A: Datasheet

Algorithm: ayonix_0

Developer: Ayonix

Submission Date: 2018_06_21

Template size: 1036 bytes

Template time (2.5 percentile): 9 msec

Template time (median): 11 msec

Template time (97.5 percentile): 13 msec

Investigation:

Frontal mugshot ranking 256 (out of 265) -- FNIR(1600000, 0, 1) = 0.4505 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 220 (out of 227) -- FNIR(1600000, 0, 1) = 0.6845 vs. lowest 0.0062 from sensetime_005

Mugshot profile ranking 194 (out of 196) -- FNIR(1600000, 0, 1) = 0.9958 vs. lowest 0.0591 from sensetime_005

Immigration visa-border ranking 132 (out of 148) -- FNIR(1600000, 0, 1) = 0.6075 vs. lowest 0.0013 from visionlabs_010

Immigration visa-kiosk ranking 135 (out of 145) — FNIR(1600000, 0, 1) = 0.8673 vs. lowest 0.0568 from hr_000

Identification:

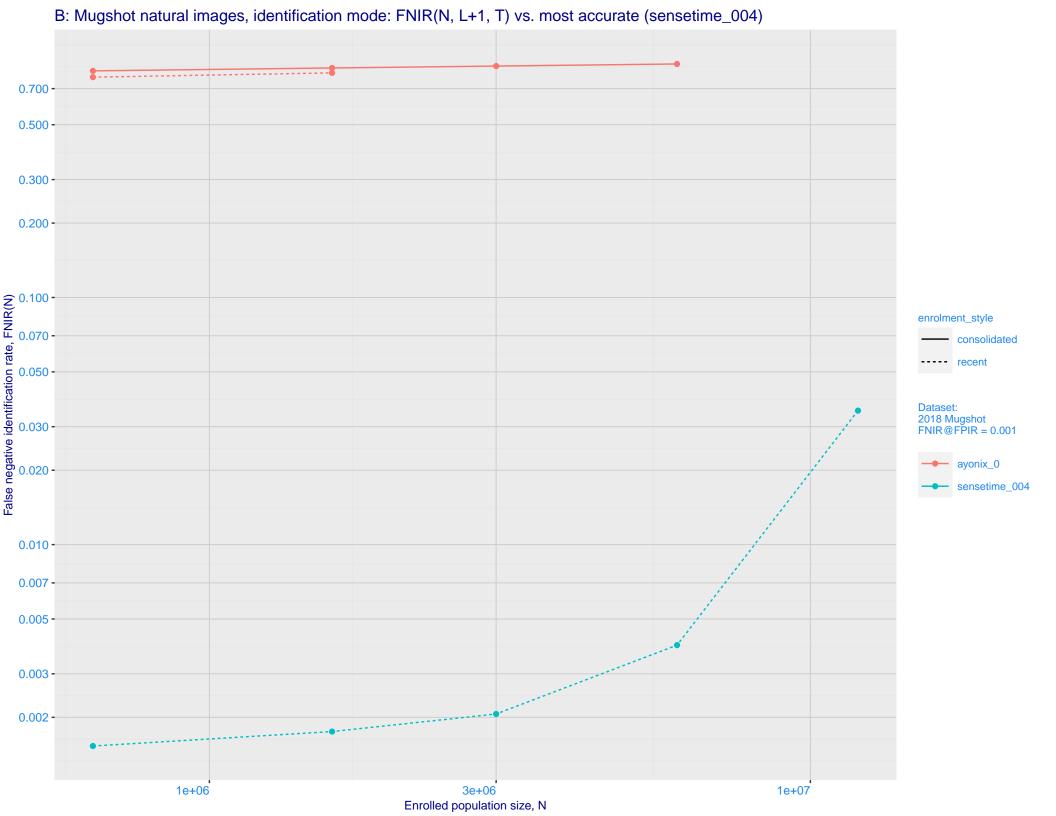
Frontal mugshot ranking 243 (out of 265) -- FNIR(1600000, T, L+1) = 0.8107, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

