# HARKTOOL5

機能設計書

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# 概要

HARKTOOL は，GHDSS で用いる分離用伝達関数ファイルとLocalizeMUSICで用いる 定位用伝達関数ファイルを

生成および可視化するツールである．

HARKTOOLの機能を下記に示す．

* インパルス応答リストファイル作成
* TSP応答リストファイル作成
* マイクロホン位置ファイル作成
* ノイズ位置ファイル作成
* 定位用伝達関数ファイル作成
* 分離用伝達関数ファイル作成
* 作成ファイルのグラフ表示

# インパルス応答から伝達関数生成

harktoolcli\_calctfimp

TSP録音から伝達関数作成処理

harktoolcli\_calctfec

幾何計算から伝達関数作成処理

harktoolcli\_calctfimp

くちTSP録音から伝達関数作成処理

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tf が正しいファイルかを調べる

harktoolcli-validxml

XMLの正しさを検証する

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harktoolcli-genconfig

harktoolcli-genposxml

harktoolcli-validtf

harktoolcli-validxml

## インパルス応答から伝達関数生成

* **機能**

インパルス応答から伝達関数生成

* **構文**

**harktool5 calctfimp [parameter]**

* **パラメータ**

|  |  |  |
| --- | --- | --- |
| I/O | Name | Description |
| IN | --mic-list | int32/float32/complex |
| IN |  |  |
| IN |  |  |
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* **戻り値**

成功　：　新規 harkio\_Matrix

失敗　：　NULL

* **処理説明**

インパルス応答から伝達関数生成

harktoolcli\_calctfimp

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | mic-list  impulse-list  伝達関数  作成処理  output-file |  |
| mic-list | g.argv.mic\_file |  |
| impulse-list | g.argv.impulse\_file |  |
| output-file | g.argv.output |  |
| output-type | g.argv.tf\_type |  |
| normalize-src | g.argv.normalize\_src |  |
| normalize-mic | g.argv.normalize\_mic |  |
| normalize-freq | g.argv.normalize\_freq |  |
| direct-length | g.argv.direct\_sound\_length |  |
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| logLeve |  |  |
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TSP録音から伝達関数作成処理

harktoolcli\_calctfec

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | mic-list  tsp-list  伝達関数  作成処理  output-file  /tmp/harktool/date+time  /tsp（calcsysの結果） |  |
| mic-list | g.argv.mic\_file |  |
| tsp-list | g.argv.tsp\_file |  |
| output-file | g.argv.output |  |
| output-type | g.argv.tf\_type |  |
| normalize-src | g.argv.normalize\_src |  |
| normalize-mic | g.argv.normalize\_mic |  |
| normalize-freq | g.argv.normalize\_freq |  |
| direct-length | g.argv.direct\_sound\_length |  |
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| logLeve |  |  |
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幾何計算から伝達関数作成処理

harktoolcli\_calctfimp

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | mic-list  tsp-list  伝達関数  作成処理  output-file |  |
| mic-list | g.argv.mic\_file |  |
| tsp-list | g.argv.tsp\_file |  |
| output-file | g.argv.output |  |
| output-type | g.argv.tf\_type |  |
| normalize-src | g.argv.normalize\_src |  |
| normalize-mic | g.argv.normalize\_mic |  |
| normalize-freq | g.argv.normalize\_freq |  |
| direct-length | g.argv.direct\_sound\_length |  |
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| logLeve |  |  |
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くちTSP録音から伝達関数作成処理

