## 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 202 (out of 259) -- FNIR(1600000, 0, 1) = 0.0614 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 179 (out of 221) -- FNIR(1600000, 0, 1) = 0.1383 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 173 (out of 190) — FNIR(1600000, 0, 1) = 0.9777 vs. lowest 0.0591 from sensetime\_005

Immigration visa-border ranking 107 (out of 142) -- FNIR(1600000, 0, 1) = 0.1517 vs. lowest 0.0014 from visionlabs\_009

Immigration visa-kiosk ranking 105 (out of 139) -- FNIR(1600000, 0, 1) = 0.3992 vs. lowest 0.0694 from cib\_000

Identification:

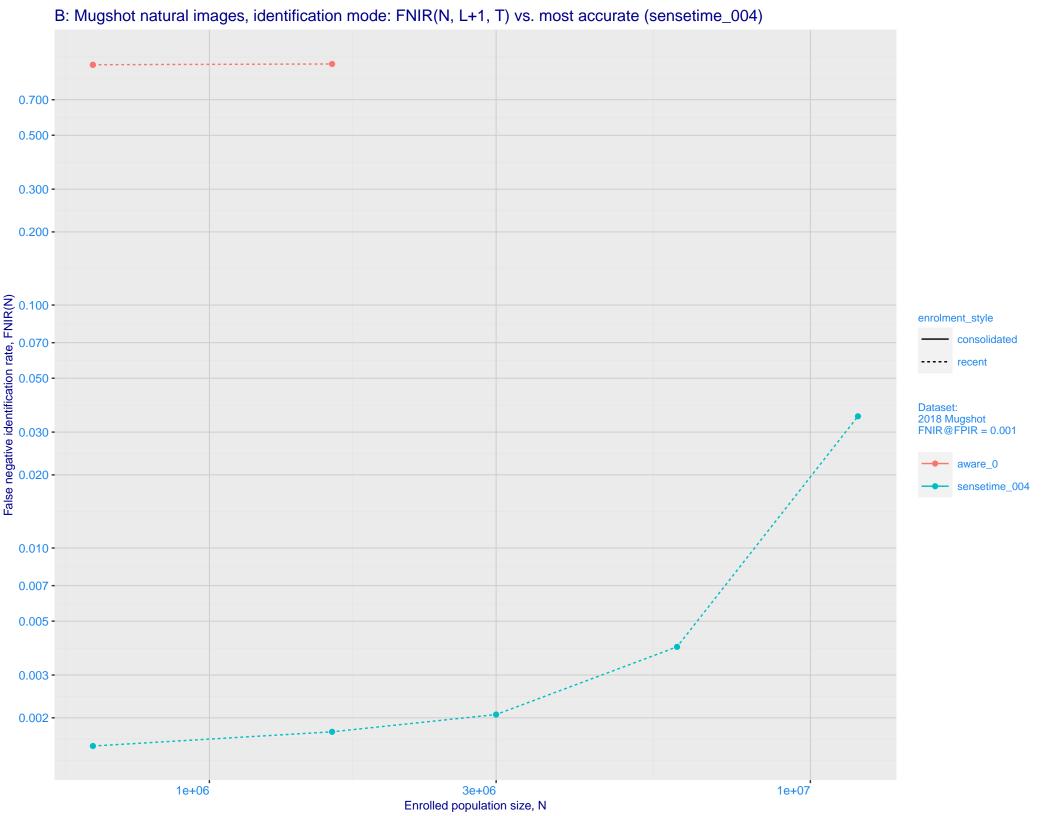
Frontal mugshot ranking 251 (out of 259) -- FNIR(1600000, T, L+1) = 0.9825, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Mugshot webcam ranking 197 (out of 219) -- FNIR(1600000, T, L+1) = 0.8167, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

