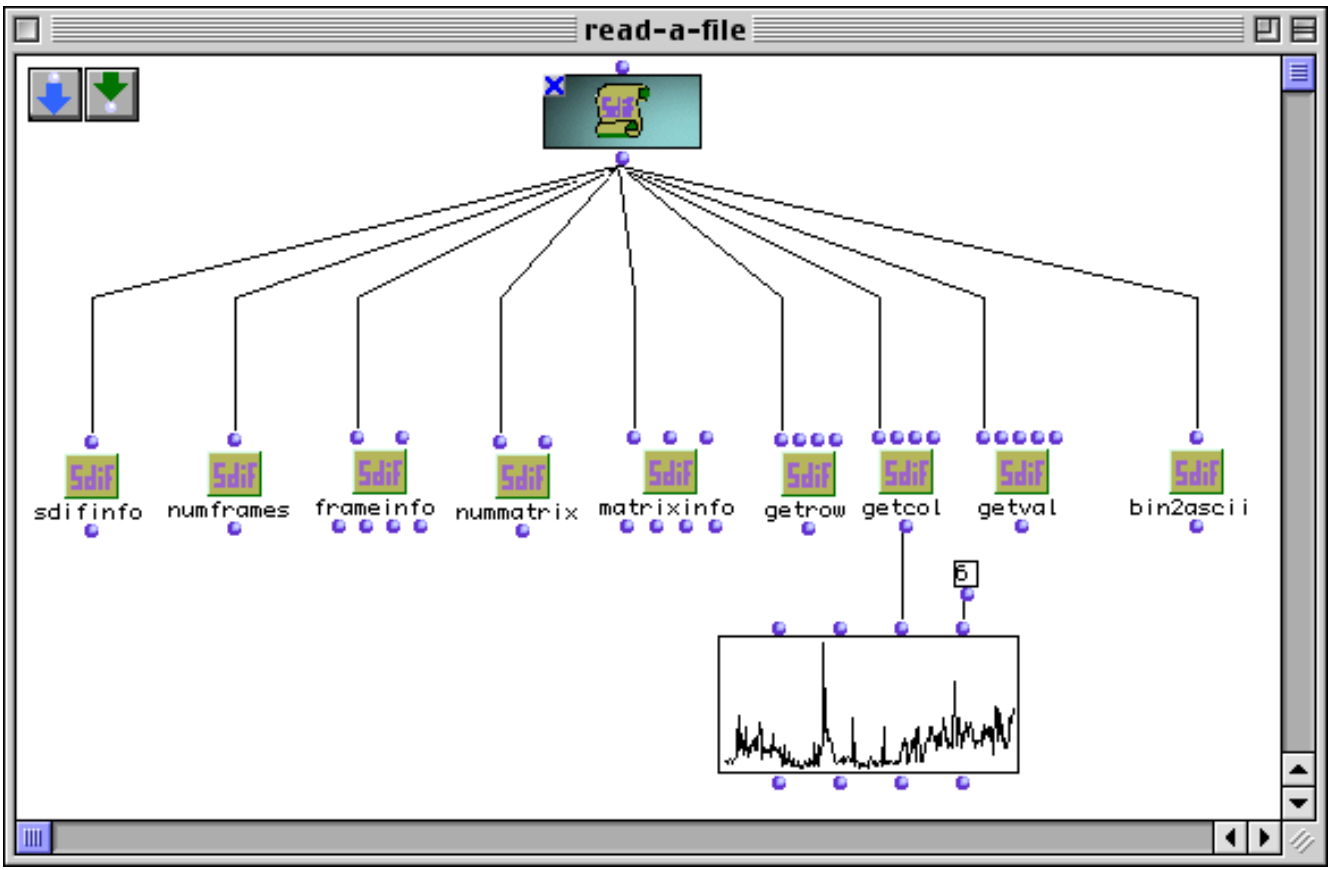
Output

One instance of some predefined matrix.

