A: Datasheet

Algorithm: aware_0

Developer: Aware

Submission Date: 2018_02_16

Template size: 1564 bytes

Template time (2.5 percentile): 597 msec

Template time (median): 650 msec

Template time (97.5 percentile): 723 msec

Investigation:

Frontal mugshot ranking 208 (out of 265) -- FNIR(1600000, 0, 1) = 0.0614 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 185 (out of 227) -- FNIR(1600000, 0, 1) = 0.1383 vs. lowest 0.0062 from sensetime_005

Mugshot profile ranking 179 (out of 196) — FNIR(1600000, 0, 1) = 0.9777 vs. lowest 0.0591 from sensetime_005

Immigration visa-border ranking 113 (out of 148) -- FNIR(1600000, 0, 1) = 0.1517 vs. lowest 0.0013 from visionlabs_010

Immigration visa-kiosk ranking 111 (out of 145) — FNIR(1600000, 0, 1) = 0.3992 vs. lowest 0.0568 from hr_000

Identification:

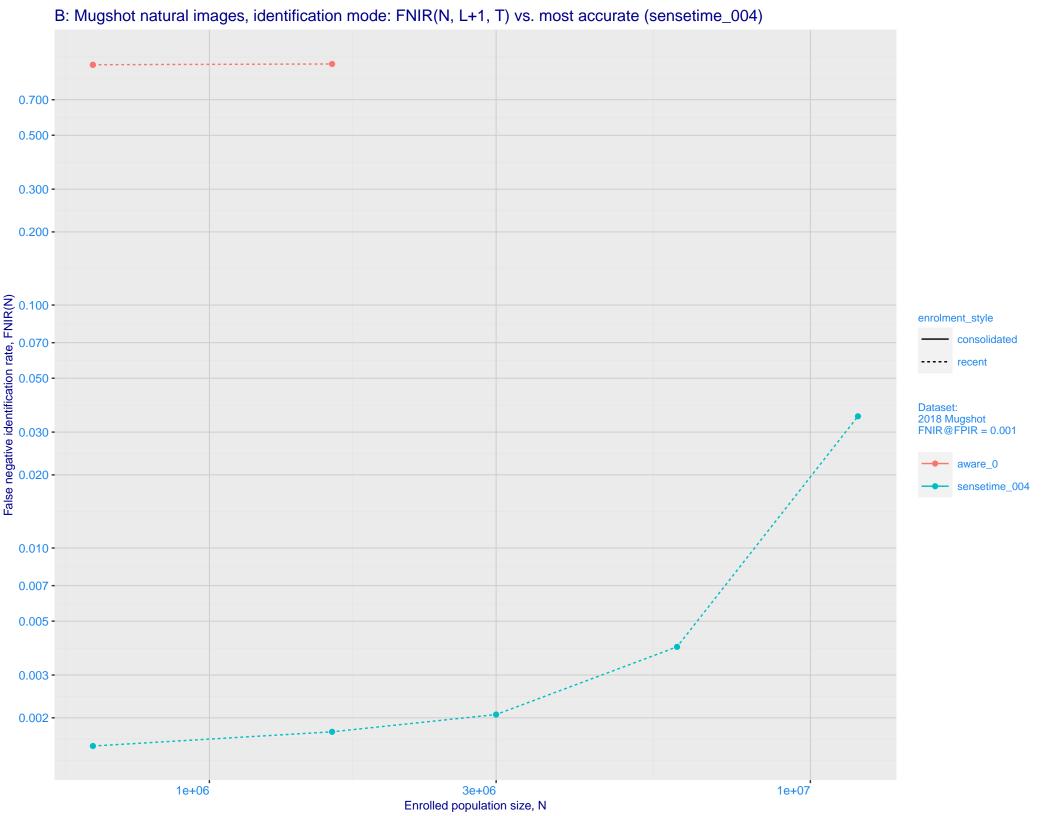
Frontal mugshot ranking 257 (out of 265) -- FNIR(1600000, T, L+1) = 0.9825, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

