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 105 (out of 259) -- FNIR(1600000, 0, 1) = 0.0081 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 125 (out of 221) -- FNIR(1600000, 0, 1) = 0.0392 vs. lowest 0.0062 from sensetime_005

Mugshot profile ranking 138 (out of 190) -- FNIR(1600000, 0, 1) = 0.9538 vs. lowest 0.0591 from sensetime_005

Immigration visa-border ranking 71 (out of 142) -- FNIR(1600000, 0, 1) = 0.0214 vs. lowest 0.0014 from visionlabs_009

Immigration visa-kiosk ranking 79 (out of 139) -- FNIR(1600000, 0, 1) = 0.2172 vs. lowest 0.0694 from cib_000

Identification:

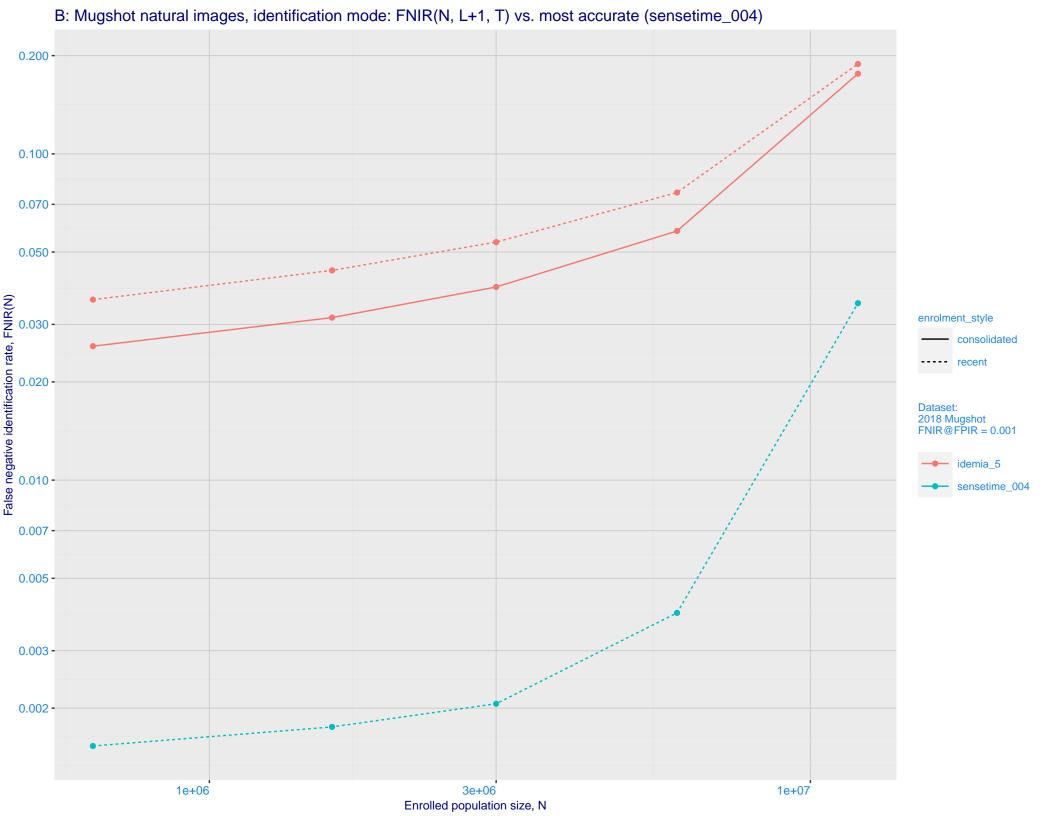
Frontal mugshot ranking 65 (out of 259) -- FNIR(1600000, T, L+1) = 0.0439, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

Mugshot webcam ranking 98 (out of 219) -- FNIR(1600000, T, L+1) = 0.1498, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

