A: Datasheet

Algorithm: pixelall_002

Developer: Guangzhou Pixel Solutions Co Ltd

Submission Date: 2019_07_01

Template size: 2560 bytes

Template time (2.5 percentile): 188 msec

Template time (median): 191 msec

Template time (97.5 percentile): 253 msec

Investigation:

Frontal mugshot ranking 70 (out of 259) -- FNIR(1600000, 0, 1) = 0.0045 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 79 (out of 221) -- FNIR(1600000, 0, 1) = 0.0222 vs. lowest 0.0062 from sensetime_005

Mugshot profile ranking 93 (out of 190) -- FNIR(1600000, 0, 1) = 0.8103 vs. lowest 0.0591 from sensetime_005

Immigration visa-border ranking 58 (out of 142) -- FNIR(1600000, 0, 1) = 0.0110 vs. lowest 0.0014 from visionlabs_009

Immigration visa-kiosk ranking 68 (out of 139) -- FNIR(1600000, 0, 1) = 0.1869 vs. lowest 0.0694 from cib_000

Identification:

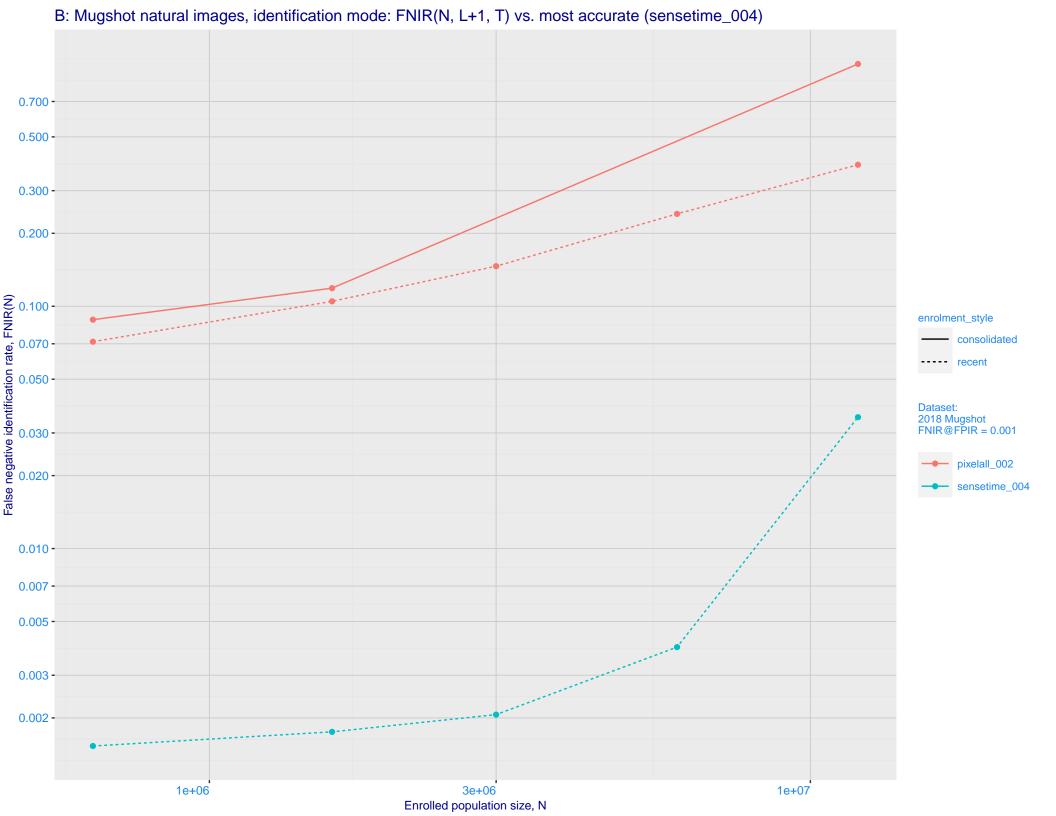
Frontal mugshot ranking 131 (out of 259) -- FNIR(1600000, T, L+1) = 0.1048, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

