A: Datasheet

Algorithm: pixelall_003

Developer: Guangzhou Pixel Solutions Co Ltd

Submission Date: 2019_11_05

Template size: 2560 bytes

Template time (2.5 percentile): 696 msec

Template time (median): 704 msec

Template time (97.5 percentile): 770 msec

Investigation:

Frontal mugshot ranking 71 (out of 329) -- FNIR(1600000, 0, 1) = 0.0021 vs. lowest 0.0009 from sensetime_006

Mugshot webcam ranking 82 (out of 291) -- FNIR(1600000, 0, 1) = 0.0140 vs. lowest 0.0057 from sensetime_006

Mugshot profile ranking 95 (out of 260) -- FNIR(1600000, 0, 1) = 0.5155 vs. lowest 0.0550 from sensetime_006

Immigration visa-border ranking 90 (out of 218) — FNIR(1600000, 0, 1) = 0.0062 vs. lowest 0.0009 from sensetime_006

Immigration visa-kiosk ranking 119 (out of 215) -- FNIR(1600000, 0, 1) = 0.1505 vs. lowest 0.0487 from cubox_000

Identification:

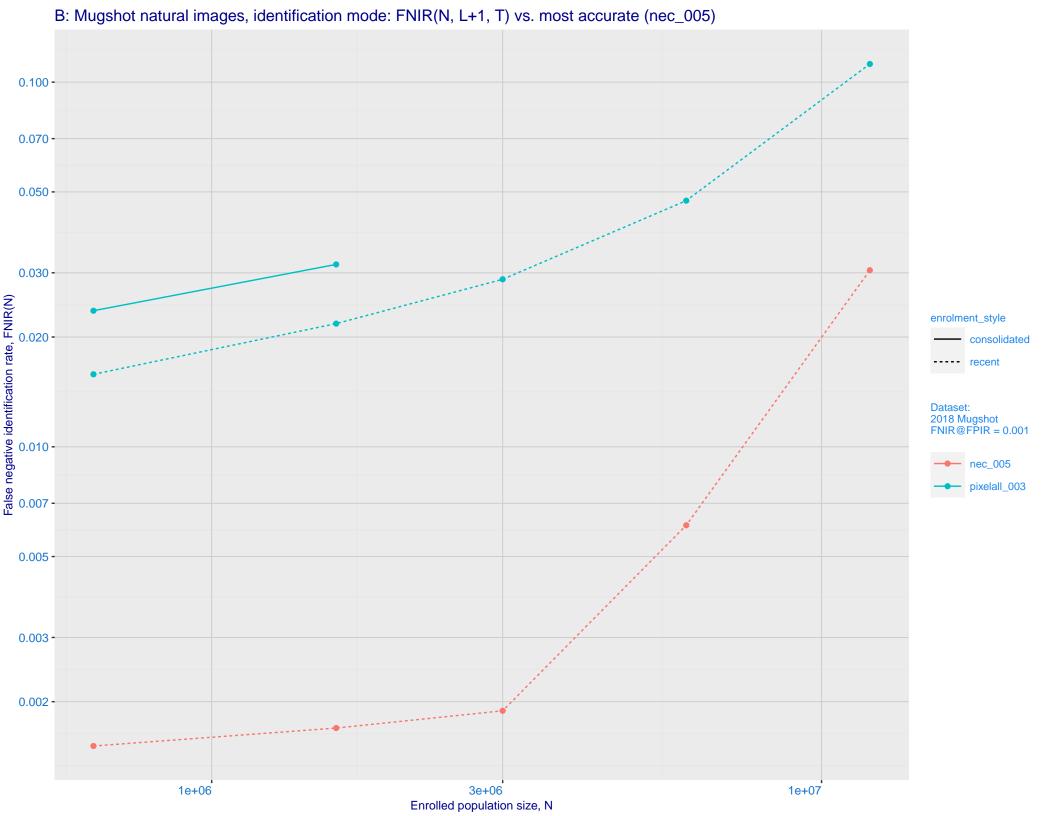
Frontal mugshot ranking 79 (out of 329) -- FNIR(1600000, T, L+1) = 0.0218, FPIR=0.001000 vs. lowest 0.0017 from nec_005

