

Participant Results

Proprietary Fingerprint Template Evaluation II (PFT-II)

Participant 3Z — Neurotechnology

Image Group

Information Access Division

Information Technology Laboratory



Contents

1	1K Sample Evaluation	3
2	Full Evaluation	5
3	Original PFT Dataset	13

List of Figures

1	1K Sample Evaluation – Template Size Distribution	3
2	1K Sample Evaluation – Enrollment and Comparison Timing	4
3	Full Evaluation – DET for POEBVA, DHS2, AZLA, and combined from R Index, L Index, and R/L Index	5
4	Full Evaluation – DET for all finger positions from AZLA	6
5	Full Evaluation – EERs and FTEs	7
6	Full Evaluation – FMR@FNMR = (0.002, 0.005) and 95% Confidence Intervals	8
7	Full Evaluation – FNMR@FMR = 0.0001 and 95% Confidence Intervals	9
8	Original PFT Dataset – DET	13

List of Tables

1	Sample Dataset — Template Size Distribution	3
2	Enrollment Times (sec)	4
3	Comparison Times (sec)	4
4	EER and FTE — Dataset AZLA	10
5	EER and FTE — Dataset DHS2	10
6	EER and FTE — Dataset POEBVA	10
7	Details for FNMR@FMR = 0.0001 and FMR@FNMR = (0.002, 0.005) — Dataset AZLA	11
8	Details for FNMR@FMR = 0.0001 and FMR@FNMR = (0.002, 0.005) — Dataset DHS2	12
9	Details for FNMR@FMR = 0.0001 and FMR@FNMR = (0.002, 0.005) — Dataset POEBVA	12
10	Details for EER, FNMR@FMR = 0.0001, and FMR@FNMR = 0.005 — Original PFT Dataset	13

1 1K Sample Evaluation

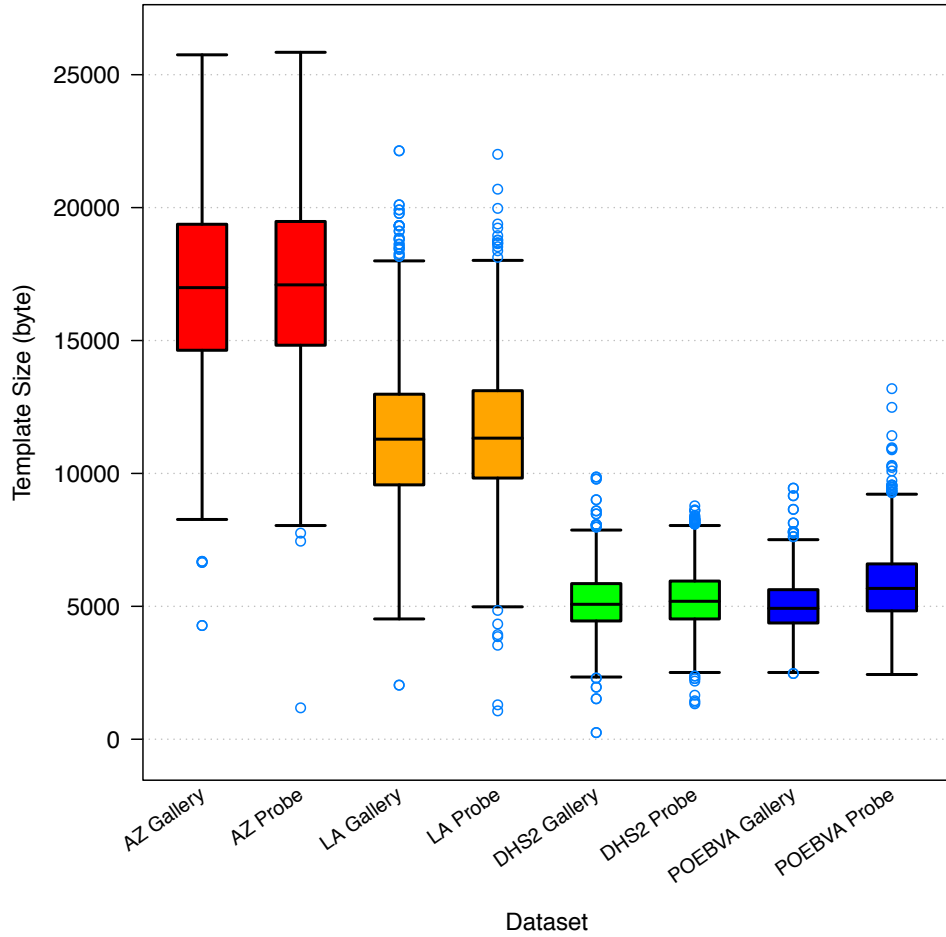


Figure 1: 1K Sample Evaluation – Template Size Distribution

	AZ		LA		DHS2		POEBVA	
	Gallery	Probe	Gallery	Probe	Gallery	Probe	Gallery	Probe
<i>Dimensions</i>	800x800	800x800	412x1000	400x776	368x368	368x368	500x500	368x368
<i>Maximum</i>	25748	25843	22138	22005	9864	8781	9446	13189
75%	19373.5	19478	12980	13113	5855	5950	5627	6596
<i>Median</i>	16989	17093.5	11289	11327	5076	5190	4924	5674.5
25%	14633	14823	9569.5	9826	4449	4525	4373	4829
<i>Minimum</i>	4278	1181	2036	1067	250	1333	2473	2435