Mugshot webcam ranking 164 (out of 219) -- FNIR(1600000, T, L+1) = 0.3697, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

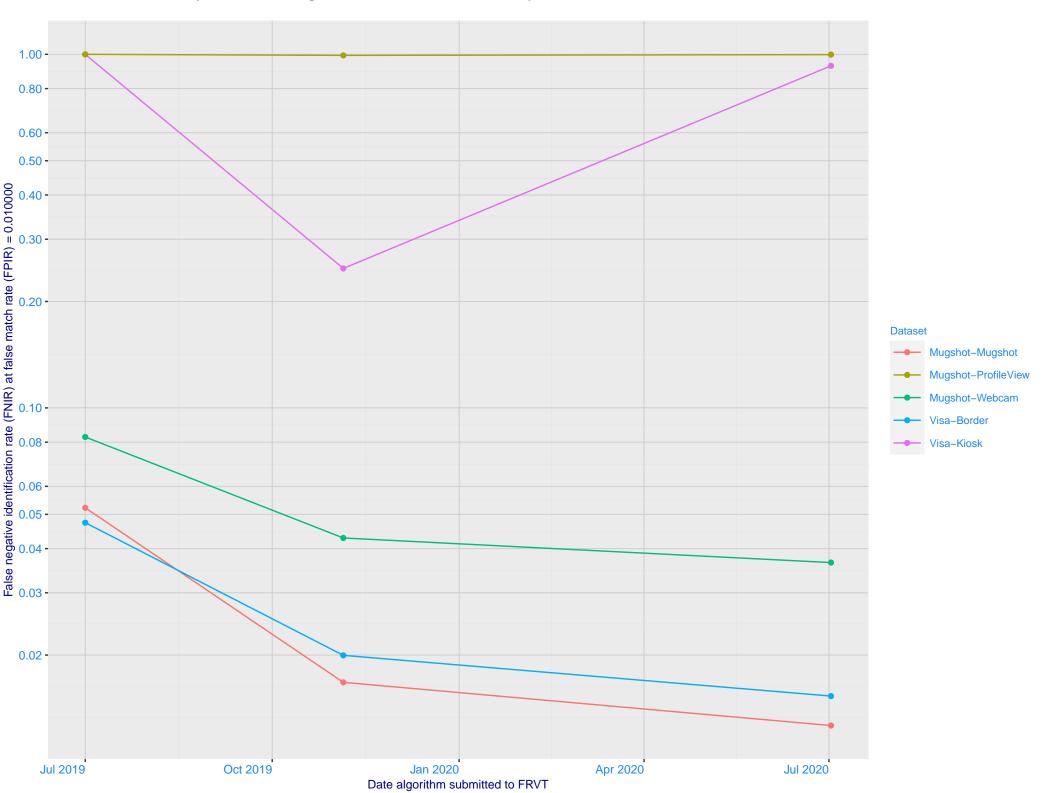
Mugshot profile ranking 170 (out of 189) -- FNIR(1600000, T, L+1) = 0.9999, FPIR=0.001000 vs. lowest 0.1733 from sensetime_005

Immigration visa-border ranking 100 (out of 139) -- FNIR(1600000, T, L+1) = 0.6016, FPIR=0.001000 vs. lowest 0.0059 from sensetime_004

Immigration visa-kiosk ranking 130 (out of 134) -- FNIR(1600000, T, L+1) = 1.0000, FPIR=0.001000 vs. lowest 0.1048 from sensetime_005