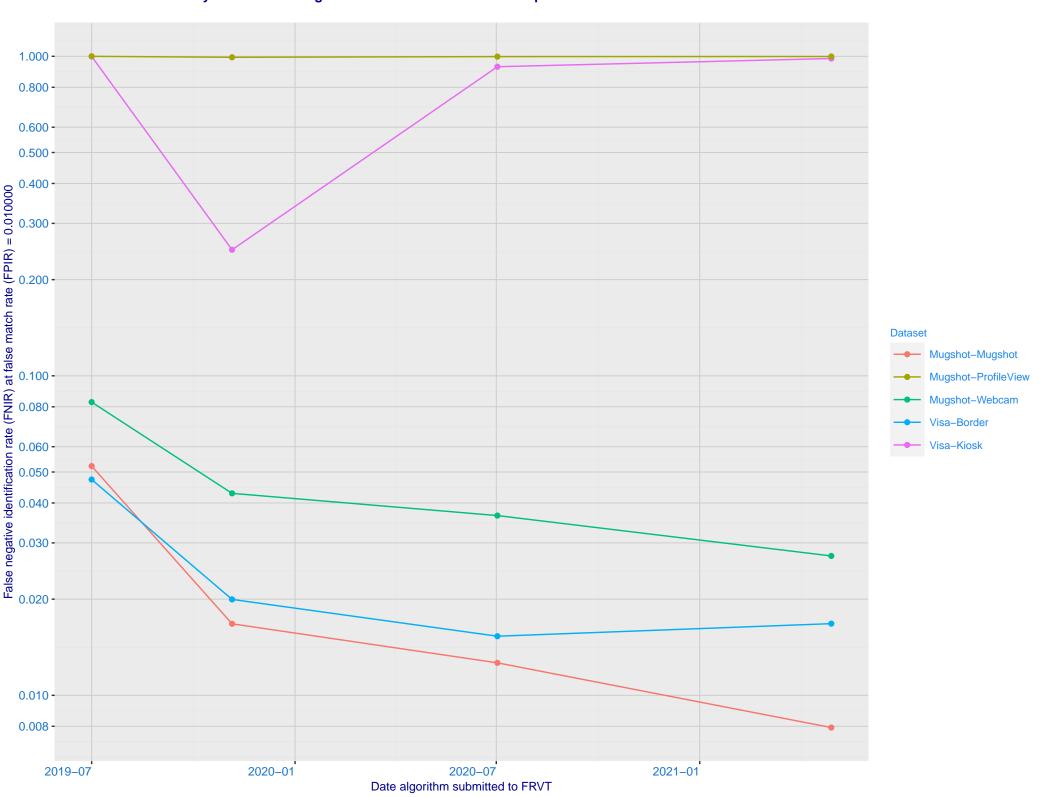
Mugshot webcam ranking 84 (out of 289) -- FNIR(1600000, T, L+1) = 0.0724, FPIR=0.001000 vs. lowest 0.0120 from nec_005

Mugshot profile ranking 193 (out of 259) -- FNIR(1600000, T, L+1) = 0.9996, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk_hr_000

Immigration visa-border ranking 80 (out of 217) -- FNIR(1600000, T, L+1) = 0.0374, FPIR=0.001000 vs. lowest 0.0032 from paravision_009

Immigration visa-kiosk ranking 119 (out of 212) -- FNIR(1600000, T, L+1) = 0.5551, FPIR=0.001000 vs. lowest 0.0728 from paravision_009