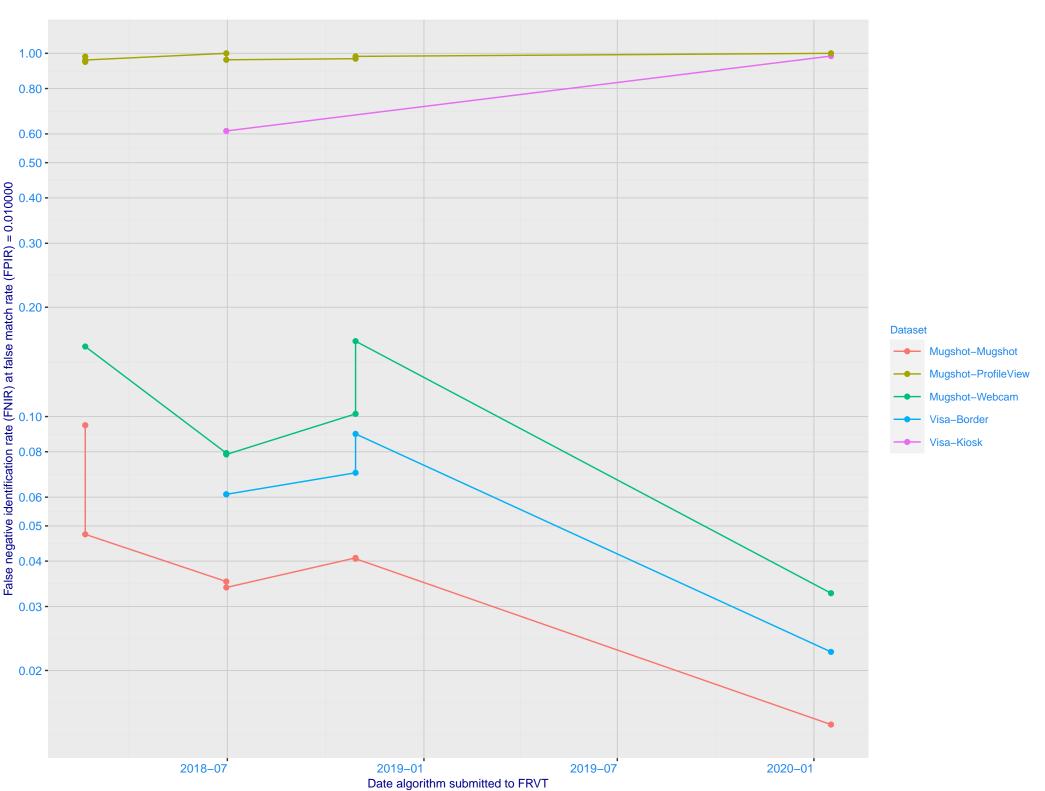
Mugshot profile ranking 50 (out of 189) -- FNIR(1600000, T, L+1) = 0.9775, FPIR=0.001000 vs. lowest 0.1733 from sensetime_005

Immigration visa-border ranking 67 (out of 139) -- FNIR(1600000, T, L+1) = 0.1302, FPIR=0.001000 vs. lowest 0.0059 from sensetime_004

Immigration visa-kiosk ranking 94 (out of 134) -- FNIR(1600000, T, L+1) = 0.8801, FPIR=0.001000 vs. lowest 0.1048 from sensetime_005



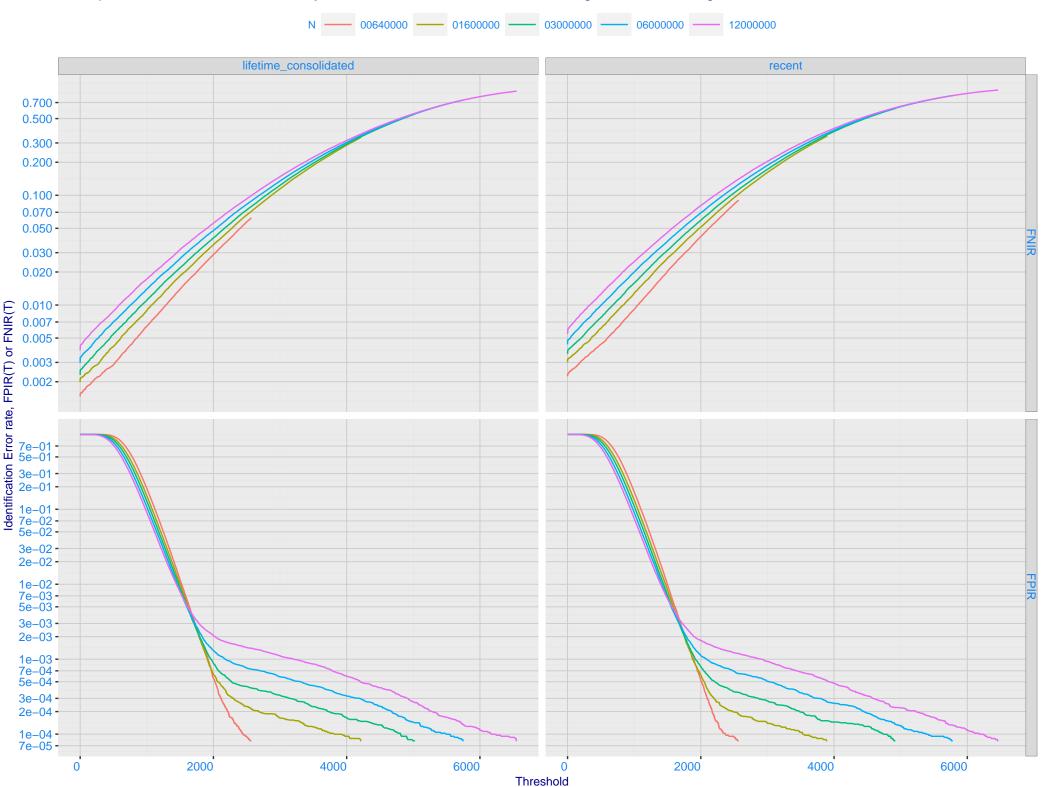
C: Evolution of accuracy for IDEMIA algorithms on three datasets 2018 – present



