

Supplementary Material for: Universal Background Sparse Coding and Multilayer Bootstrap Network for Speaker Clustering

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APPENDIX

A. Supplementary Figures

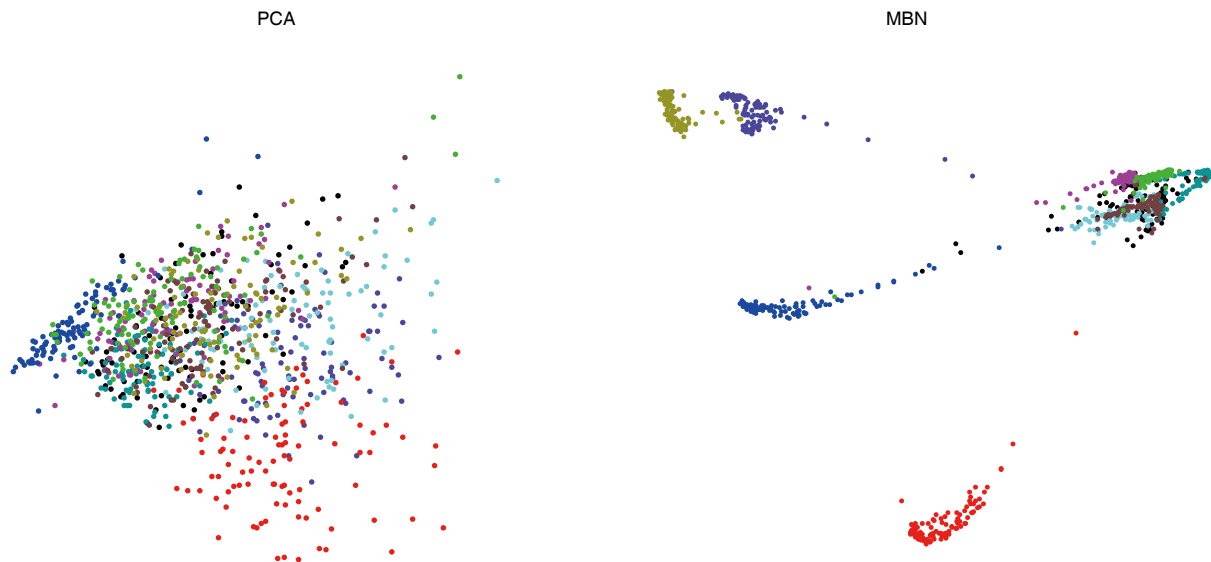


Fig. 1. Visualizations of 10 speakers by PCA and MBN respectively, where a 16-mixtures UBM with 0 EM iteration is used to produce their input supervectors. The speakers are labeled in different colors.

B. Supplementary Tables

TABLE I

ACCURACY COMPARISON (IN TERMS OF NMI) BETWEEN GMM+PCA AND GMM+MBN WITH RESPECT TO MIXTURE NUMBER OF GMM-UBM AND NUMBER OF OUTPUT DIMENSIONS. THE GMM-UBMS ARE OPTIMIZED BY 20 EM ITERATIONS.

		1-mix	2-mix	4-mix	8-mix	16-mix	32-mix	64-mix
2 dimensions	PCA	21.73	17.70	32.36	35.74	45.14	48.04	46.43
	MBN	42.79	50.03	63.30	72.72	76.01	73.05	72.01
3 dimensions	PCA	32.45	22.18	34.98	43.99	54.50	57.70	55.72
	MBN	47.18	53.38	67.76	78.09	79.07	77.36	76.17
5 dimensions	PCA	39.40	39.61	43.81	51.36	60.73	67.32	66.84
	MBN	48.37	58.74	73.45	83.14	84.88	84.96	82.37
10 dimensions	PCA	43.27	44.43	49.65	58.18	67.54	76.95	78.83
	MBN	53.44	62.28	77.23	87.01	89.58	90.54	88.11
30 dimensions	PCA	43.98	47.11	56.51	68.72	78.98	86.23	87.90
	MBN	57.75	65.59	79.83	88.56	91.25	91.10	88.96
50 dimensions	PCA	44.16	47.61	57.86	71.86	82.33	89.57	90.48
	MBN	57.44	65.47	79.08	87.10	90.20	90.60	88.02

TABLE II

ACCURACY COMPARISON (IN TERMS OF NMI) BETWEEN GMM+PCA AND GMM+MBN WITH RESPECT TO MIXTURE NUMBER OF GMM-UBM AND NUMBER OF OUTPUT DIMENSIONS. THE GMM-UBMS ARE OPTIMIZED BY 0 EM ITERATIONS.

		1-mix	2-mix	4-mix	8-mix	16-mix	32-mix	64-mix
2 dimensions	PCA	21.74	22.42	22.81	22.66	21.89	23.04	24.93
	MBN	41.44	44.95	48.54	51.75	53.41	51.53	53.25
3 dimensions	PCA	32.06	28.95	28.82	32.45	30.62	31.99	33.45
	MBN	46.77	49.42	51.55	54.97	55.91	54.42	56.30
5 dimensions	PCA	39.41	37.59	35.37	36.82	35.34	35.46	36.20
	MBN	48.90	52.33	53.82	56.97	58.92	56.56	58.99
10 dimensions	PCA	43.21	41.60	40.27	41.56	41.28	39.48	40.32
	MBN	53.92	55.72	57.14	60.76	61.64	60.15	62.50
30 dimensions	PCA	44.13	43.71	42.52	44.42	44.30	42.40	43.40
	MBN	57.79	59.68	60.64	64.05	65.26	64.74	66.84
50 dimensions	PCA	44.10	43.46	42.70	44.84	44.69	43.12	44.17
	MBN	57.53	59.77	60.55	63.81	65.12	64.04	66.59