harktoolcli\_calctfmouth

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | mic-list  tsp-list  伝達関数  作成処理  output-file  /tmp/harktool/date+time  /tsp |  |
| mic-list | g.argv.mic\_file |  |
| tsp-list | g.argv.tsp\_file |  |
| output-file | g.argv.output |  |
| output-type | g.argv.tf\_type |  |
| start | g.argv.start |  |
| end | g.argv.end |  |
| mch | g.argv.mch |  |
| nch | g.argv.nch |  |
| fltlen | g.argv.fltlen |  |
| hop | g.argv.hop |  |
| headmargin | g.argv.headmargin |  |
| enable-wn | g.argv.enable\_wn |  |
| wn-level | g.argv.wn\_level |  |
| enable-normalize | g.argv.enable\_normalize |  |
|  |  |  |
| logLeve | g.argv.loglevel |  |
| help |  |  |

calcsysimp

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | tsp-list  Wav file  Inpulse応答  作成処理  output-file  /tmp/harktool/date+time  /tsp |  |
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・・harktoolcli

harktoolcli-gentsp

TSP信号の合成

harktoolcli-gentsp output\_filename [options]

|  |  |  |
| --- | --- | --- |
|  | Inpulse応答  作成処理  output-file |  |
| -n: Number of TSPs |  |
| -o: Offset of the TSP |  |
| -r: Sampling rate of TSP |  |
| -s: input tsp raw (32 bit float) file |  |
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harktoolcli-conv

インパルス応答ファイルとクリーン音声ファイルの畳み込み

|  |  |  |
| --- | --- | --- |
|  | tsp-list  Wav file  Inpulse応答  作成処理  output-file |  |
| -i : Impulse response file [ float 32bit wave format] |  |
| -c : input file (before convolution)[ signed 16bit PCM wave format: short mono] |  |
| -o : output file (after convolution) [wav file] |  |
|  |  |
| [option] |  |
| -s : select channels of output [ex. -s 0,3,6] |  |
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harktoolcli-genconfig

XML 形式で定義した <config> を作る

|  |  |  |
| --- | --- | --- |
|  | Inpulse応答  作成処理  output-file |  |
| -s: Number of TSPs in the recorded wav (-s 16) |  |
| -o: Offset of the TSP (-o 0) |  |
| -p: Range for peak search (-p 0,32) |  |
| -n: NFFT of convolution (-n 1024) |  |
| -r: SamplingRate (-r 16000) |  |
| -m: SignalMax (-m 32768) |  |
| -l: TSPlength (-l 16384) |  |
| -t: Path to the original TSP |  |
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harktoolcli-genposxml

XML 形式で定義した <positions> を作る

circle

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Inpulse応答  作成処理  output-file |  |
| --type Coordinate type  ※ tsp / impulse / noise / microphone / soundsource |  |  |
| --output Output filename |  |  |
| --id Position id of start |  |  |
| --path position path |  |  |
| --min-azimuth Minimum of azimuth |  |  |
| --max-azimuth Maximum of azimuth |  |  |
| --interval-azimuth Interval of azimuth |  |  |
|  |  |  |
| --min-elevation Minimum of elevation |  |  |
| --max-elevation Maximum of elevation |  |  |
| --interval-elevation Interval of elevation |  |  |
|  |  |  |
| --min-radius Minimum of radius |  |  |
| --max-radius Maximum of radius |  |  |
| --interval-radius Interval of radius |  |  |
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grid

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| --- | --- | --- | --- |
|  |  | Inpulse応答  作成処理  output-file |  |
| --type Coordinate type  ※ tsp / impulse / noise / microphone / soundsource |  |  |
| --output Output filename |  |  |
| --id Position id of start |  |  |
| --path position path |  |  |
|  |  |  |
| --min-x\_axis Minimum of x\_axis |  |  |
| --max-x\_axis Maximum of x\_axis |  |  |
| --interval-x\_axis Interval of x\_axis |  |  |
|  |  |  |
| --min-y\_axis Minimum of y\_axis |  |  |
| --max-y\_axis Maximum of y\_axis |  |  |
| --interval-y\_axis Interval of y\_axis |  |  |
|  |  |  |
| --min-z\_axis Minimum of y\_axis |  |  |
| --max-z\_axis Maximum of y\_axis |  |  |
| --interval-z\_axis Interval of y\_axis |  |  |
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cylinder