Table 1: Sample Dataset — Template Size Distribution

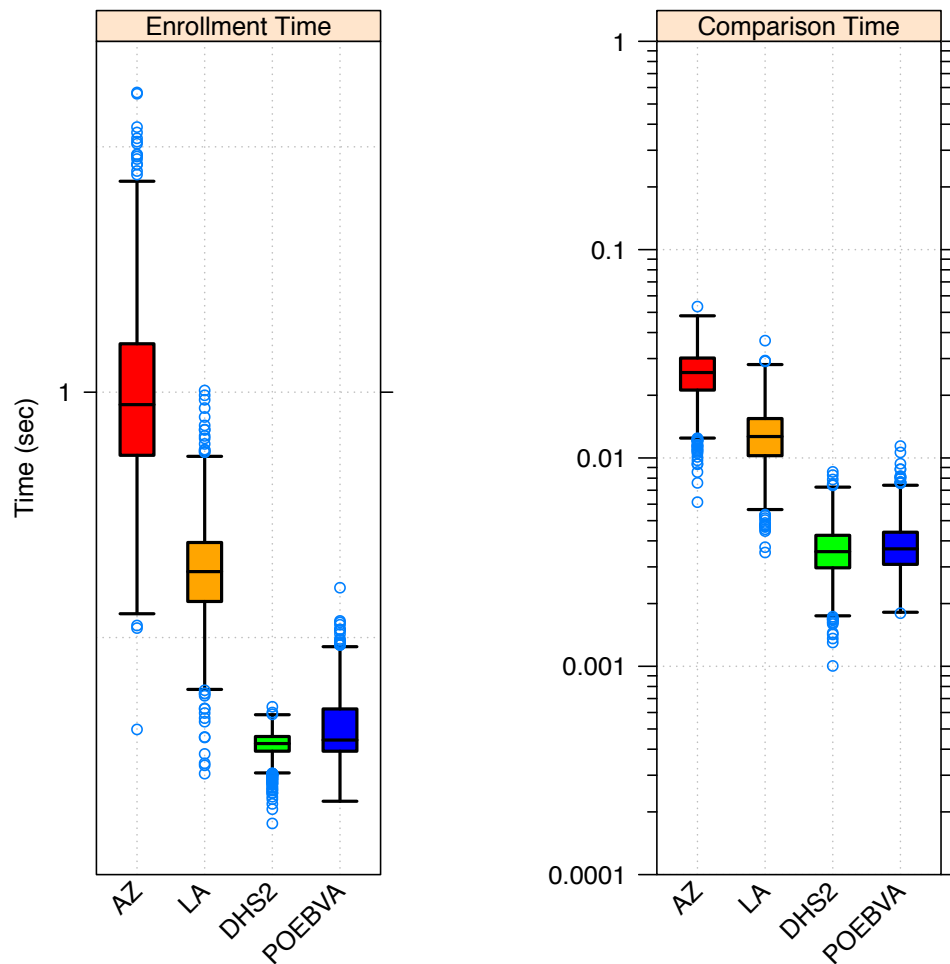


Figure 2: 1K Sample Evaluation – Enrollment and Comparison Timing

	AZ	LA	DHS2	POEBVA
<i>Maximum</i>	1.611	1.003	0.359	0.602
<i>75%</i>	1.099	0.694	0.298	0.355
<i>Median</i>	0.975	0.634	0.284	0.291
<i>25%</i>	0.871	0.573	0.268	0.268
<i>Minimum</i>	0.313	0.223	0.121	0.166

Table 2: Enrollment Times (sec)

	AZ	LA	DHS2	POEBVA
<i>Maximum</i>	0.053	0.037	0.009	0.011
<i>75%</i>	0.030	0.015	0.004	0.004
<i>Median</i>	0.026	0.013	0.004	0.004
<i>25%</i>	0.021	0.010	0.003	0.003
<i>Minimum</i>	0.006	0.004	0.001	0.002

Table 3: Comparison Times (sec)

