A: Datasheet

Algorithm: idemia_5

Developer: Idemia

Submission Date: 2018_10_29

Template size: 352 bytes

Template time (2.5 percentile): 359 msec

Template time (median): 371 msec

Template time (97.5 percentile): 405 msec

Investigation:

Frontal mugshot ranking 111 (out of 265) -- FNIR(1600000, 0, 1) = 0.0081 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 131 (out of 227) -- FNIR(1600000, 0, 1) = 0.0392 vs. lowest 0.0062 from sensetime_005

Mugshot profile ranking 144 (out of 196) — FNIR(1600000, 0, 1) = 0.9538 vs. lowest 0.0591 from sensetime_005

Immigration visa-border ranking 77 (out of 148) -- FNIR(1600000, 0, 1) = 0.0214 vs. lowest 0.0013 from visionlabs_010

Immigration visa-kiosk ranking 85 (out of 145) -- FNIR(1600000, 0, 1) = 0.2172 vs. lowest 0.0568 from hr_000

Identification:

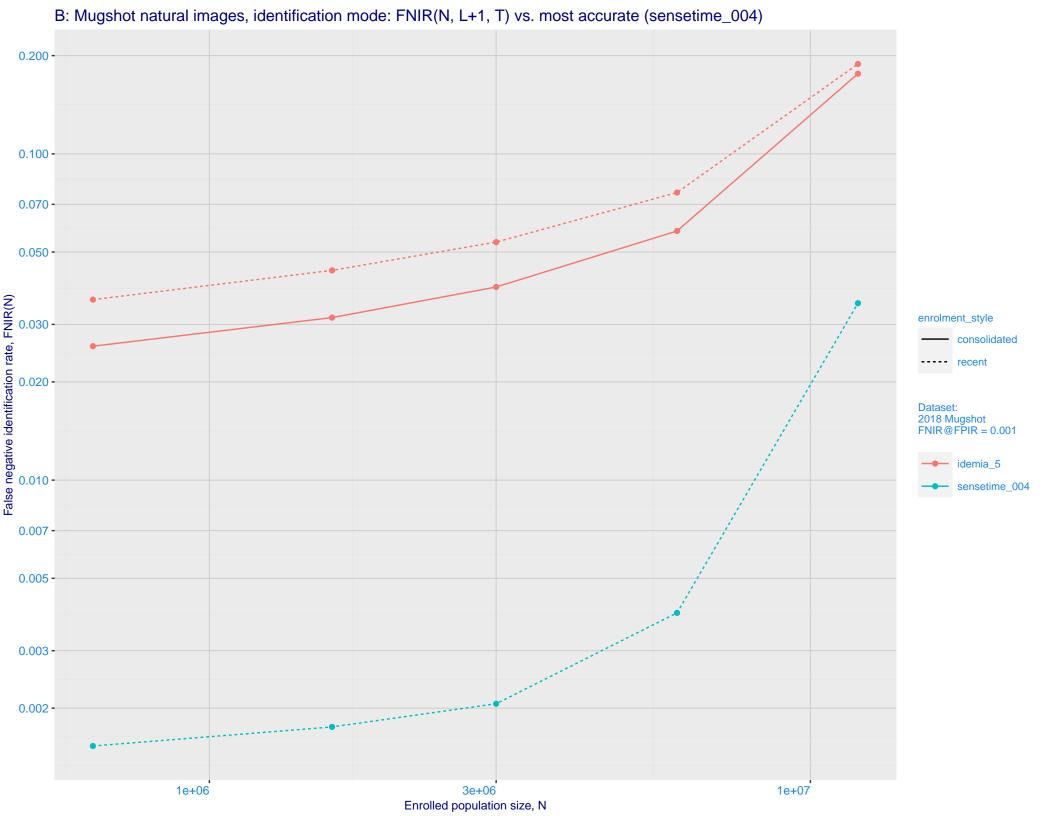
Frontal mugshot ranking 70 (out of 265) -- FNIR(1600000, T, L+1) = 0.0439, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

Mugshot webcam ranking 104 (out of 225) -- FNIR(1600000, T, L+1) = 0.1498, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