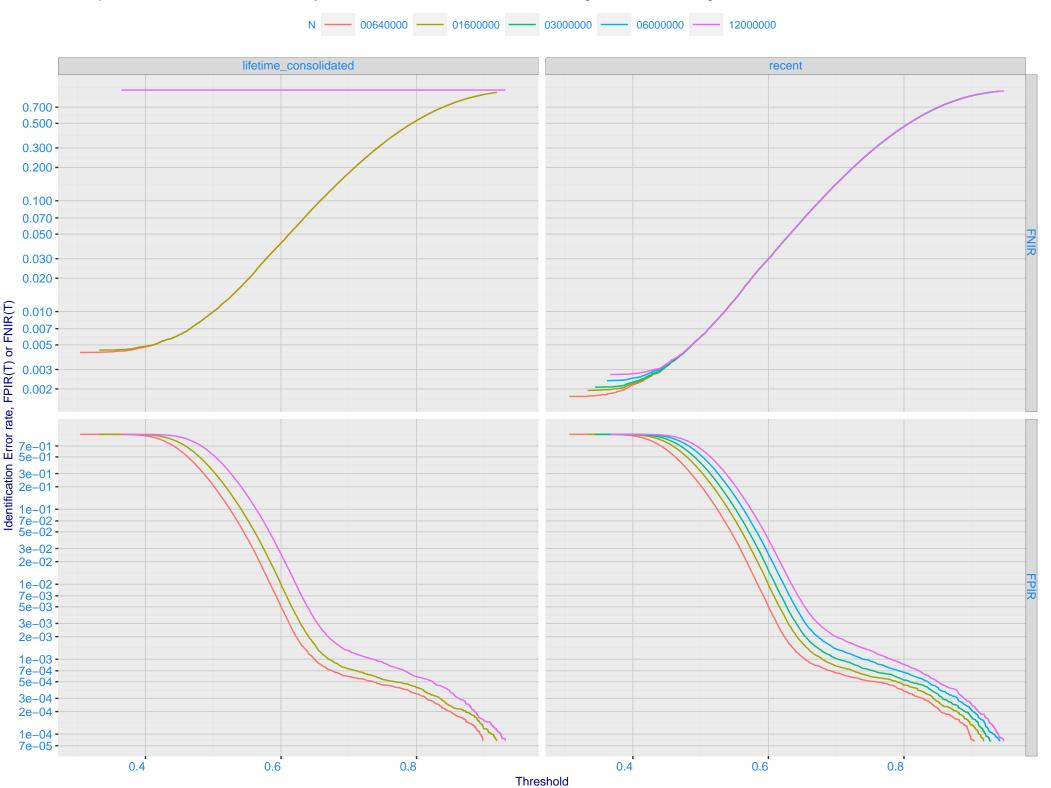
C: Evolution of accuracy for PIXELALL algorithms on three datasets 2018 – present