2 Full Evaluation

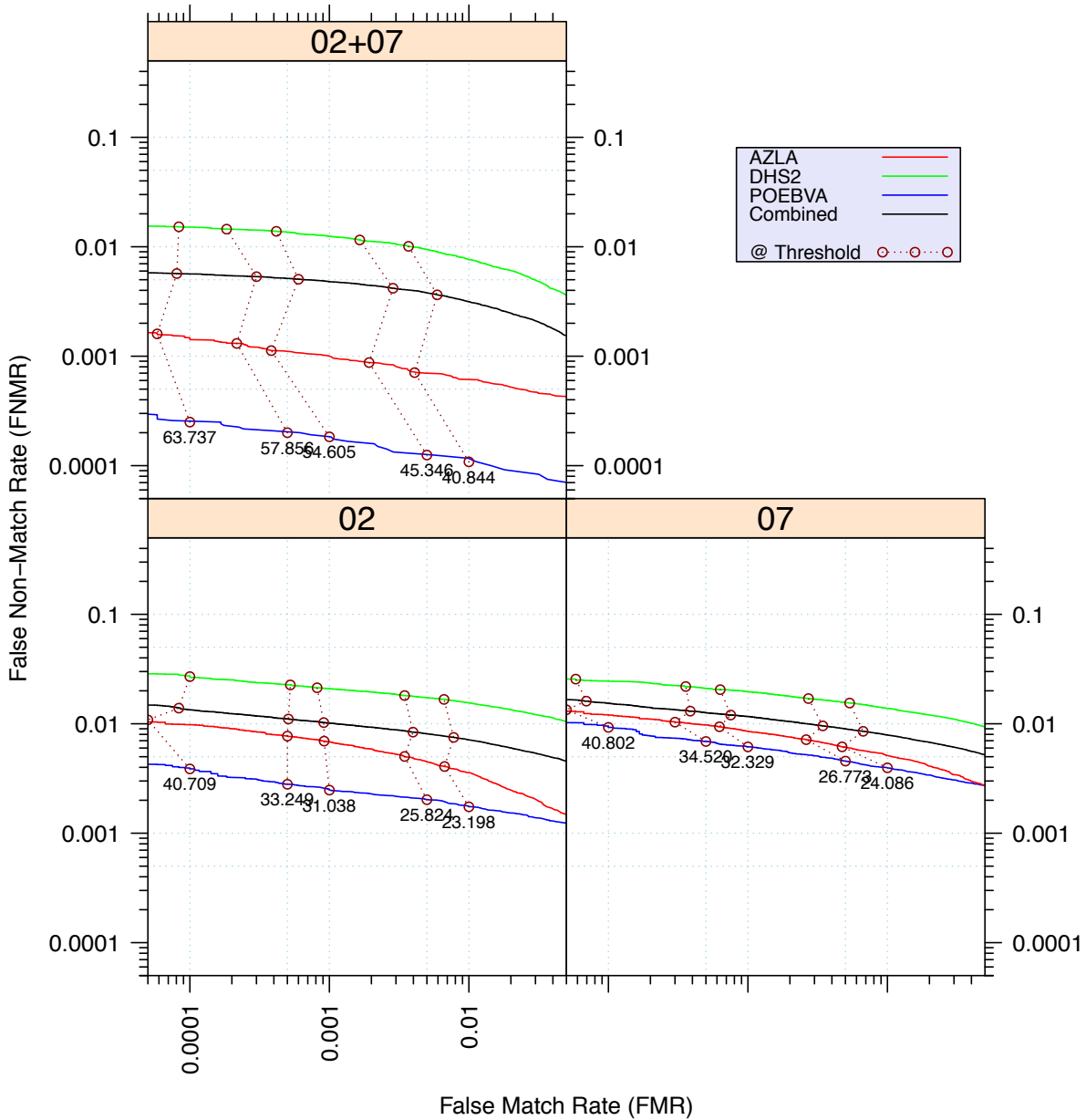


Figure 3: Full Evaluation – DET for POEBVA, DHS2, AZLA, and combined from R Index, L Index, and R/L Index