Mugshot webcam ranking 203 (out of 225) -- FNIR(1600000, T, L+1) = 0.8167, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

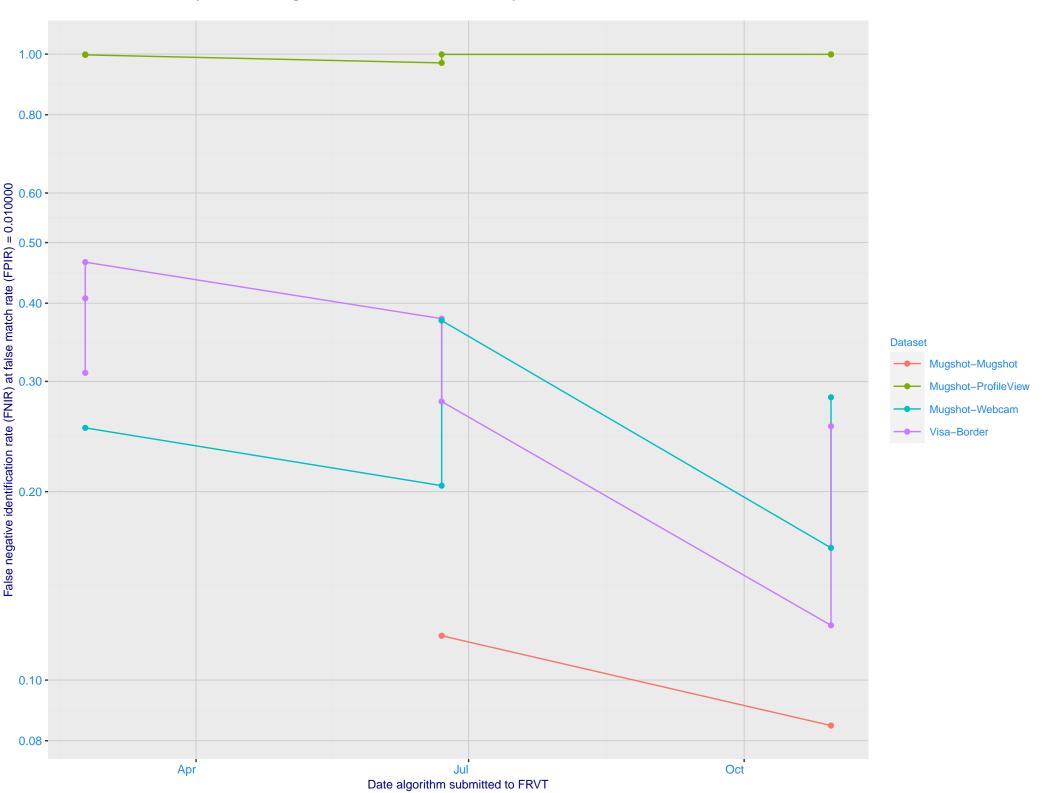
Mugshot profile ranking 176 (out of 195) -- FNIR(1600000, T, L+1) = 0.9999, FPIR=0.001000 vs. lowest 0.1331 from hr_000

Immigration visa-border ranking 111 (out of 146) -- FNIR(1600000, T, L+1) = 0.6377, FPIR=0.001000 vs. lowest 0.0049 from hr_000

Immigration visa-kiosk ranking 104 (out of 141) -- FNIR(1600000, T, L+1) = 0.9186, FPIR=0.001000 vs. lowest 0.0996 from hr_000