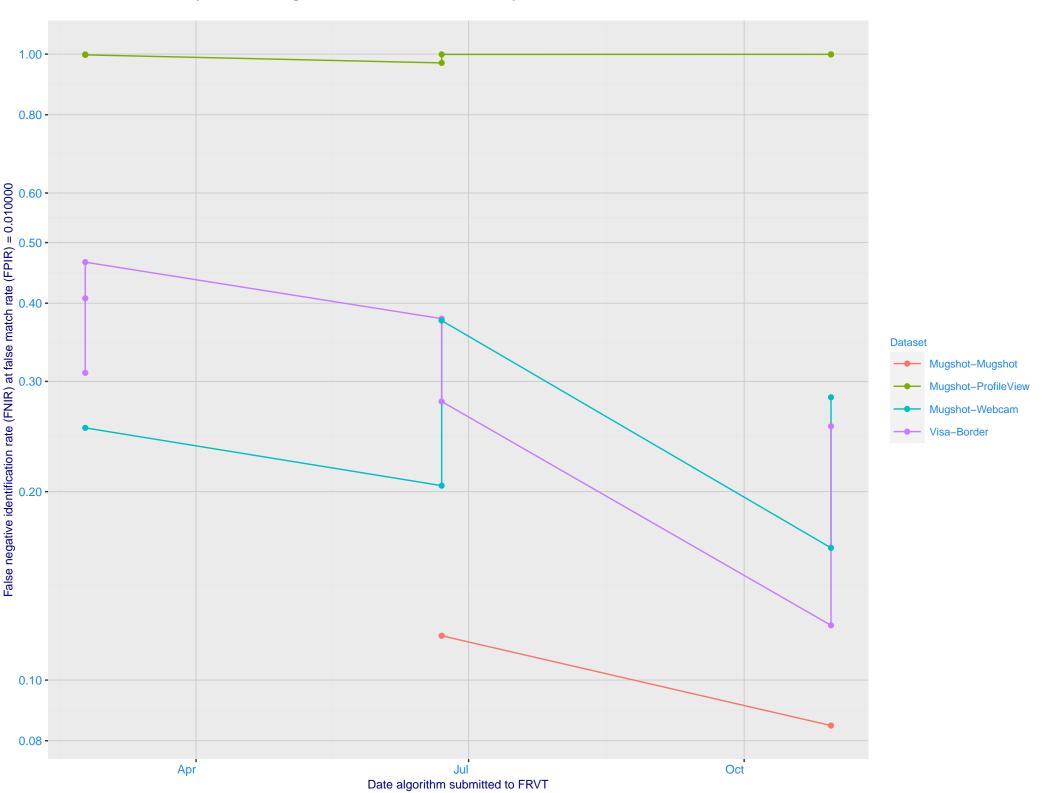
Mugshot profile ranking 170 (out of 189) -- FNIR(1600000, T, L+1) = 0.9999, FPIR=0.001000 vs. lowest 0.1733 from sensetime\_005

Immigration visa-border ranking 105 (out of 139) -- FNIR(1600000, T, L+1) = 0.6377, FPIR=0.001000 vs. lowest 0.0059 from sensetime\_004

Immigration visa-kiosk ranking 98 (out of 134) -- FNIR(1600000, T, L+1) = 0.9186, FPIR=0.001000 vs. lowest 0.1048 from sensetime\_005

