NAME

snr; Tool for evaluting signal-to-noise-ratio (SNR) for speech signal.

USAGE

snr [**-?**] [**-h**] [**-w** *<wlen>*] [**-s** *<wstep>*] [**-SNR**] [**-SSNR**] [**-SSNRA**] [**-LSNR** *<out>*] *<mixed>* *<clean>* [**-d** *<det>*] [**-E**] [**-v**]

snr [**-?**] [**-h**] [**-w** *<wlen>*] [**-s** *<wstep>*] <**-m** *num>* [**-SNR**] [**-SSNR**] [**-SSNRA**] *<noise>* *<clean>* *<mixed>* [**-d** *<det>*] [**-E**] [**-v**]

snr [**-?**] [**-h**] [**-w** *<wlen>*] [**-s** *<wstep>*] [**-SSNR**] [**-SSNRA**] [**-LSNR** *<out>*] **-est1** *<mixed>* [**-d** *<det>*] [**-E**] [**-v**]

snr [**-?**] [**-h**] [**-w** *<wlen>*] [**-s** *<wstep>*] [**-SSNR**] [**-SSNRA**] [**-LSNR** *<out>*] **-est2** *<mixed>* [**-d** *<det>*] [**-N** *<order>*] [**-E**] [**-v**]

snr [**-?**] [**-h**] [**-w** *<wlen>*] [**-s** *<wstep>*] [**-SSNR**] [**-SSNRA**] **-estm** *<mixed>* [**-L** *<t>*] [**-c** *<const>*] [**-fs** *<frequency>*] [**-d** *<det>*] [**-E**] [**-v**]

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DESCTRIPTION

You can use program **snr** for evaluting **SNR** (Global SNR), **SSNR** (Segmental SNR), **SSNRA** (Arithmetic SNR), and **LSNR** (Local SNR). You can choose reverse process, generating mix file with demand signal-to-noise-ratio. In both case is possible to use an external detector of speech activity (VAD). If is not used external file with speech activity, program will use internal detector based in cepstral distance. If You use option **[-E]**, internal detector based in energy algorithm will be used. The third usage of this tool is estimating SNR from one mixed signal without reference acording to selected option (**SNR, SSNR, SSNRA, LSNR**). Evalutions are based on algorithms described in following publications:

1) P. Pollak: Estination Metods of Speech SNR, Metody odhadu odstupu signalu odsumu v recovem signalu (Czech language) In Akusticke listy, Vol. 7, 2001

2) P. Pollak: Efficient and Relaible Measurement and simulations of noisy speech background, In EUSPICO 2002, Sep 2002

3) J. Slezak: Urcovani pomeru signal-sum, SNR kriteria (Czech language). CTU, Prague 2001

MANDATORY PARAMETERS

<mixed>

Name of the file with the noisy speech. (required parametr)

<clean>

Name of the file with the clean speech. (required parametr)

<noise>

Name of the file with the noise signal. (required parametr)

OPTIONAL PARAMETERS
-d *<det>*

Usage of external detector VAD, *<det>* is required name of the text file with speach activity.

-D *<vad>*

Usage of external detector on the sample level, *<vad>* is required name of the text file with speach activity.

-E   Usage of internal detector VAD based in energy algorithm.

-SNR   Usage for evalution of global signal-to-noise-ratio. (**SNR**)

-SSNR   Usage for evalution of segmental signal-to-noise-ratio. (**SSNR**)

-SSNRA

Usage for modifed evalution of segmantal signal-to-noise-ratio. (**SSNRA**)

-LSNR *<out>*

Usage for evalution of local signal-to-noise-ratio. *<out>* is required name of the out file.

-h, -?   Prints the help and exits.

-w *<wlen>*

Set the segment window length. Must be positiv. Defalt value is 512.

-s *<wstep>*

Step of the window beginnings. Default is 256. (50% overlaping)

-m *<num>*

Option for generating mixed file with demand (*num*) signal-to-noise-ratio.

-N *<order>*

Order of running average, default is N=10.

-L *<t>*   Time interval in sec for Martin algorithm, default is t=0.5.

-c *<const>*

        Multiple constant for Martin algorithm, default is c=1.2.

-fs *<frequency>*

        Sampling frequency in Hz, default is fs=8000.

-est1   First estimation metod of evaluting signal-to-noise-ratio. It is based in averaging of the energy of the noise backrounds.

-est2   Other estimation method of evaluting signal-to-noise-ratio. It is based in running average.

-estm   Martin estimation method of evaluting signal-to-noise-ratio. It is based in founding of minimum power in interval **L**.

-v   Verbose abstract.

EXAMPLES

snr -w *512* **-s** *512* **-SNR** *mixed_speech.bin clean_speech.bin* **-d** *detector.det*

        Return **SNR** in dB of signal-to-noise-ratio with length of segment *512* samples and step *512* samples. Tool use external detector of speech activty.

snr -SSNRA *mixed_speech.bin clean_speech.bin*

        Return **SSNRA** in dB of signal-to-noise-ratio with length of segment *512* samples and step *256* samples. Tool use internal detector of speech activty based in cepstral distance.

snr -SSNRA -m *0 noise.bin clean_speech.bin mixed_speech.bin* **-E**

        In file *mixed_speech.bin* tool return mixed signal with *0* dB of **SSNRA** signal-to-noise-ratio. Length of segment is *512* samples and step *256* samples. Program will use internal detector of speech based in energy algorithm.

snr -w *512* **-s** *512* **-LSNR** *output.txt mixed_speech.bin clean_bin* **-d** *detector.det*

        In file *output.txt* tool return for each segment the **LSNR** signal-to-noise-ratio.Tool use external detector of speech activty. Length of segment is *512* samples and step *512* samples.

snr -SSNR -est1 *mixed_file.bin*

        Return **SSNR** in dB of signal-to-noise-ratio with length of segment *512* samples and step *256* samples. Tool use estimation metod based in exponencial forgettery and internal detector of speech activty.

snr -w *256* **-s** *256* **-SSNR -est1** *mixed_file.bin* **-d** *detector.det*

Return **SSNR** in dB of signal-to-noise-ratio with length of segment *256* samples and step *256* samples. Tool use estimation metod based in exponencial forgettery and external detector of speech activty.

snr -SSNR -est2 *mixed_file.bin* **-d** *detector.det*

Return **SSNR** in dB of signal-to-noise-ratio with length of segment *512* samples and step *256* samples. Tool use estimation metod based in running average. Tool use external detector of speech activty.

snr -SSNRA -estm *mixed_file.bin* **-L** *0.8* **-fs** *8000*

Return **SSNRA** in dB of signal-to-noise-ratio with length of segment *512* samples and step *256* samples. Tool use Martin algortihm with time intrerval *0.8* s and sample frequency *8000* Hz

AUTOR

Martin Vondrasek, CVUT FEL K331

vondram3@feld.cvut.cz, pollak@feld.cvut.cz

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