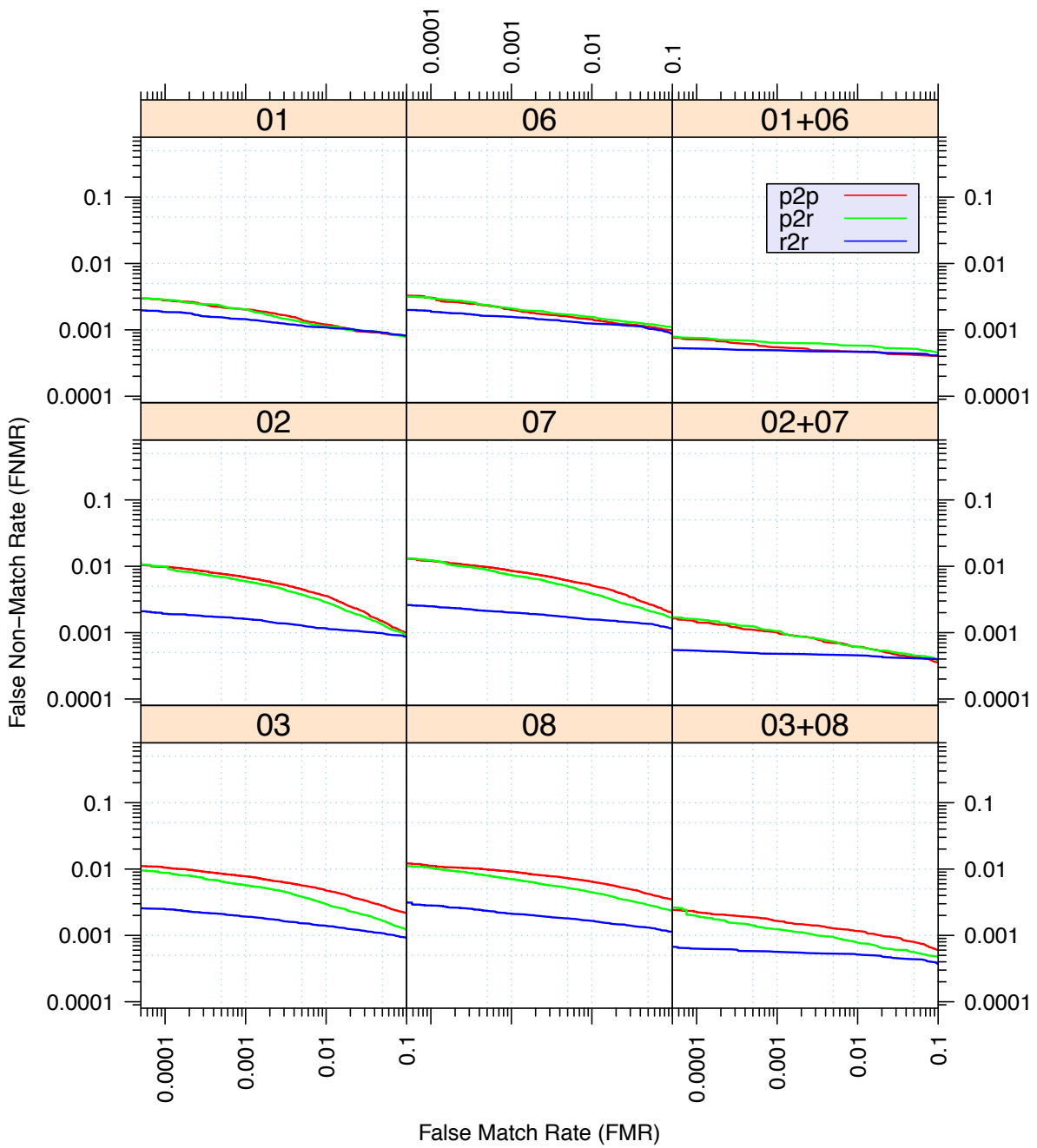


Figure 4: Full Evaluation – DET for all finger positions from AZLA

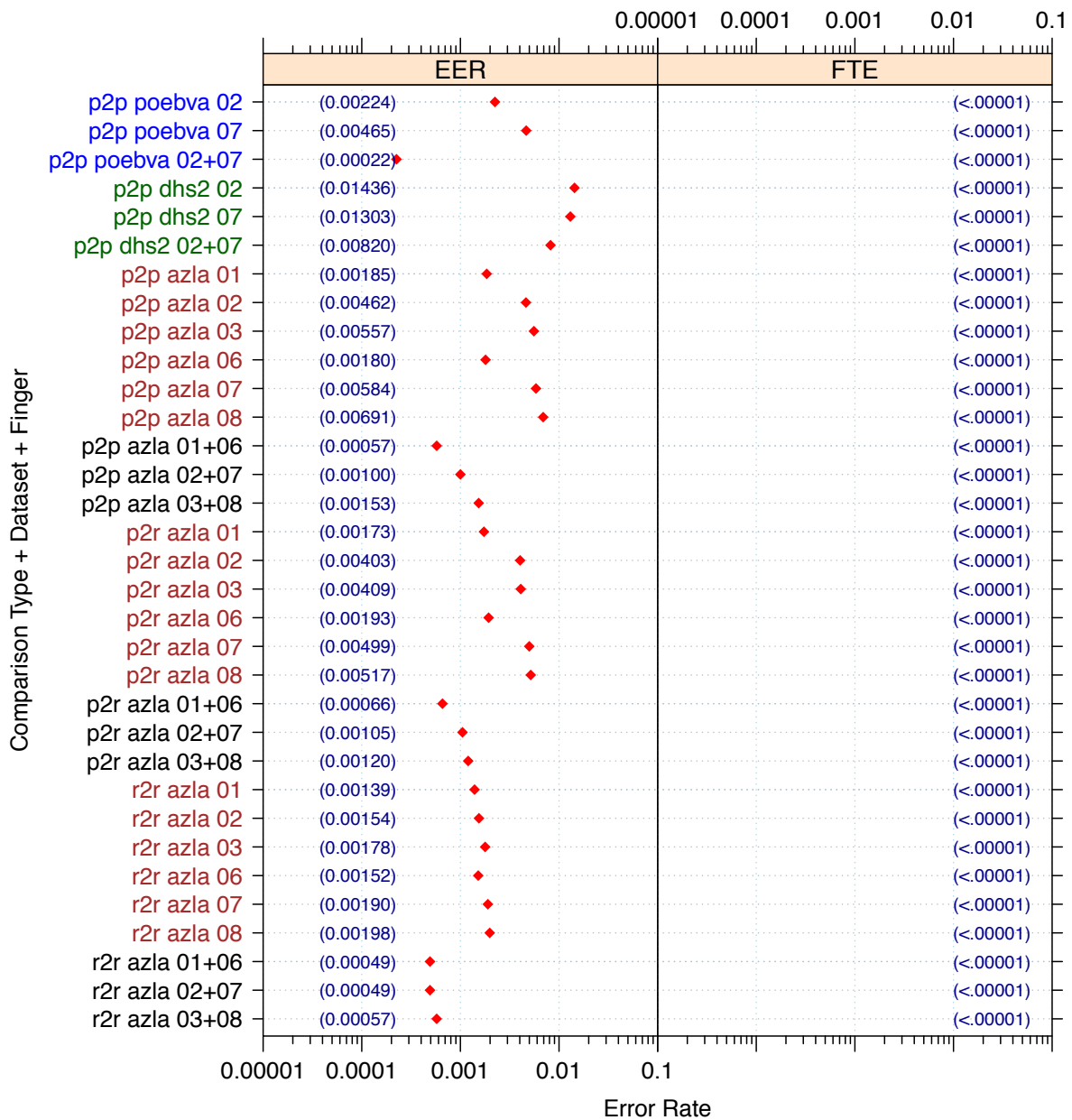


Figure 5: Full Evaluation – EERs and FTEs