3. Exemples

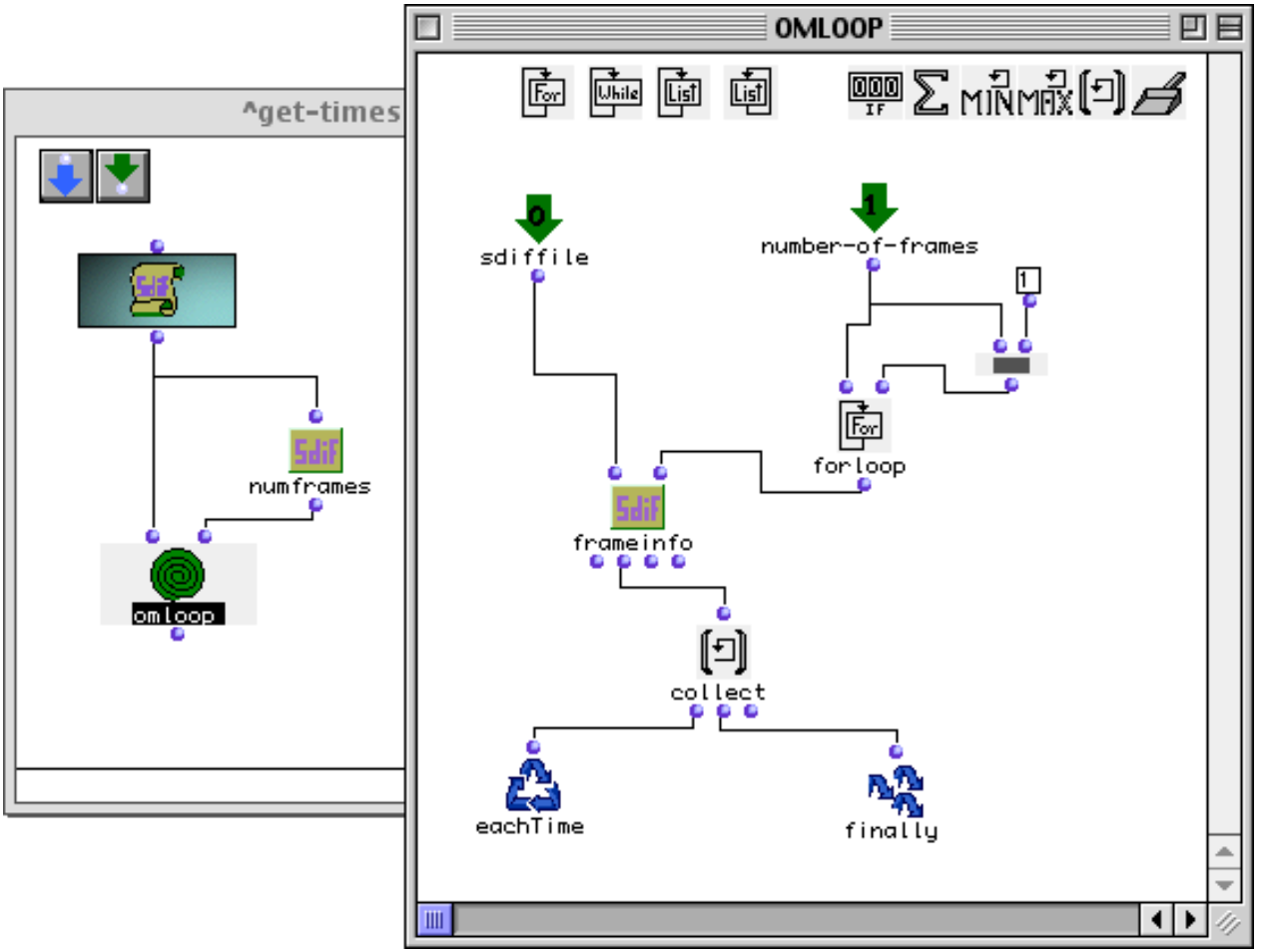
3.1 Read-a-file

This exemple use all functions defined in 2.2. Eval boxes from left to rigth.



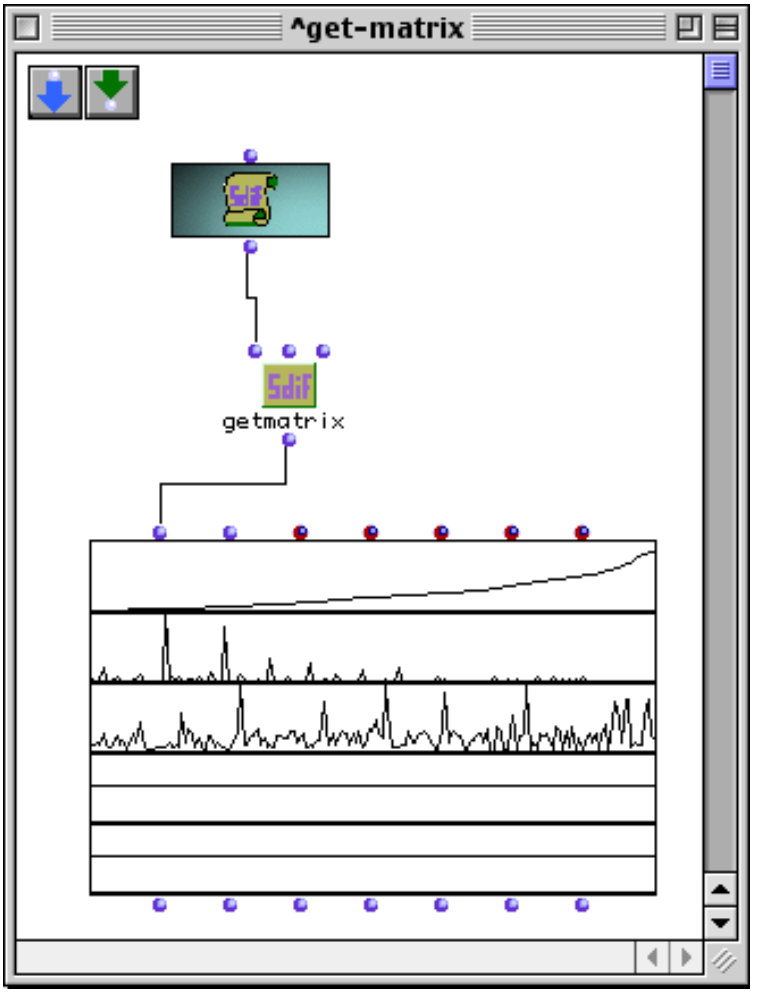
3.2 Get-times

A simple loop getting the onset times of all frames in a SDIF file



3.3 Get-Matrix

Using the function get-matrix



4. References

(1) Dominique Virolle, *SDIF Format Specification. Analyse/Synthèse*, Ircam-Centre Pompidou, 2000.

5. Acknowledgements

Thanks to Diemo Schwarz and Adrian Lefevre.