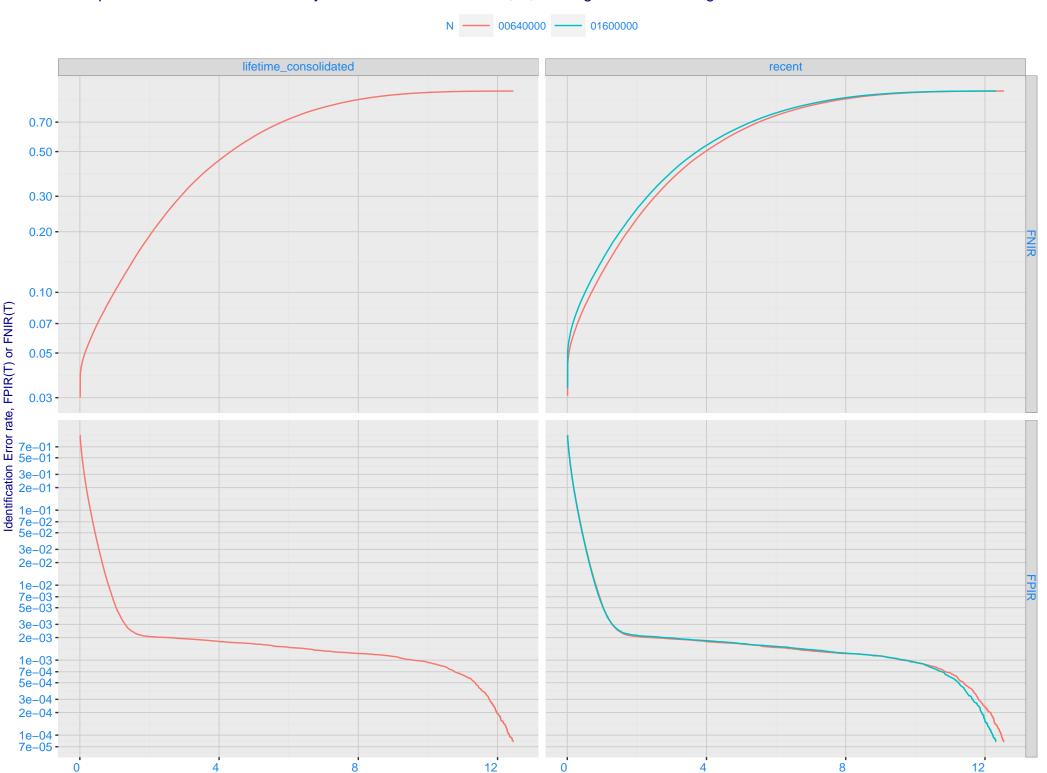


C: Evolution of accuracy for AWARE algorithms on three datasets 2018 – present



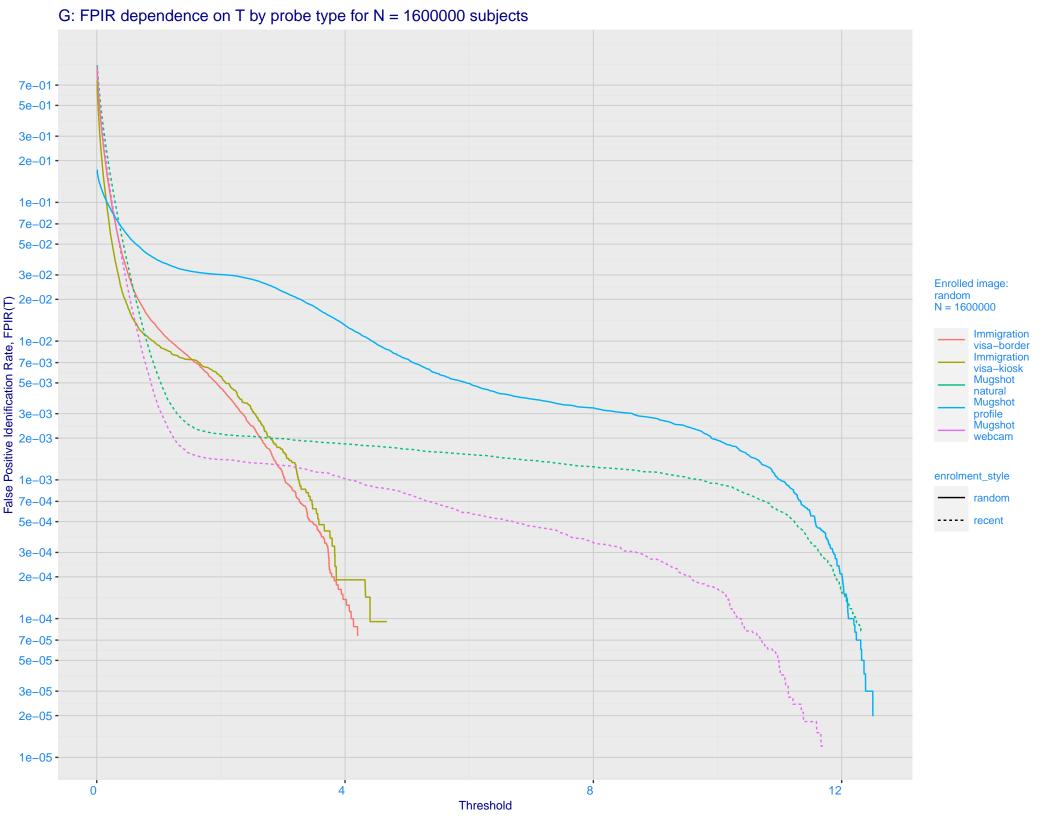
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 - 0.005 - 0.005 - 0.002 - 0.001 - 0.001 - 0.700 - 0.500 - 0.200 enrolment\_style random-ONE-MATE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