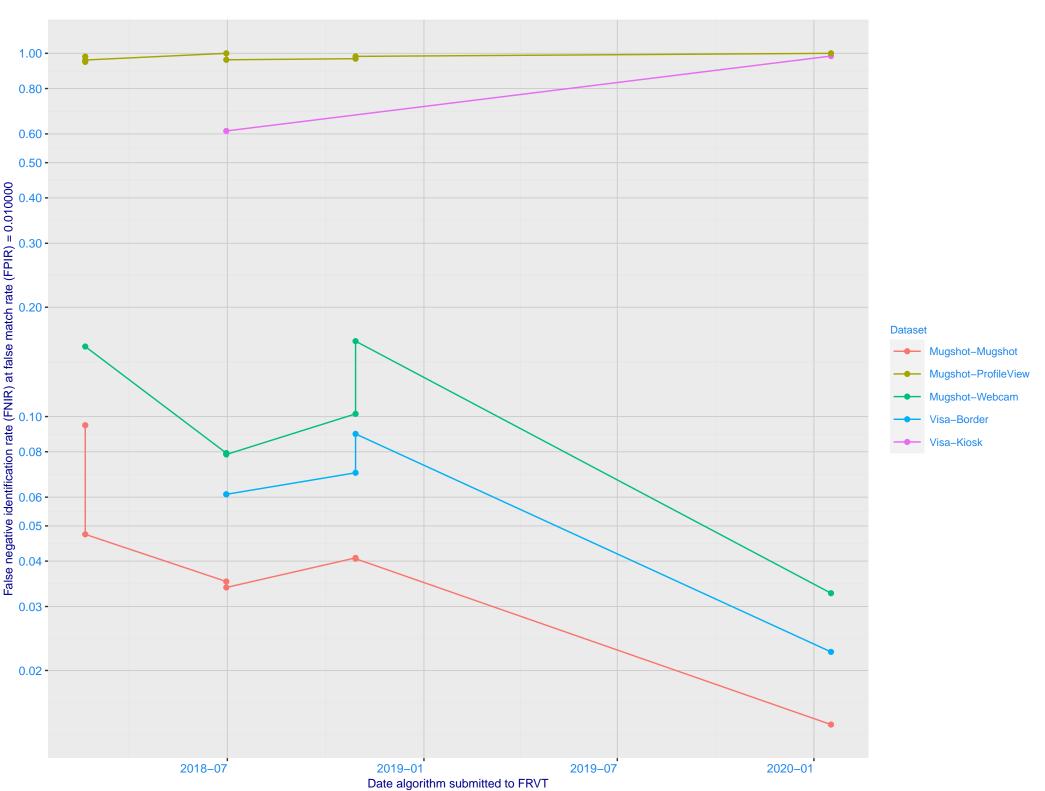
Mugshot profile ranking 54 (out of 195) -- FNIR(1600000, T, L+1) = 0.9775, FPIR=0.001000 vs. lowest 0.1331 from hr_000

Immigration visa-border ranking 73 (out of 146) -- FNIR(1600000, T, L+1) = 0.1302, FPIR=0.001000 vs. lowest 0.0049 from hr_000

Immigration visa-kiosk ranking 100 (out of 141) -- FNIR(1600000, T, L+1) = 0.8801, FPIR=0.001000 vs. lowest 0.0996 from hr_000



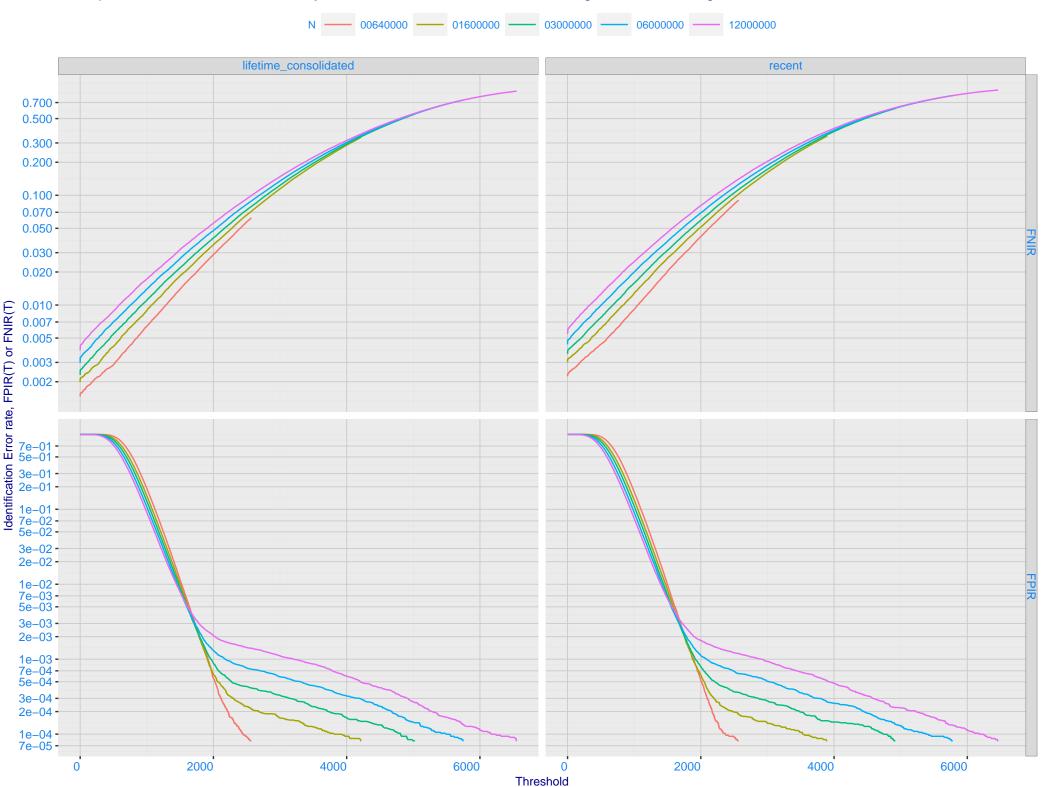
C: Evolution of accuracy for IDEMIA algorithms on three datasets 2018 – present