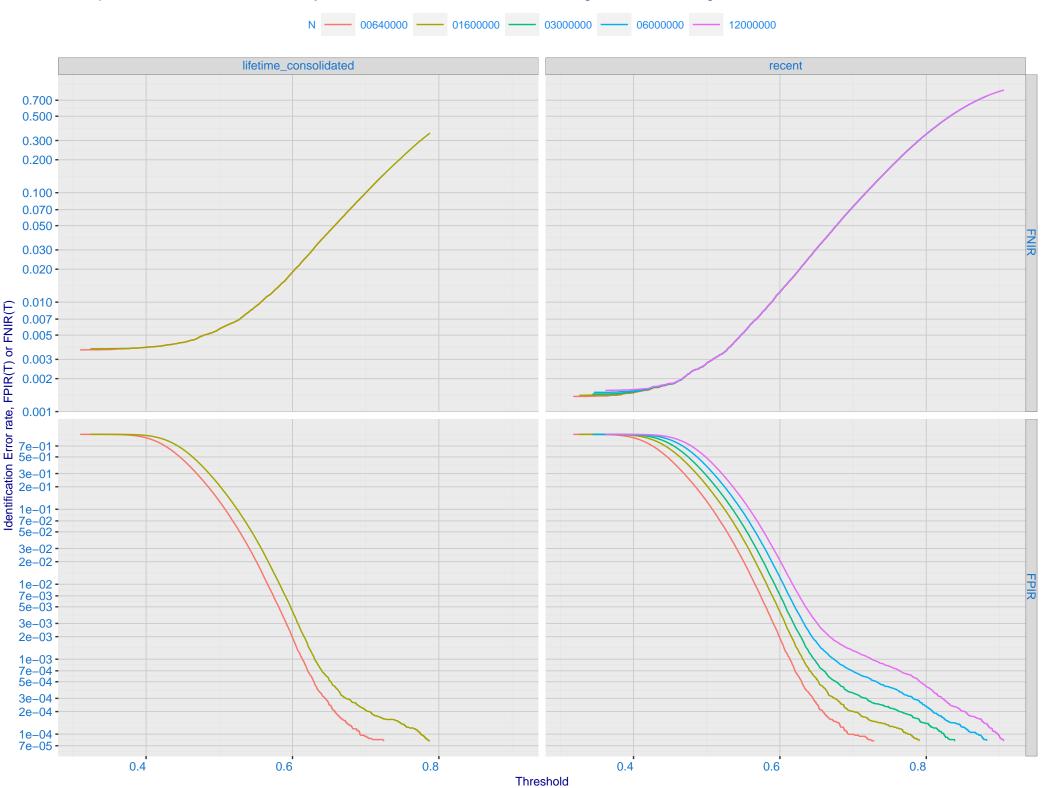




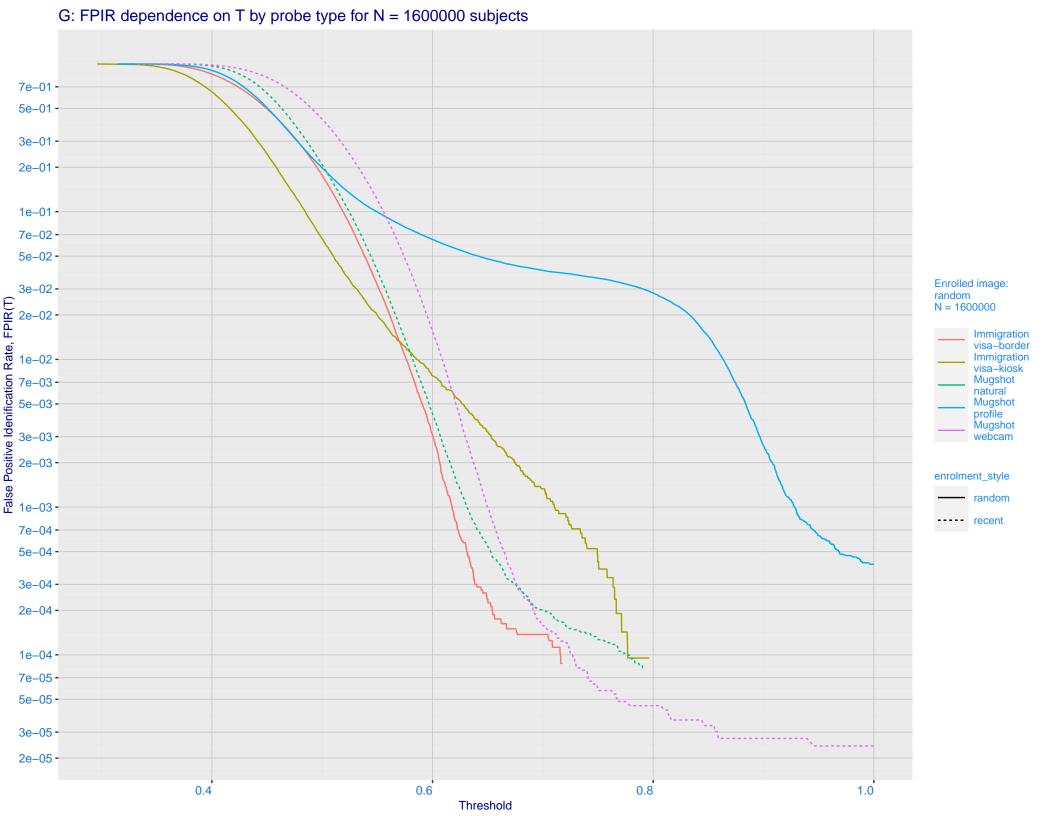
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration **Immigration** Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -Construction (2007) - 0.007 - 0.003 - 0.002 - 0.001 - 0.500 - 0.500 - 0.200 enrolment_style consolidated-ONE-MATE random-ONE-MATE recent-ONE-MATE unconsolidated-ALL-MATES unconsolidated-ANY-MATE 0.100 -0.070 pixelall 003 0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -0.002 -0.001 -