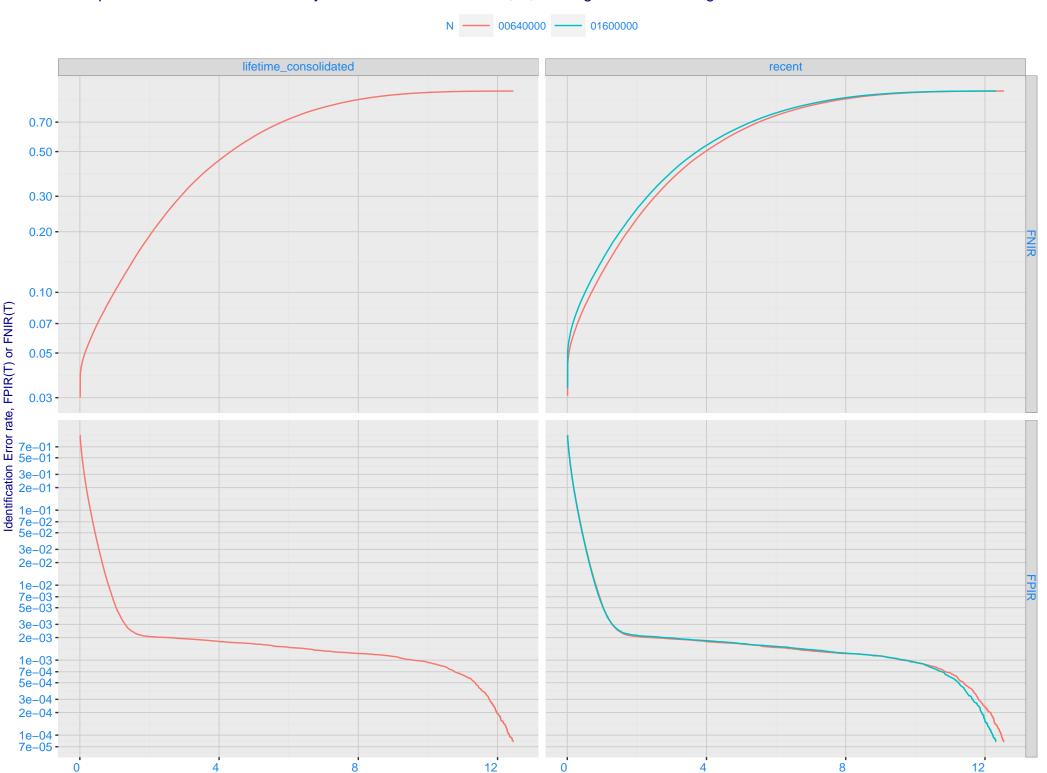


C: Evolution of accuracy for AWARE algorithms on three datasets 2018 – present



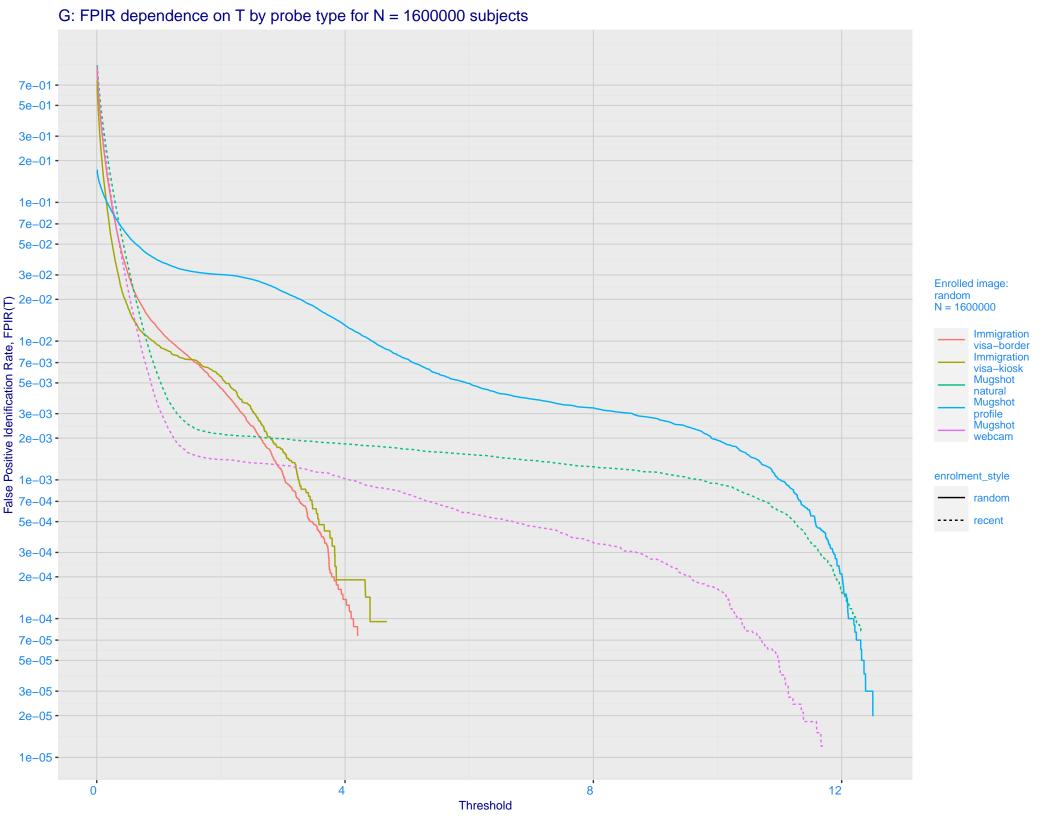
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 - 0.005 - 0.005 - 0.002 - 0.001 - 0.001 - 0.700 - 0.500 - 0.200 enrolment_style random-ONE-MATE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