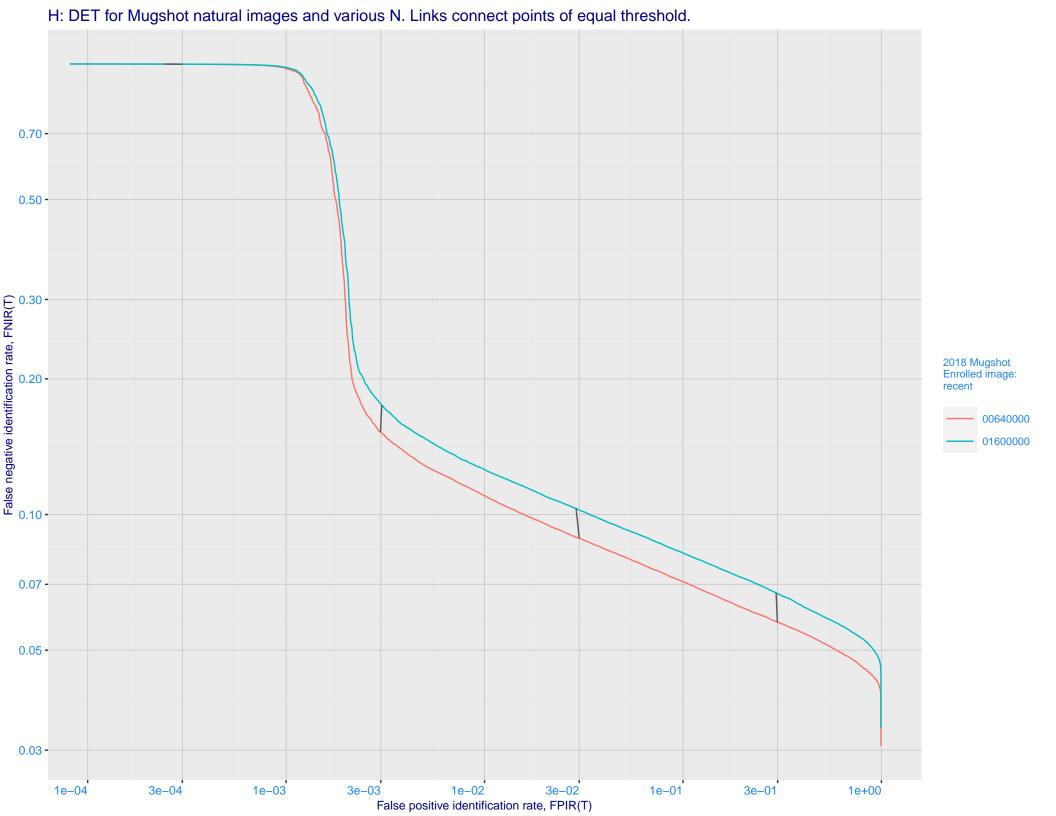
E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images



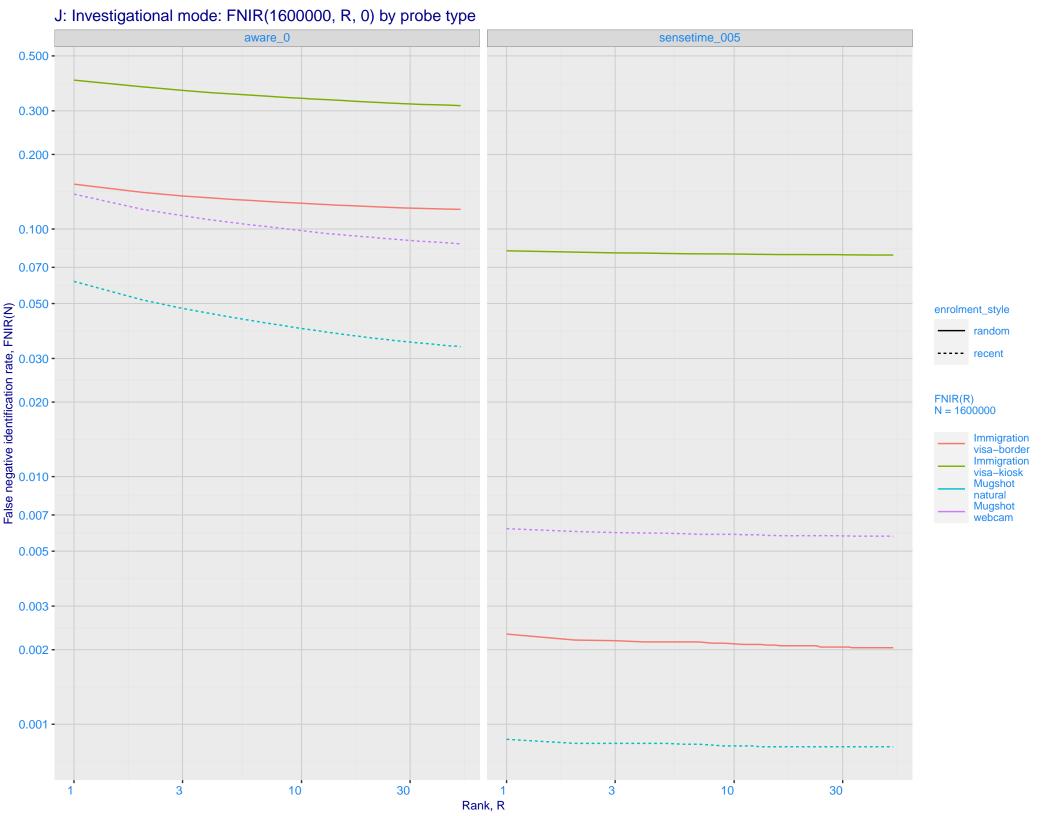
Threshold

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