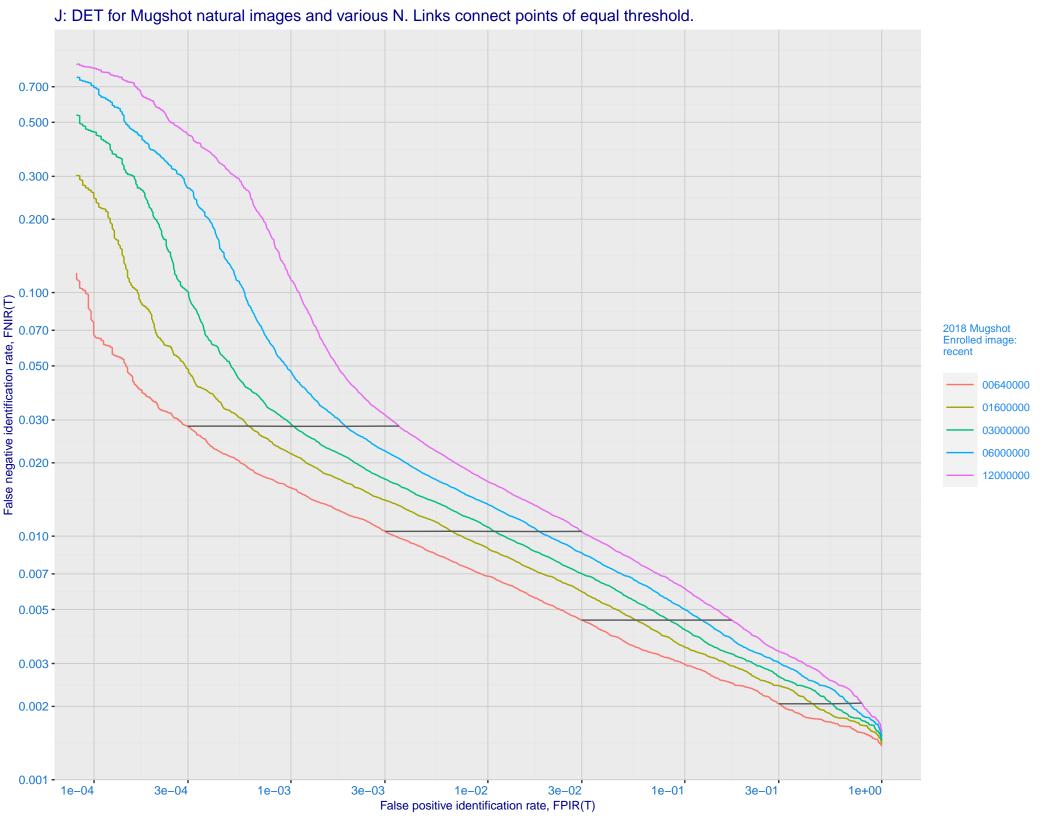
False positive identification rate, FPIR(T)