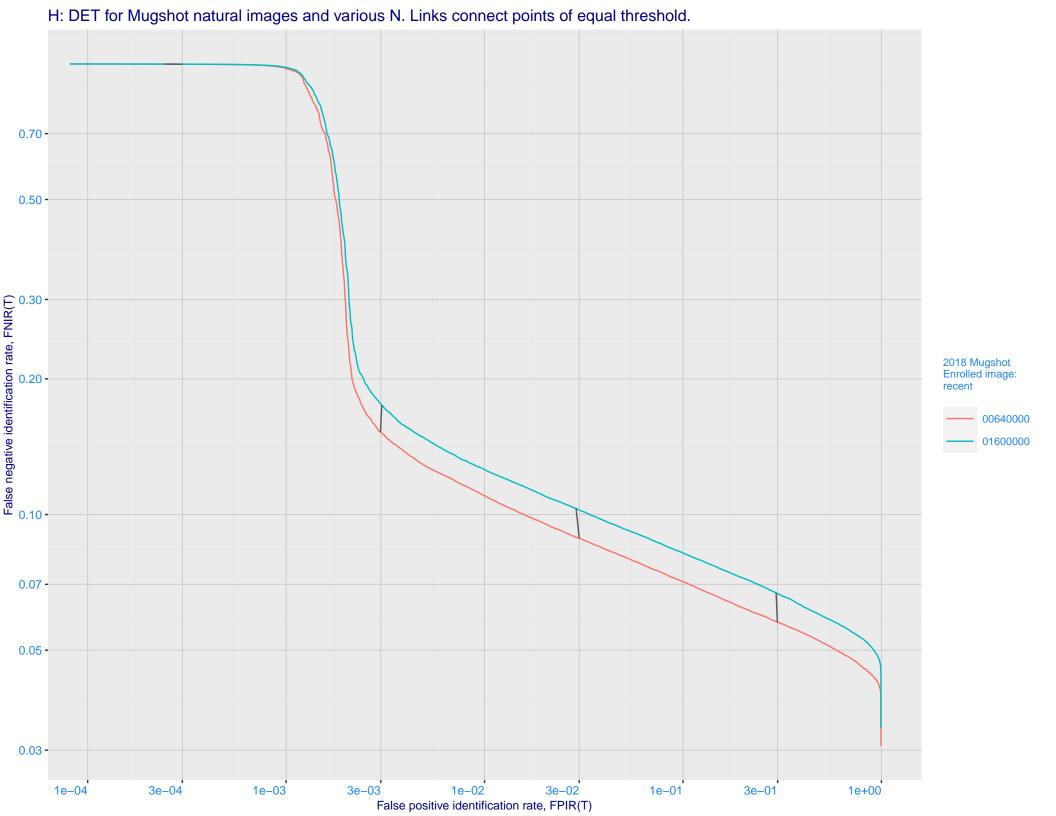
E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images