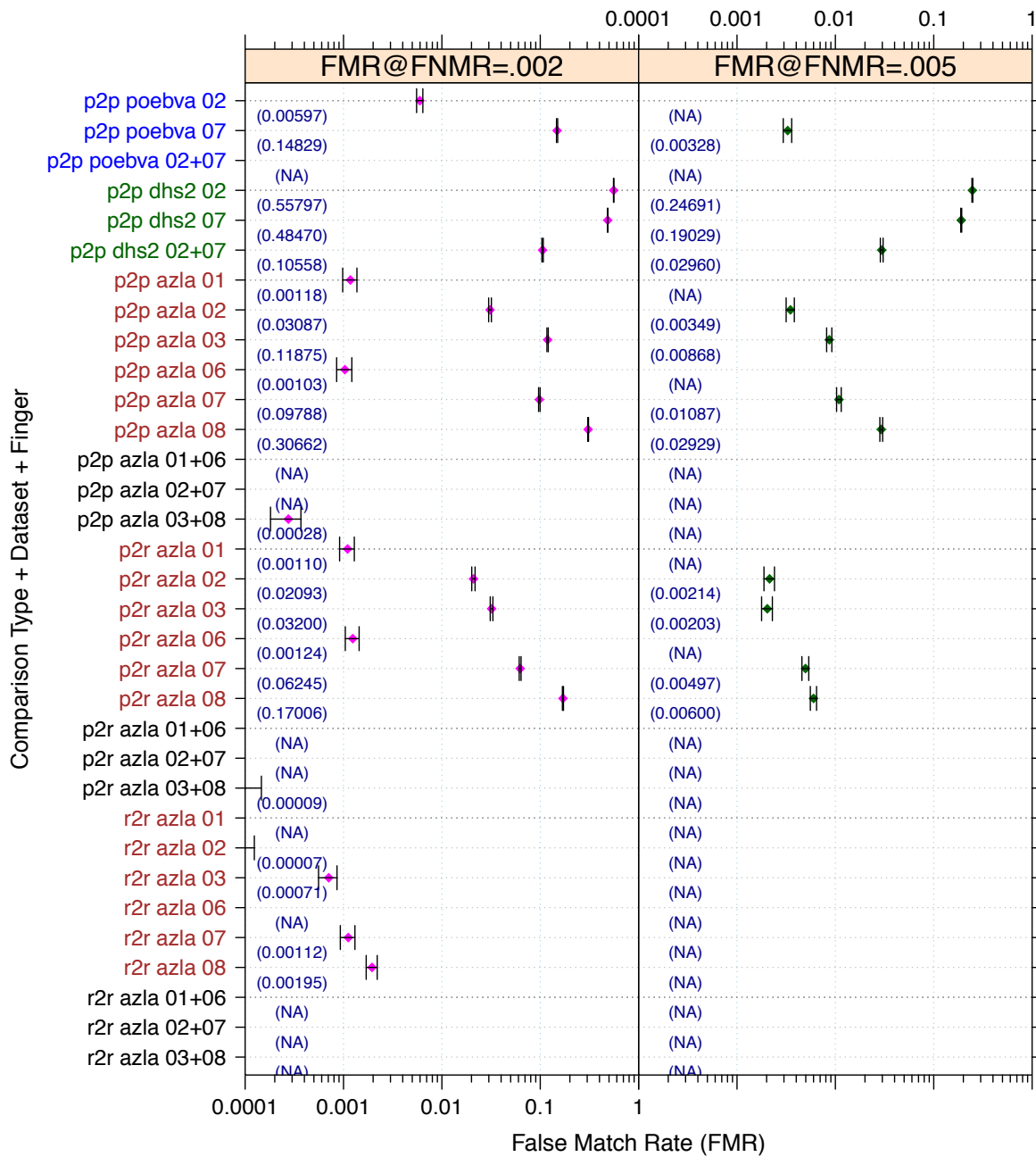


Figure 6: Full Evaluation – FMR@FNMR = (0.002, 0.005) and 95% Confidence Intervals

Note: “n/a” indicates that the value could not be reliably measured with the available sample size.