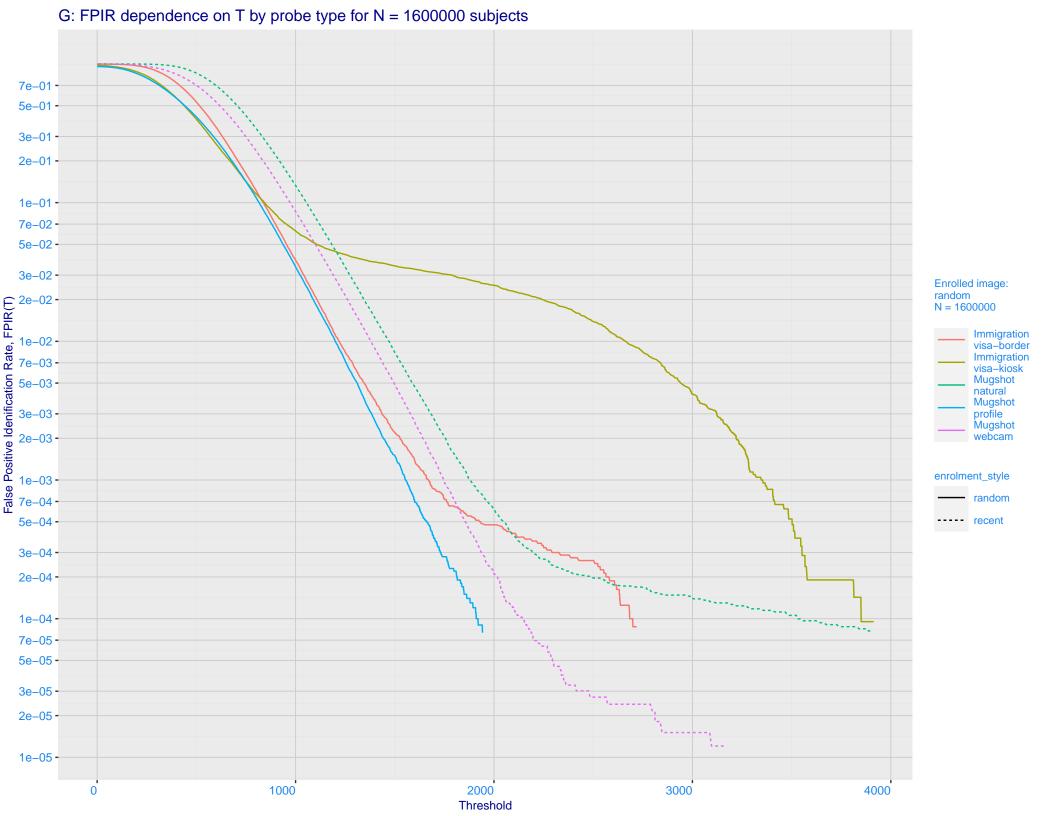
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration Immigration** Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 - 0.005 - 0.005 - 0.002 - 0.001 - 0.001 - 0.700 - 0.500 - 0.200 enrolment_style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

