

Voce registrata nel 2000 da Daniele Gullà

File - Test

Info about sound file: C:\Programmi\Ikar\Azzurrina 2000.wav
Size of file: 664804 bytes
Length of sound: 332380 samples, 664760 bytes
Number of channels: 1 (mono); 16 bits
Sampling frequency: 11025 Hz
Number of frames: 10380 (overlapping - 224/256 samples, 7/8)

1st stage of processing... - evaluating

-24 DC offset
-32768 min sample
31026 max sample
normalizing is possible
normalizing isn't useful, change will be less 0.5%

1st stage of processing - dividing speech signal to speech and pauses

10380 frames processed
5176 frames with pauses (49.87 %)
5204 frames with voice (50.13 %)
-19 DC offset

2nd stage of processing - searching of voiced frames, measuring of parameters

19 number of voiced frames (0.37 %)

3rd stage of processing - statistical processing of parameters

Completed...

4th stage of processing - calculation of covariac matrixes

Completed...

File - Test

Info about sound file: C:\Programmi\Ikar\Casca_la_palla.wav
603308 bytes
Length of sound: 301632 samples, 603264 bytes
Number of channels: 1 (mono); 16 bits
Sampling frequency: 11025 Hz
Number of frames: 9419 (overlapping - 224/256 samples, 7/8)

Size of file:

1st stage of processing... - evaluating

-1 DC offset
-32768 min sample
32767 max sample
normalizing is possible
normalizing isn't useful, change will be less 0.5%

1st stage of processing - dividing speech signal to speech and pauses

9419 frames processed
5474 frames with pauses (58.12 %)
3945 frames with voice (41.88 %)
-1 DC offset

2nd stage of processing - searching of voiced frames, measuring of parameters

1430 number of voiced frames (36.25 %)

3rd stage of processing - statistical processing of parameters

Completed...

4th stage of processing - calculation of covariac matrixes

Completed...

File - Etalon
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Voce registrata in luglio 2011 da Riccardo Di Napoli

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Euclidean distance
 At comparison we use average of variances of parameters
 (1) without using of F-ratio
 (2) rejecting parameters with low F-ratio
 (3) with using of F-ratio

	(1)	(2)	(3)
RMS difference of spectrum	1.363	1.550	1.554
RMS difference of cepstrum	1.137	1.159	1.181
RMS difference of cep.coef	0.472	0.487	0.634
RMS difference F0-3,AF,Na	1.313	1.691	1.540
RMS difference of LPC	0.603	0.611	0.755
Total Euclidean distance	1.231	1.398	1.384

Mahalonobis distance
 group of other parameters 74.465
 cepstral coefficients 20.011
 LPC 63.837

Parametric statistical test - Comparing of means
 if $P=0.99$ and $n > 30$ $Z_{lim} = 2.58$

F0	$Z = 31.99Z > Z_{lim}$	difference is big, H0 - false !!
F1	$Z = 3.82Z > Z_{lim}$	difference is big, H0 - false !!
F2	$Z = 0.83Z \leq Z_{lim}$	difference is small, H0 - OK
F3	$Z = 0.74Z \leq Z_{lim}$	difference is small, H0 - OK
AF	$Z = 4.23Z > Z_{lim}$	difference is big, H0 - false !!
F1/F0	$Z = 2.44Z \leq Z_{lim}$	difference is small, H0 - OK
F2/F1	$Z = 3.83Z > Z_{lim}$	difference is big, H0 - false !!
Slope	$Z = 4.75Z > Z_{lim}$	difference is big, H0 - false !!

RMS Z= 0.23Z <= Zlim difference is small, H0 - OK
 dF0 Z= 5.20Z > Zlim difference is big, H0 - false !!

Parametric statistical test - Comparing of variances
 Romanovsky test R, P=0.889

F0 R= 9.09 R >= 3 difference is big, H0 - false !!!
 F1 R= 5.57 R >= 3 difference is big, H0 - false !!!
 F2 R= 1.05 R < 3 difference is small, H0 - OK
 F3 R= 1.60 R < 3 difference is small, H0 - OK
 AF R= 4.48 R >= 3 difference is big, H0 - false !!!
 F1/F0 R= 17.56 R >= 3 difference is big, H0 - false !!!
 F2/F1 R= 5.49 R >= 3 difference is big, H0 - false !!!
 Slope R= 0.12 R < 3 difference is small, H0 - OK
 dF0 R= 26.89 R >= 3 difference is big, H0 - false !!!

Non-parametric statistical test - Wilcoxon test
 if P=0.99 and n >25 Zlim= 2.58

F0 T= 195 Tlow= 9099 Thigh= 18451 H0 - false !!!
 F1 T= 6144 Tlow= 7780 Thigh= 16496 H0 - false !!!
 F2 T= 14298 Tlow= 8164 Thigh= 16910 H0 - OK
 F3 T= 10984 Tlow= 6921 Thigh= 14319 H0 - OK
 AF T= 9118 Tlow= 10164 Thigh= 16970 H0 - false !!!
 F1/F0 T= 15684 Tlow= 7758 Thigh= 16450 H0 - OK
 F2/F1 T= 18348 Tlow= 7470 Thigh= 15837 H0 - false !!!
 Slope T= 20928 Tlow= 9087 Thigh= 18425 H0 - false !!!
 RMS T= 16290 Tlow= 9099 Thigh= 18451 H0 - OK
 dF0 T= 8154 Tlow= 5168 Thigh= 12382 H0 - OK

Table of statistical tests

	Means	Variances	Wilcoxon
F0			
F1			
F2	OK	OK	OK
F3	OK	OK	OK
AF			
F1/F0	OK		OK
F2/F1			
Slope		OK	
RMS	OK	--	OK
dF0			OK

OK - comparison shows the proximity of parameters
 -- - comparison wasn't made

P- Value = 0.5234 !!!

LA CORRISPONDENZA E' DELL'ORDINE DI PCO SUPERIORE AL 50%. COMPATIBILE MA INSUFFICIENTE A COMPROVARNE LA MEDESIMA ORIGINE VOCALE E QUINDI L'IDENTITA'

C.T.U. DANIELE GULLA'