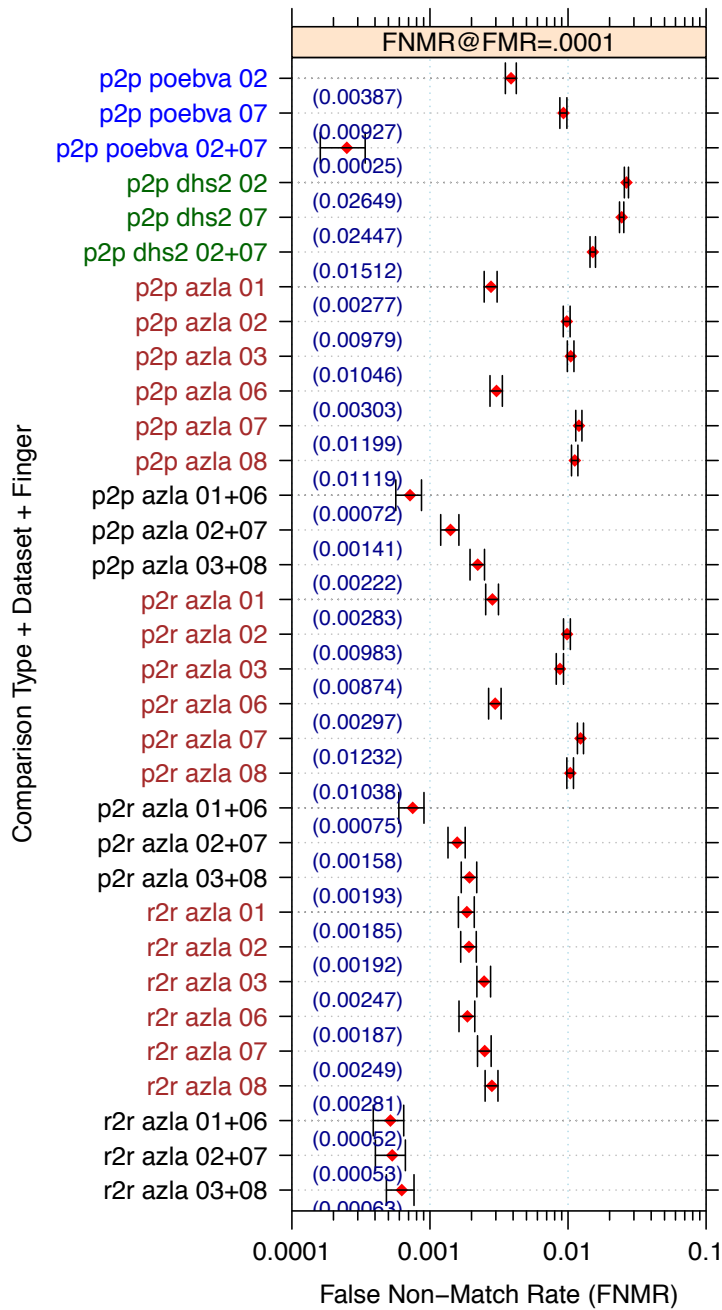


Figure 7: Full Evaluation – FNMR@FMR = 0.0001 and 95% Confidence Intervals

Note: “n/a” indicates that the value could not be reliably measured with the available sample size.