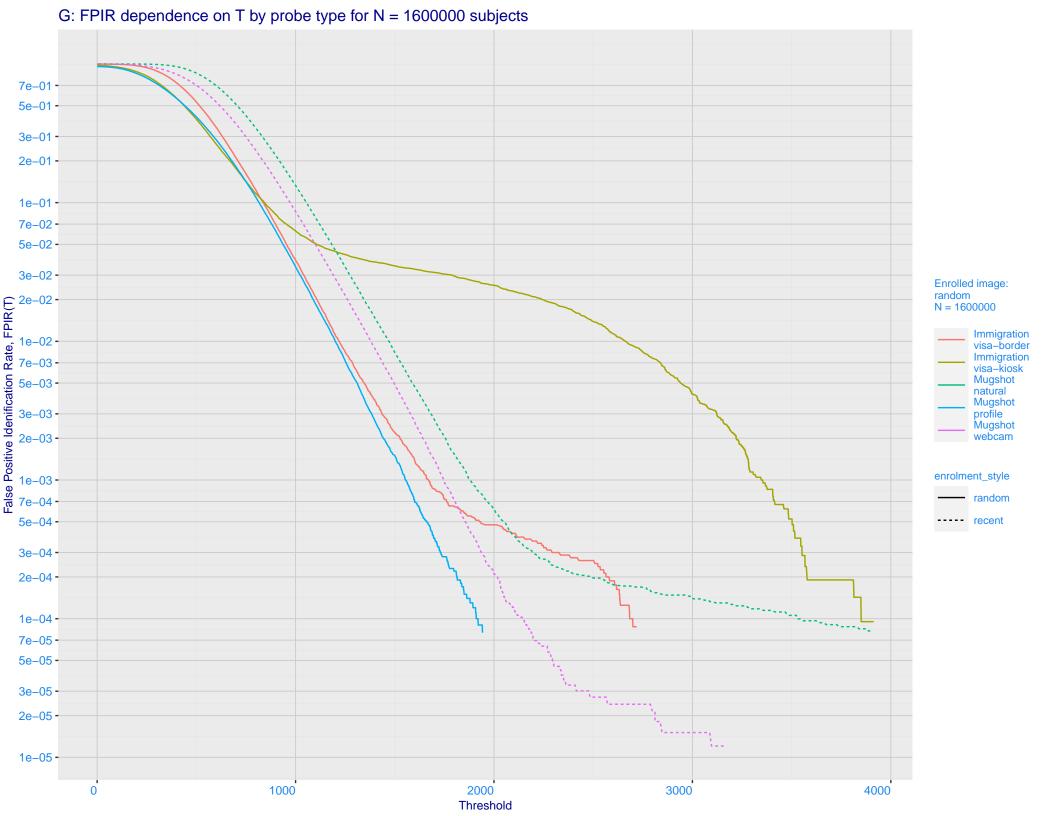
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration Immigration** Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 - 0.005 - 0.005 - 0.002 - 0.001 - 0.001 - 0.700 - 0.500 - 0.200 enrolment_style 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 -