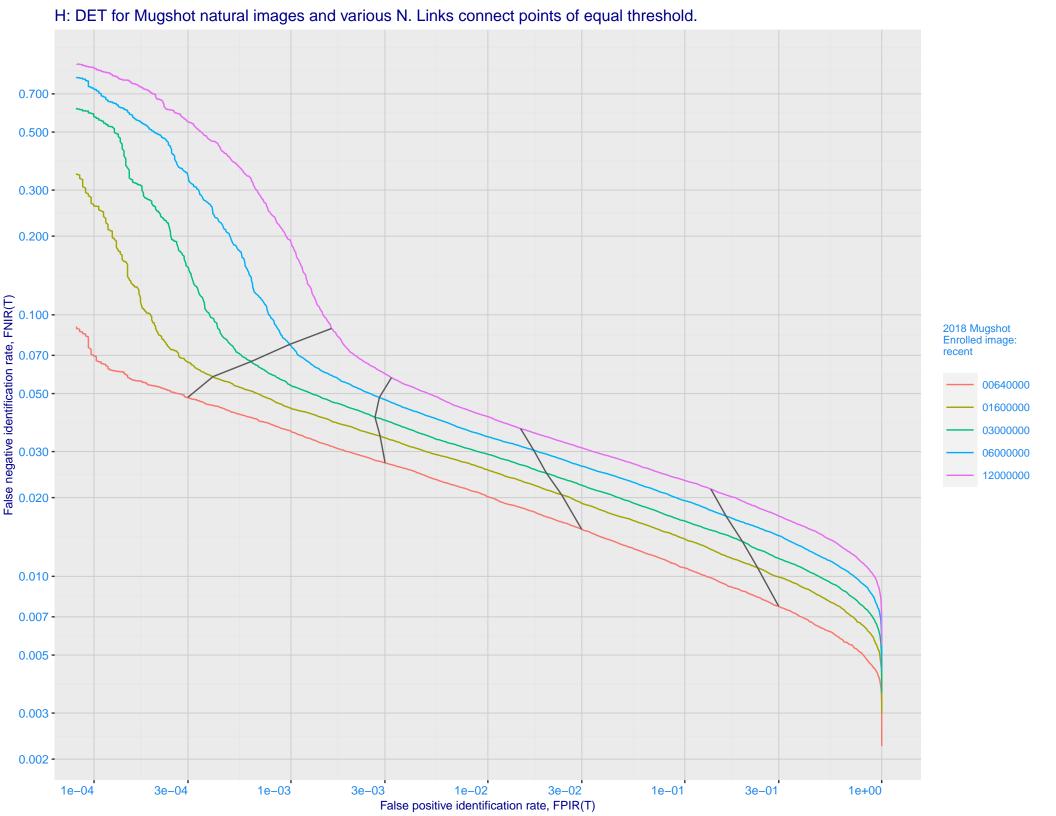
False positive identification rate, FPIR(T)

