

Measuring Hidden Bias within Face Recognition via Racial Phenotypes

- Supplementary Material

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8. Supplementary Material

8.1. Attribute-based Face Verification

We present attribute-based face verification scores including False Non-Match Rate (FNMR), False match rate (FMR) and F1 score in the Table S1. We use the same pairings and protocol [27] presented in the Section 6.2 for Table 3.

Whilst F1 scores are correlated with Table 3 accuracies, for the imbalanced training setup 1, the false matching ratio is higher on attributes like Monolid Eye, Type 6/5/4/3, Wide Nose, Full Lips than the different categories under the same attribute. Moreover, we observe that the balanced training setup 2 improves the FMR while increasing the FNMR for the attribute categories with higher accuracies and F1 scores.

Attribute Name	Setup 1			Setup 2		
	F1	FNMR	FMR	F1	FNMR	FMR
Blonde Hair	96.85	1.40	3.83	96.04	2.53	3.13
Red Hair	96.60	2.83	4.00	96.48	2.83	2.83
Type 2	95.98	3.10	3.90	95.25	3.77	3.90
Bald	95.32	5.00	5.37	95.44	3.23	4.97
Gray Hair	95.00	3.70	5.87	95.93	2.53	5.13
Brown Hair	94.46	6.40	4.63	94.08	5.43	4.43
Type 6	94.42	4.10	7.30	95.01	5.53	4.67
Wavy Hair	93.96	3.27	7.53	95.42	4.97	3.77
Narrow Nose	93.05	6.77	7.20	94.29	4.40	5.87
Type 5	92.72	4.07	10.33	94.45	5.63	5.47
Curly Hair	92.51	5.47	9.67	93.58	6.87	5.70
Small Lips	92.36	5.80	8.37	94.29	5.03	4.70
Type 1	92.08	5.99	6.45	90.14	6.67	9.41
Type 3	91.80	8.63	7.73	93.59	5.93	6.13
Straight Hair	91.19	9.17	6.87	93.97	4.30	6.53
Other Eye	91.16	7.23	7.27	93.76	7.43	4.47
Wide Nose	90.99	7.23	7.43	89.78	7.10	5.27
Full Lips	90.73	6.60	10.17	93.43	7.13	5.77
Type 4	90.45	8.30	8.53	93.50	5.70	6.93
Black Hair	90.12	7.77	8.73	90.50	6.83	5.83
Monolid Eye	88.84	9.53	13.03	90.62	8.47	6.93

Table S1. Attribute-based face verification F1, FNMR, TMR scores of RFW dataset on both training setups.