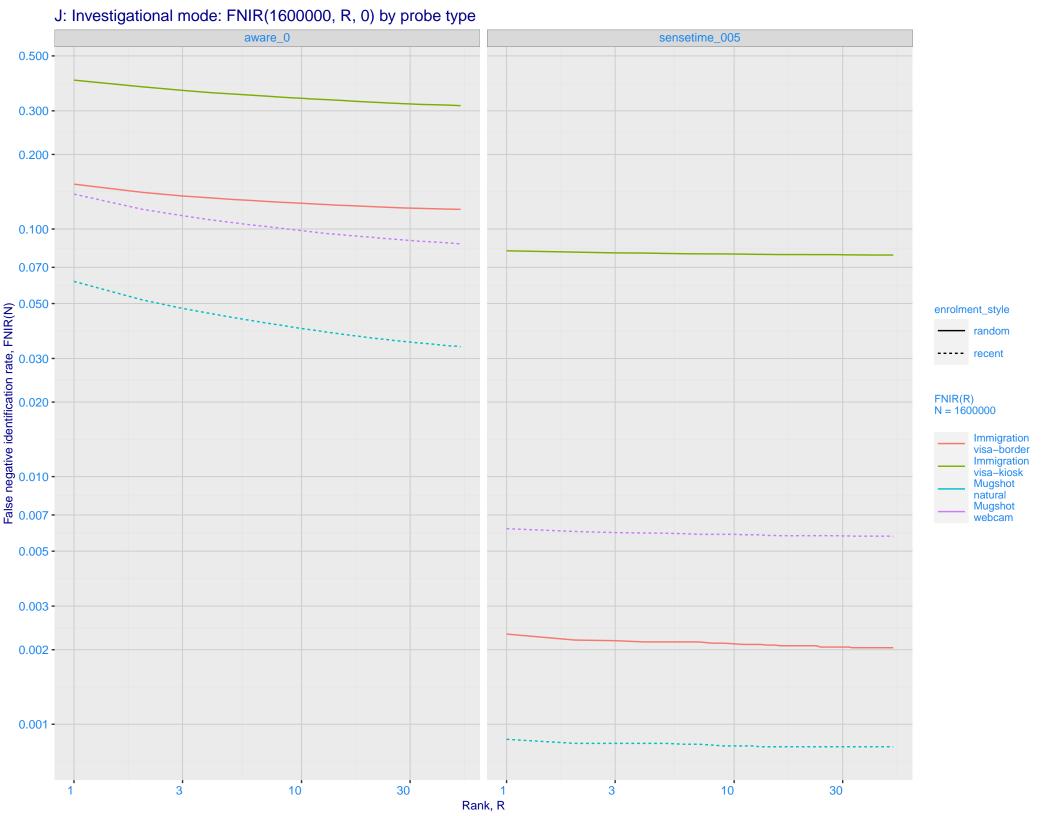
Threshold

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 **-**Selectivity, SEL(T) 5e-02 - 5e-02 - 2e-02 - 1e-02 - 1 **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 -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 0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -Palse negative identification rate, FNIR(N) 0.003 - 0.001 - 0.500 - 0.200 - 0.100 - 0. enrolment_style consolidated ---- random --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 aware_0 sensetime_005 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



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 - Log Model ---- Power Law Model 700 -500 -Search Duration (milliseconds) 200 -100 -7e+05 8e+05 1e+06 Enrolled population size, N, one image per person

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