		EER	FTE Rate
Plain to Plain	<i>R Thumb</i>	0.0019	0.0000
	<i>R Index</i>	0.0046	0.0000
	<i>R Middle</i>	0.0056	0.0000
	<i>L Thumb</i>	0.0018	0.0000
	<i>L Index</i>	0.0058	0.0000
	<i>L Middle</i>	0.0069	0.0000
	<i>R/L Thumb</i>	0.0006	0.0000
	<i>R/L Index</i>	0.0010	0.0000
	<i>R/L Middle</i>	0.0015	0.0000
Plain to Rolled	<i>R Thumb</i>	0.0017	0.0000
	<i>R Index</i>	0.0040	0.0000
	<i>R Middle</i>	0.0041	0.0000
	<i>L Thumb</i>	0.0019	0.0000
	<i>L Index</i>	0.0050	0.0000
	<i>L Middle</i>	0.0052	0.0000
	<i>R/L Thumb</i>	0.0007	0.0000
	<i>R/L Index</i>	0.0010	0.0000
	<i>R/L Middle</i>	0.0012	0.0000
Rolled to Rolled	<i>R Thumb</i>	0.0014	0.0000
	<i>R Index</i>	0.0015	0.0000
	<i>R Middle</i>	0.0018	0.0000
	<i>L Thumb</i>	0.0015	0.0000
	<i>L Index</i>	0.0019	0.0000
	<i>L Middle</i>	0.0020	0.0000
	<i>R/L Thumb</i>	0.0005	0.0000
	<i>R/L Index</i>	0.0005	0.0000
	<i>R/L Middle</i>	0.0006	0.0000

Table 4: EER and FTE — Dataset AZLA

		EER	FTE Rate
<i>R Index</i>	0.0144	0.0000	
<i>L Index</i>	0.0130	0.0000	
<i>R/L Index</i>	0.0082	0.0000	

Table 5: EER and FTE — Dataset DHS2

		EER	FTE Rate
<i>R Index</i>	0.0022	0.0000	
<i>L Index</i>	0.0046	0.0000	
<i>R/L Index</i>	0.0002	0.0000	

Table 6: EER and FTE — Dataset POEBVA

		FNMR@FMR = 0.0001	FMR@FNMR = 0.002	FMR@FNMR = 0.005
Plain to Plain	<i>R Thumb</i>	0.0028 ±0.00030	0.0012 ±0.00019	n/a
	<i>R Index</i>	0.0098 ±0.00056	0.0309 ±0.00098	0.0035 ±0.00033
	<i>R Middle</i>	0.0105 ±0.00058	0.1187 ±0.00183	0.0087 ±0.00052
	<i>L Thumb</i>	0.0030 ±0.00031	0.0010 ±0.00018	n/a
	<i>L Index</i>	0.0120 ±0.00062	0.0979 ±0.00168	0.0109 ±0.00059
	<i>L Middle</i>	0.0112 ±0.00060	0.3066 ±0.00261	0.0293 ±0.00095
	<i>R/L Thumb</i>	0.0007 ±0.00015	n/a	n/a
	<i>R/L Index</i>	0.0014 ±0.00021	n/a	n/a
	<i>R/L Middle</i>	0.0022 ±0.00027	0.0003 ±0.00009	n/a
Plain to Rolled	<i>R Thumb</i>	0.0028 ±0.00030	0.0011 ±0.00019	n/a
	<i>R Index</i>	0.0098 ±0.00056	0.0209 ±0.00081	0.0021 ±0.00026
	<i>R Middle</i>	0.0087 ±0.00053	0.0320 ±0.00100	0.0020 ±0.00026
	<i>L Thumb</i>	0.0030 ±0.00031	0.0012 ±0.00020	n/a
	<i>L Index</i>	0.0123 ±0.00062	0.0624 ±0.00137	0.0050 ±0.00040
	<i>L Middle</i>	0.0104 ±0.00057	0.1701 ±0.00213	0.0060 ±0.00044
	<i>R/L Thumb</i>	0.0008 ±0.00015	n/a	n/a
	<i>R/L Index</i>	0.0016 ±0.00022	n/a	n/a
	<i>R/L Middle</i>	0.0019 ±0.00025	0.0001 ±0.00005	n/a
Rolled to Rolled	<i>R Thumb</i>	0.0019 ±0.00024	n/a	n/a
	<i>R Index</i>	0.0019 ±0.00025	n/a	n/a
	<i>R Middle</i>	0.0025 ±0.00028	0.0007 ±0.00015	n/a
	<i>L Thumb</i>	0.0019 ±0.00024	n/a	n/a
	<i>L Index</i>	0.0025 ±0.00028	0.0011 ±0.00019	n/a
	<i>L Middle</i>	0.0028 ±0.00030	0.0019 ±0.00025	n/a
	<i>R/L Thumb</i>	0.0005 ±0.00013	n/a	n/a
	<i>R/L Index</i>	0.0005 ±0.00013	n/a	n/a
	<i>R/L Middle</i>	0.0006 ±0.00014	n/a	n/a

Table 7: Details for FNMR@FMR = 0.0001 and FMR@FNMR = (0.002, 0.005) — Dataset AZLA

Note: “n/a” indicates that the value could not be reliably measured with the available sample size.