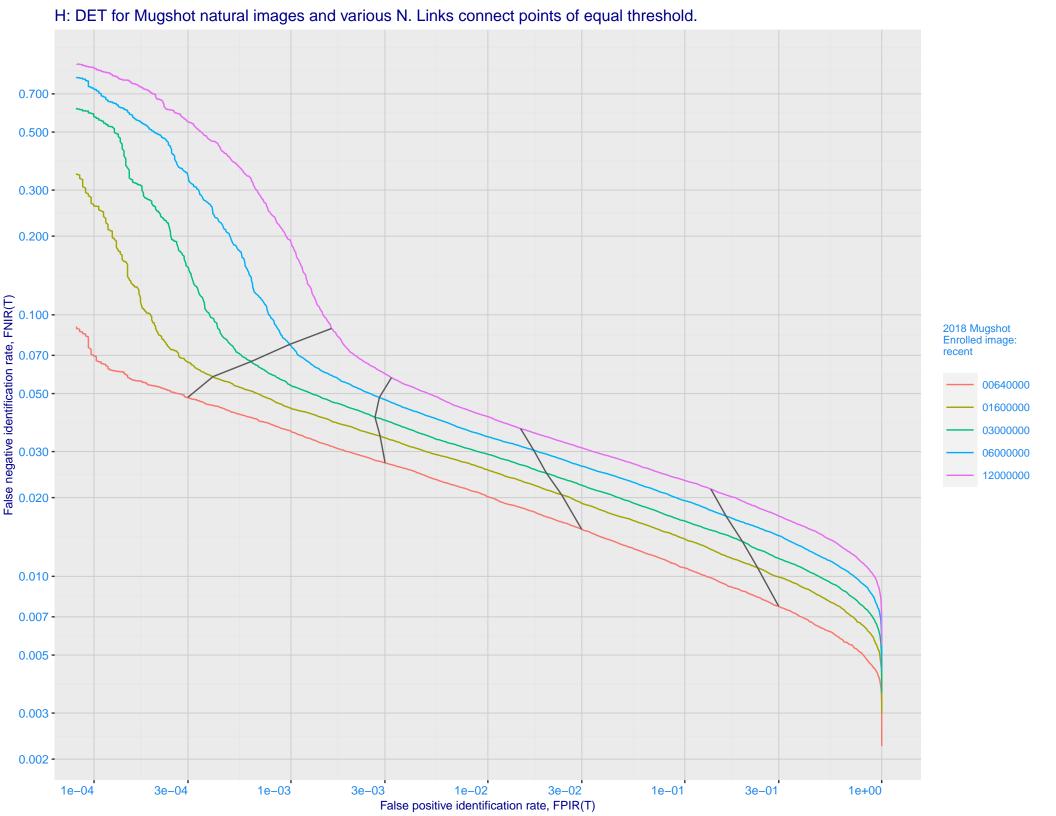
False positive identification rate, FPIR(T)

