

The UWS system for NIST'10

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Overview

- Uses ALIZE/SpkDET open source toolkit
- UBM-GMM followed by an SVM operating on GMM means, plus NAP
- 3 sets of scores are submitted, differs mainly by using different NAP set

System Description

<u>UWS 1</u>

- 20-ms frame length with 10-ms overlap
- MFCC for male, LFCC for female
- Mask = 19 static + 19 delta + 11 double delta + delta energy
- Energy based End point detecting
- UBM training data comes from NIST SRE'04 set
- Speaker modelling: mean only adaptation from GMM-UBM
- Session variability modelling : Nuisance Attribute
- Projection with 40 eigenvectors
- Two NAP sets are used SVM using mean supervector
 - i) NAP0405: phone data from NIST $^\prime 04$,
 - mic data from '05
 - ii) NAP05: mic data from NIST '05
 - An average of 24 recordings per speaker
- Impostor modelling: data from NIST '04 (phone) and 05 (mic).
- Score Fusion:

i) Male: no fusion, direct score from MFCC-NAP0405 system

ii) Female: linear fusion of score from LFCC-NAP05 system and LFCC-NAP0405 system

<u>UWS_2</u>

- Both male and female uses LFCC feature
- NAP0405 system for all trials

<u>UWS_3</u>

- Both male and female uses LFCC feature
- Score fusion: NAP0405 system for phone-phone, phonemic and mic-phone trials











	MinDCF		
DET	UWS_1	UWS_2	UWS_3
1	0.79	0.77	0.76
2	0.91	0.93	0.92
3	0.71	0.70	0.70
4	0.71	0.73	0.70
5	0.54	0.64	0.64
6	0.85	0.90	0.90
7	0.75	0.73	0.76
8	0.44	0.43	0.43
9	0.47	0.49	0.43

EER (%)	
Male	Female
4.21	5.78
6.15	8.98
4.90	7.65
4.44	7.32
6.52	7.44
6.99	8.20
7.22	10.22
0.84	2.23
3.39	4.05
	Male 4.21 6.15 4.90 4.44 6.52 6.99 7.22 0.84 3.39

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Male speakers: 124 from NIST'04 and 45 from NIST'05 Period Female speakers: 186 from NIST'04 and 52 from NIST'05

- 1.1 Front end processing
- ver 10-ms overlap teaures with ver tizer 50 fi.e 1 st to 11 del N111s ou le de ta Era
- Female same as feature for male but uses LFCC features, not MFCC

- all generated with SPR - Energy based Fnd poin ASpkd tools 5^m male speakers 1.2 UBM trainir

- GMM with 512 components, gender-dependent
- aptalion momenta in the speakers from NIST SRE'04 Bet aptalion momenta in the speakers from
- SVM using mean supervector
- 1.4 Session variability modelling
- Nuisance Attribute Projection with ApelenvStor: 05
- Two NAP set are used:
- o NAP0405: data from NIST '04 and 05
- Image: Male speakers: 124 from NIST'04 and 45 from NIST'05
- Premale speakers: 186 from NIST'04 and 52 from NIST'05
- o NAP05: data from NIST'05
- 2 45 male speakers
- 2 52 female speakers from NIST'05
- o An average of 24 recordings per speaker
- 1.5 Score normalization
- T-norm with imposter selected from NIST SRE'04 (phone speech) and NIST SRE'05 (microphone speech).
- 1.6 Score Fusion
- Male: no fusion, direct score from MFCC-NAP0405 system
- Female: linear fusion of score from LFCC-NAP05 system and LFCC-NAP0405 system

Male: no fusion, direct score from MFCC-NAP0405 system Female: linear fusion of score from I FCC-NAI