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| --- | --- | --- |
|  | Inpulse応答  作成処理  output-file |  |
| --type Coordinate type  ※ tsp / impulse / noise / microphone / soundsource |  |
| --output Output filename |  |
| --id Position id of start |  |
| --path position path |  |
|  |  |
| --min-azimuth Minimum of azimuth |  |
| --max-azimuth Maximum of azimuth |  |
| --interval-azimuth Interval of azimuth |  |
|  |  |
| --min-height Minimum of height |  |
| --max-height Maximum of height |  |
| --interval-height Interval of height |  |
|  |  |
| --min-radius Minimum of radius |  |
| --max-radius Maximum of radius |  |
| --interval-radius Interval of radius |  |
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ball

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| --- | --- | --- |
|  | Inpulse応答  作成処理  output-file |  |
| --type Coordinate type  ※ tsp / impulse / noise / microphone / soundsource |  |
| --output Output filename |  |
| --id Position id of start |  |
| --path position path |  |
|  |  |
| --min-azimuth Minimum of azimuth |  |
| --max-azimuth Maximum of azimuth |  |
| --interval-azimuth Interval of azimuth |  |
|  |  |
| --min-elevation Minimum of elevation |  |
| --max-elevation Maximum of elevation |  |
| --interval-elevation Interval of elevation |  |
|  |  |
| --min-radius Minimum of radius |  |
| --max-radius Maximum of radius |  |
| --interval-radius Interval of radius |  |
|  |  |

harktoolcli-mergexmls

複数の XML を１ファイルに統合

|  |  |  |
| --- | --- | --- |
|  | tsp-list  Wav file  Inpulse応答  作成処理  output-file |  |
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harktoolcli-validtf

tf が正しいファイルかを調べる

|  |  |  |
| --- | --- | --- |
|  | Zip file  Inpulse応答  作成処理 |  |
| tf\_filename(zip) |  |
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harktoolcli-validxml

XMLの正しさを検証する

|  |  |  |
| --- | --- | --- |
|  | tsp-list  Wav file  Inpulse応答  作成処理  output-file |  |
| filename(xml) |  |
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harktoolcli-mat2csv

行列ファイルを csv 形式に変換する

|  |  |  |
| --- | --- | --- |
|  | In file  Inpulse応答  作成処理  output-file |  |
| filename(mat file) |  |
| -o output-filename] |  |
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harktoolcli-conv-tf

旧伝達関数ファイルを変換

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| --- | --- | --- |
|  | tsp-list  Wav file  Inpulse応答  作成処理  output-file |  |
| -l : Localization transfer file(Binary) or NULL |  |
| -s : Separation transfer file(Binary) |  |
| -o : output transfer file(zip file) |  |
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harktoolcli-mat2csv

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| --- | --- | --- |
|  | tsp-list  Wav file  Inpulse応答  作成処理  output-file |  |
| filename(mat file) |  |
| -o output-filename] |  |
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harktoolcli-genconfig

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| --- | --- | --- |
|  | tsp-list  Wav file  Inpulse応答  作成処理  output-file |  |
| -s: Number of TSPs in the recorded wav (-s 16) |  |
| -o: Offset of the TSP (-o 0) |  |
| -p: Range for peak search (-p 0,32) |  |
| -n: NFFT of convolution (-n 1024) |  |
| -r: SamplingRate (-r 16000) |  |
| -m: SignalMax (-m 32768) |  |
| -l: TSPlength (-l 16384) |  |
| -t: Path to the original TSP |  |
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harktoolcli-genneighbors

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| --- | --- | --- |
|  | tsp-list  Wav file  Inpulse応答  作成処理  output-file |  |
| -i: input filename |  |
| -o: Output filename |  |
| -a: Algorithms( 1:NearestNeighbor only) |  |
| -n: nearest |  |
| -t: threshold |  |
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