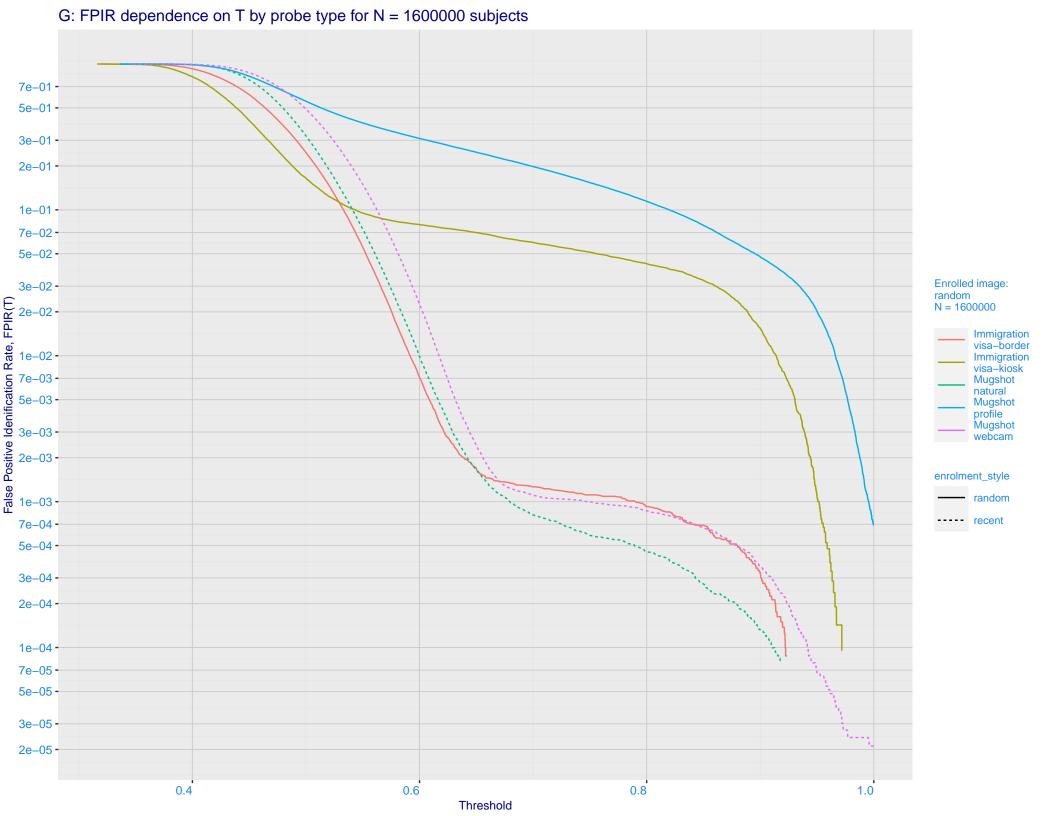
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration** Mugshot **Immigration** visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 - 0.005 - 0.005 - 0.002 - 0.001 - 0.001 - 0.700 - 0.500 - 0.200 enrolment_style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

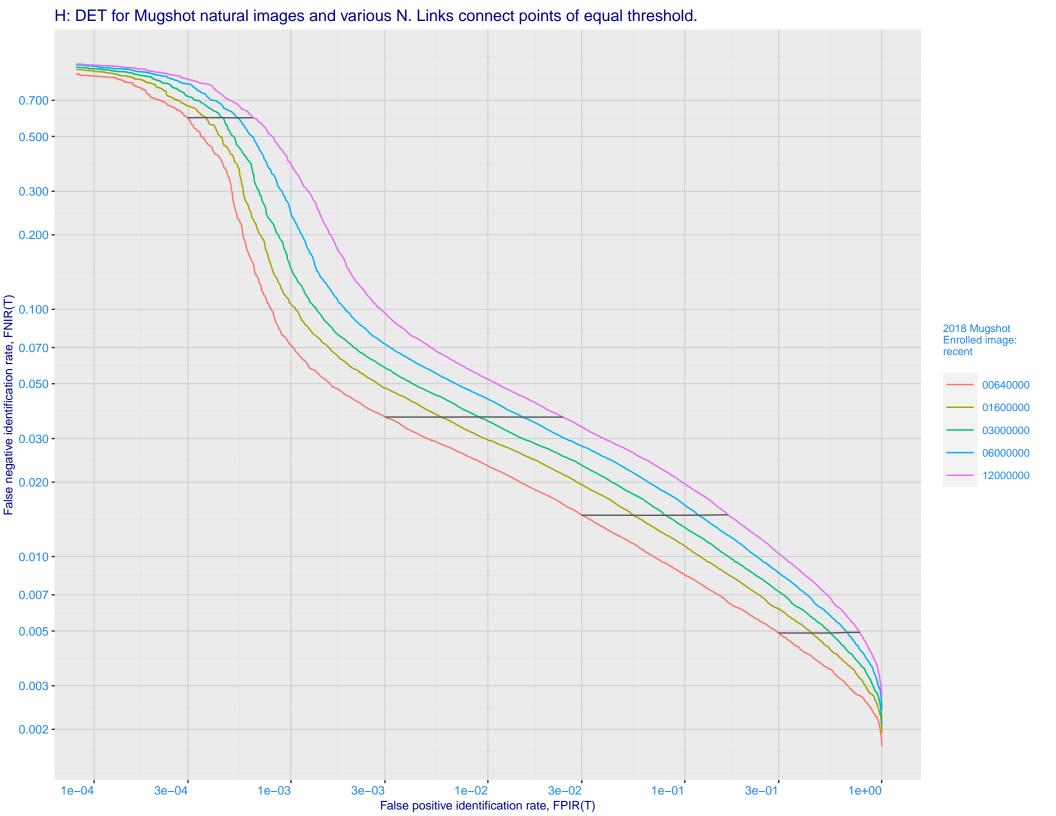
False positive identification rate, FPIR(T)