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

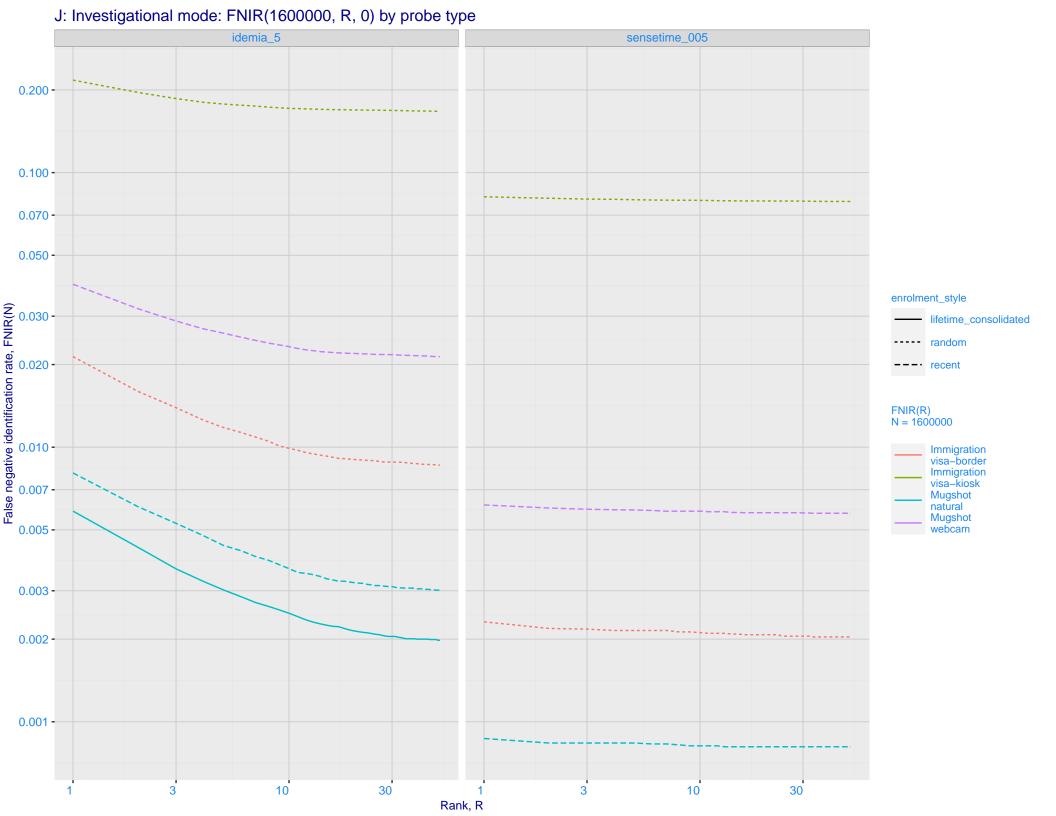


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 -5e-02 -3e-02 -3e-02 -1e-02 -**Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam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

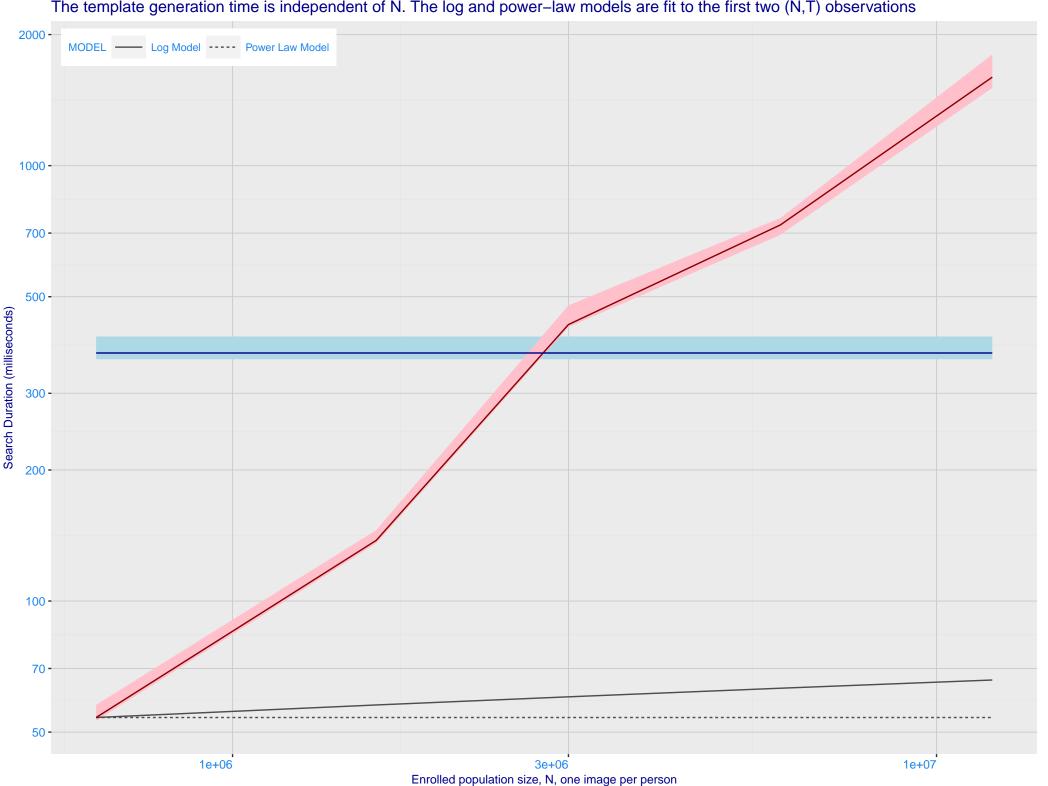




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_005) Immigration **Immigration** visa-border visa-kiosk 0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -Ealse negative identification rate, FNIR(N) 0.003 - 0.001 - 0.200 - 0.100 - 0.070 - 0. enrolment_style consolidated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