	FNMR@FMR = 0.0001	FMR@FNMR = 0.002	FMR@FNMR = 0.005
<i>R Index</i>	0.0265 ±0.00091	0.5580 ±0.00281	0.2469 ±0.00244
<i>L Index</i>	0.0245 ±0.00087	0.4847 ±0.00283	0.1903 ±0.00222
<i>R/L Index</i>	0.0151 ±0.00069	0.1056 ±0.00174	0.0296 ±0.00096

Table 8: Details for FNMR@FMR = 0.0001 and FMR@FNMR = (0.002, 0.005) — Dataset DHS2

	FNMR@FMR = 0.0001	FMR@FNMR = 0.002	FMR@FNMR = 0.005
<i>R Index</i>	0.0039 ±0.00035	0.0060 ±0.00044	n/a
<i>L Index</i>	0.0093 ±0.00054	0.1483 ±0.00201	0.0033 ±0.00032
<i>R/L Index</i>	0.0003 ±0.00009	n/a	n/a

Table 9: Details for FNMR@FMR = 0.0001 and FMR@FNMR = (0.002, 0.005) — Dataset POEBVA

Note: “n/a” indicates that the value could not be reliably measured with the available sample size.

3 Original PFT Dataset

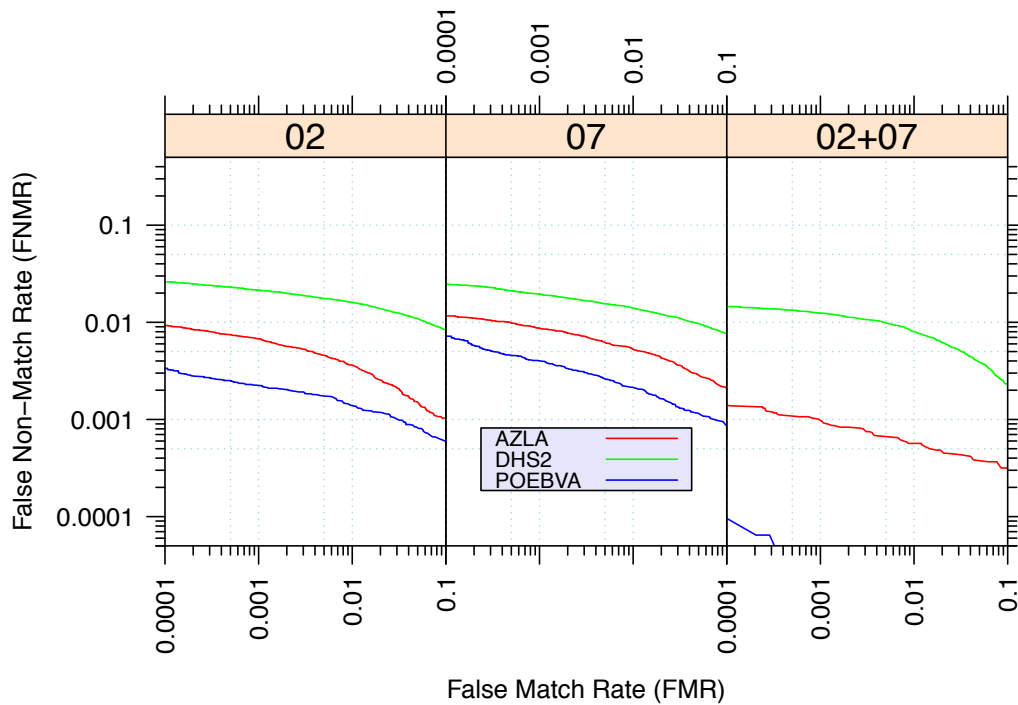


Figure 8: Original PFT Dataset – DET

		EER	FNMR@FMR = 0.0001	FMR@FNMR = 0.005
AZLA	<i>R Index</i>	0.0046	0.0093	0.0037
	<i>L Index</i>	0.0059	0.0116	0.0125
	<i>R/L Index</i>	0.0010	0.0014	n/a
DHS2	<i>R Index</i>	0.0149	0.0261	0.2467
	<i>L Index</i>	0.0132	0.0246	0.2105
	<i>R/L Index</i>	0.0086	0.0145	0.0319
POEBVA	<i>R Index</i>	n/a	0.0033	n/a
	<i>L Index</i>	0.0030	0.0072	0.0003
	<i>R/L Index</i>	0.0001	n/a	n/a

Table 10: Details for EER, FNMR@FMR = 0.0001, and FMR@FNMR = 0.005 — Original PFT Dataset

Note: “n/a” indicates that the value could not be reliably measured with the available sample size.