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 - 3e-02 - 3e-02 - 2e-02 - 1e-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)

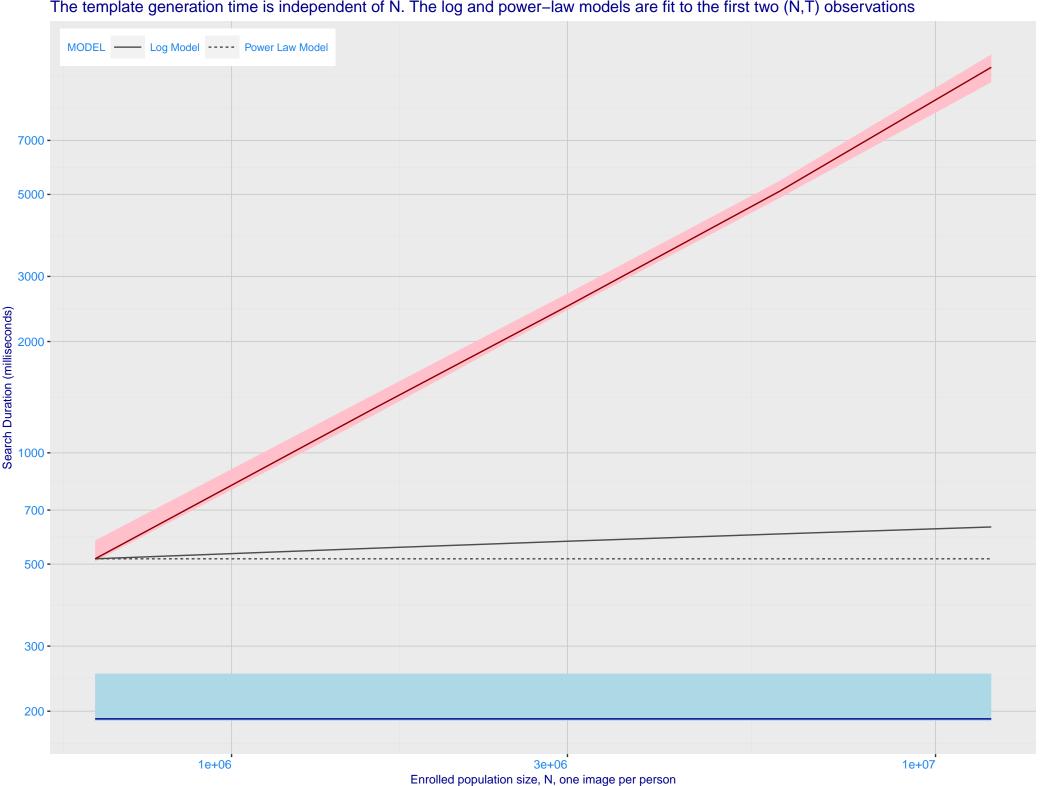




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_005) Immigration **Immigration** visa-border visa-kiosk 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 - 0.003 - 0.002 - 0.001 - 0.001 - 0.000 - 0.300 - 0.200 enrolment_style consolidated ---- random --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 pixelall_002 sensetime_005 0.100 -0.070 -0.050 -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

J: Investigational mode: FNIR(1600000, R, 0) by probe type pixelall_002 sensetime_005 0.200 -0.100 -0.070 -0.050 enrolment_style Ealse 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

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



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