E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images



F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 - 7e-02 - 7e-02 - 3e-02 - 2e-02 - 2e-02 - 3e-02 Enrolled images: recent N = 1600000 Mugshot natural Mugshot webcam 1e-02 -7e-03 -5e-03 -3e-03 -2e-03 -1e-03 -7e-04 -5e-04 -3e-04 -2e-04 -1e-04 -7e-05 -5e-05 -3e-05 -2e-05 -3e-05 1e-04 3e-04 1e-03 3e-03 1e-02 3e-02 1e-01 3e-01 False Positive Idenification Rate, FPIR(T)

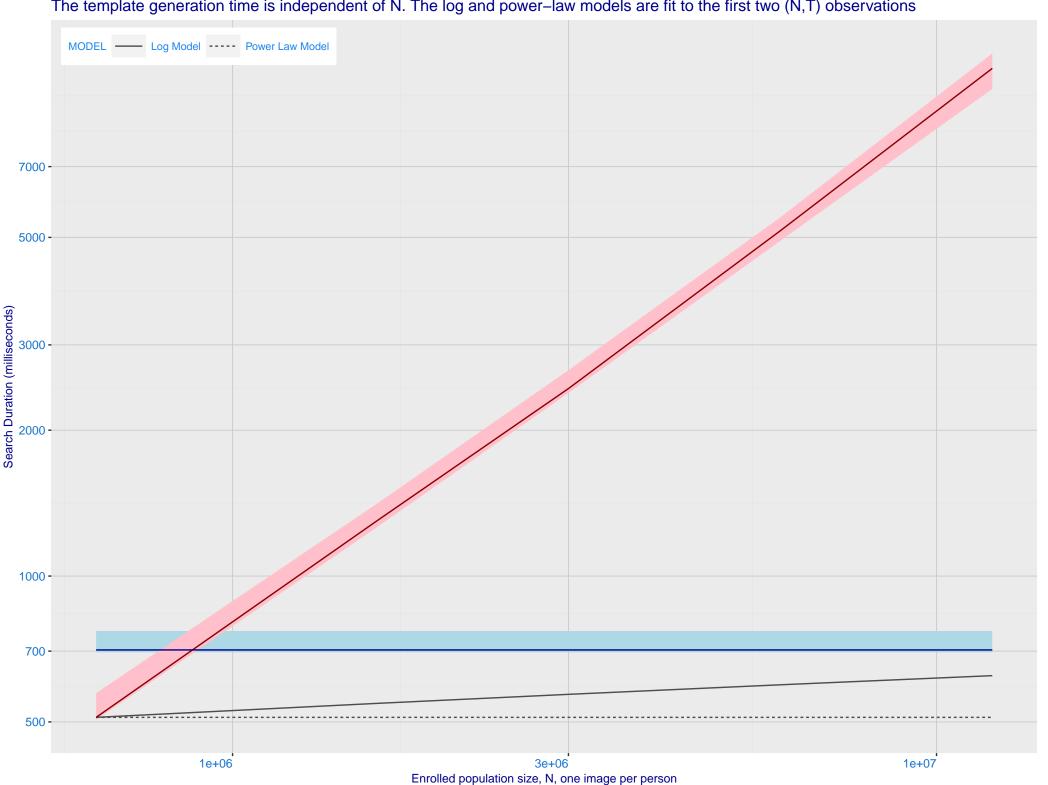




K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_006) Immigration **Immigration** visa-border visa-kiosk 0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 - 0.002 - 0.001 - 0.001 - 0.000 enrolment_style consolidated ---- random --- recent Mugshot webcam Mugshot natural FNIR@Rank = 1 pixelall_003 sensetime_006 0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -0.002 -0.001 -1e+06 3e+06 1e+07 1e+06 3e+06 1e+07 Enrolled population size, N