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

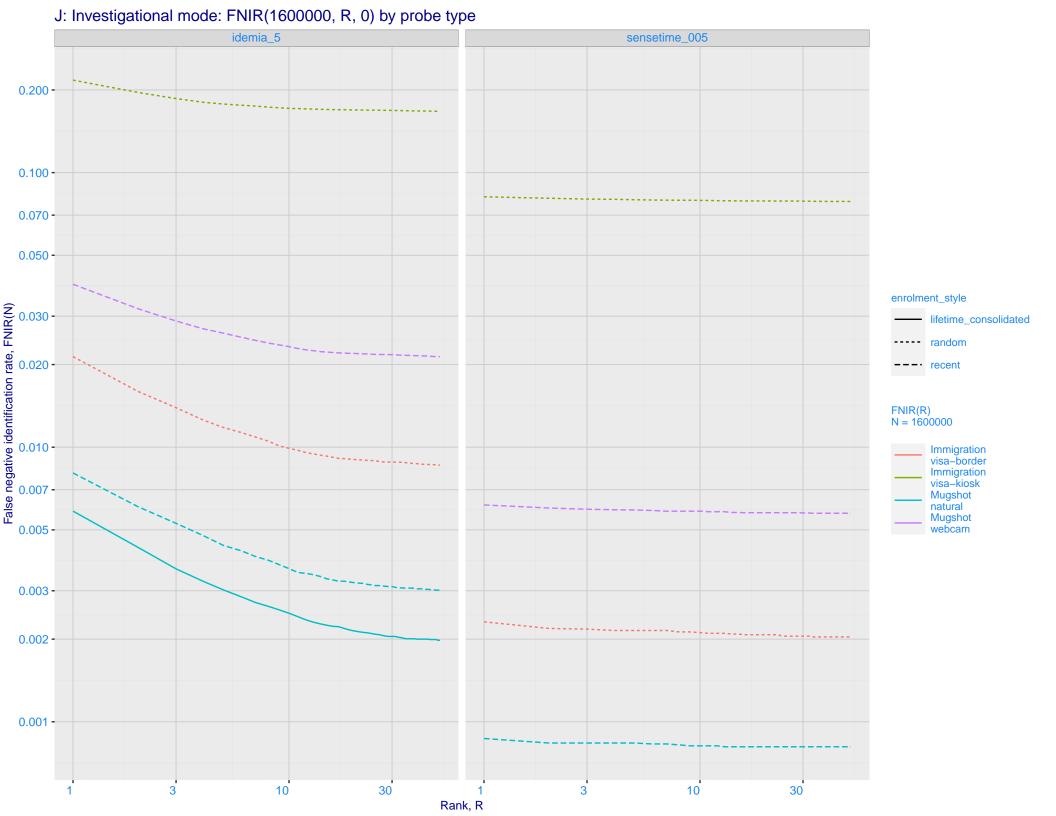


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 -5e-02 -3e-02 -3e-02 -1e-02 -**Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam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

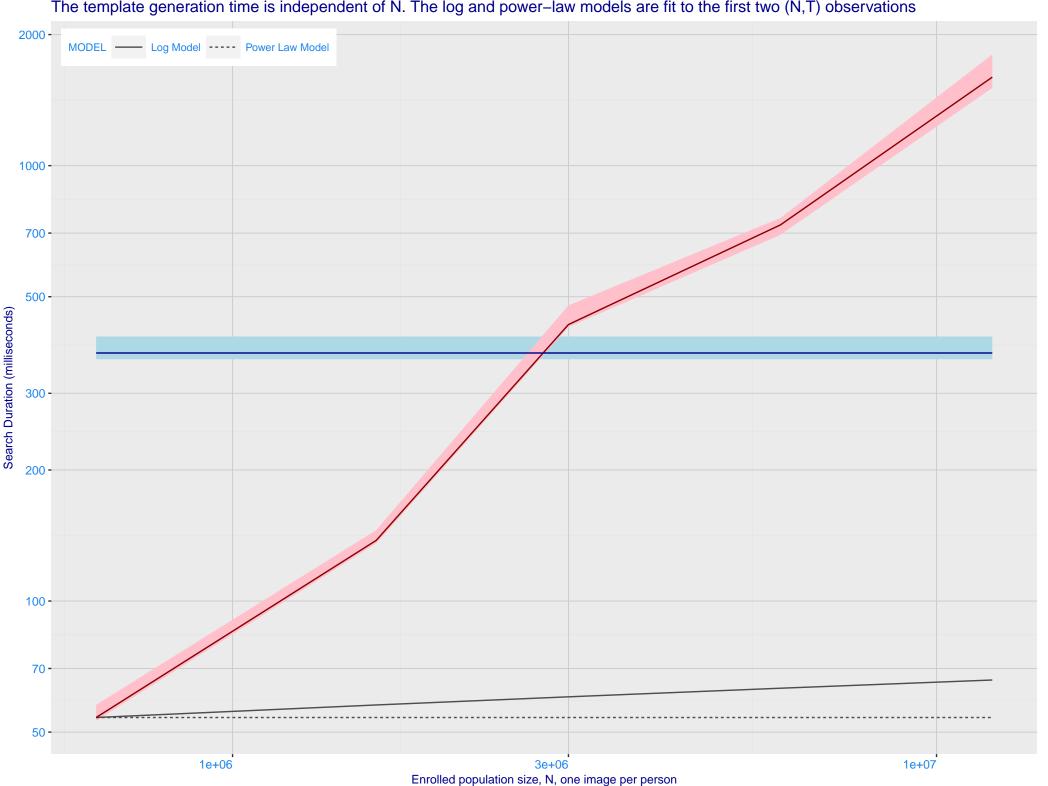




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_005) Immigration **Immigration** visa-border visa-kiosk 0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -Ealse negative identification rate, FNIR(N) 0.003 - 0.001 - 0.200 - 0.100 - 0.070 - 0. enrolment_style consolidated ---- random --- recent Mugshot webcam Mugshot natural FNIR@Rank = 1 idemia_5 - sensetime_005 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



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