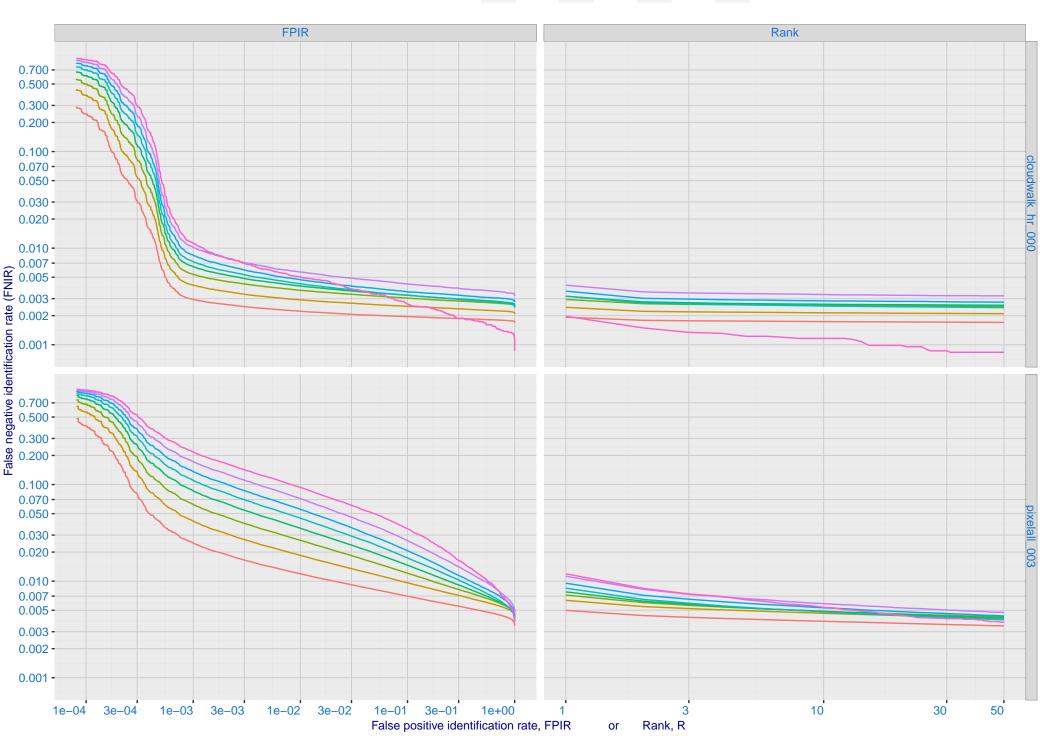
L: Investigational mode: FNIR(1600000, R, 0) by probe type pixelall_003 sensetime_006 0.100 -0.070 -0.050 -0.030 enrolment_style False negative identification rate, FNIR(N) 0.000 - 0. lifetime_consolidated ---- random --- recent FNIR(R) N = 1600000 Immigration visa-border Immigration visa-kiosk Mugshot natural Mugshot webcam 0.003 -0.002 -0.001 -10 30 3 10 30 Rank, R

M: Template duration; search duration vs. N. The blue and pink ribbon covers 95 percent of observed measurements. The template generation time is independent of N. The log and power–law models are fit to the first two (N,T) observations



Q: Identification FNIR(N, T, L+1) and Investigational FNIR(N, 0, R) under ageing





R: Decline of genuine scores with ageing, with some eventually dropping below typical thresholds shown by the horizontal lines 1.0 -Dataset: 2018 Mugshot N= 3.1M Color encodes FNIR (Rank = 1) 0.8 -0.15 0.10 0.05 0.00 0.6 -TVAL - FPIR = 0.001 FPIR = 0.003 FPIR = 0.010FPIR = 0.030 0.4 -(00,02](02,04](04,06](06,08](08,10](10,12](12,14](14,18]

Time lapse between search and initial encounter enrollment (years)