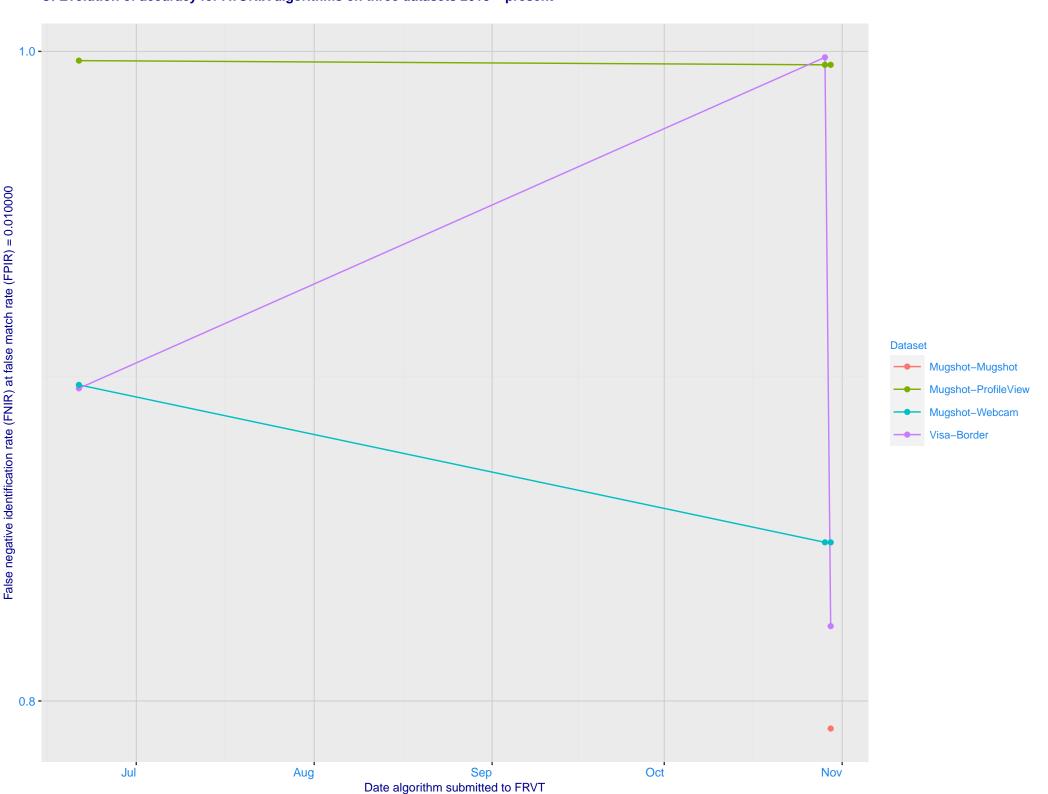
Mugshot webcam ranking 213 (out of 225) -- FNIR(1600000, T, L+1) = 0.9389, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

Mugshot profile ranking 118 (out of 195) -- FNIR(1600000, T, L+1) = 0.9978, FPIR=0.001000 vs. lowest 0.1331 from hr_000

Immigration visa-border ranking 128 (out of 146) -- FNIR(1600000, T, L+1) = 0.9536, FPIR=0.001000 vs. lowest 0.0049 from hr_000

Immigration visa-kiosk ranking 118 (out of 141) -- FNIR(1600000, T, L+1) = 0.9821, FPIR=0.001000 vs. lowest 0.0996 from hr_000

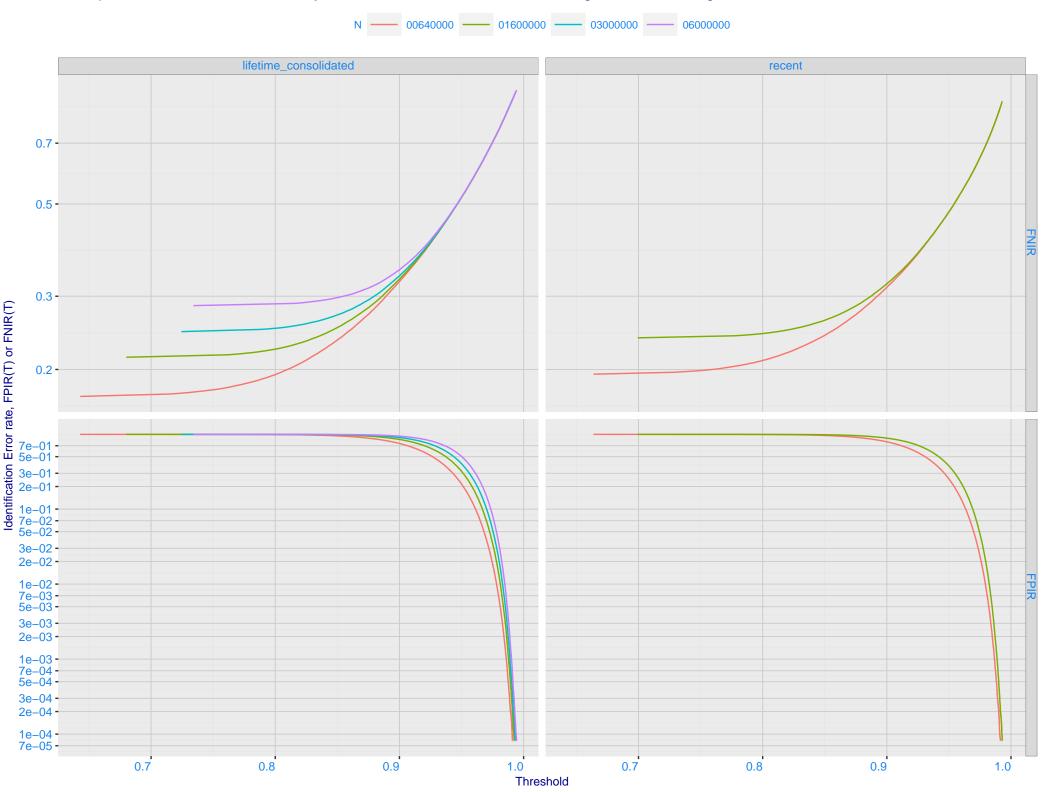




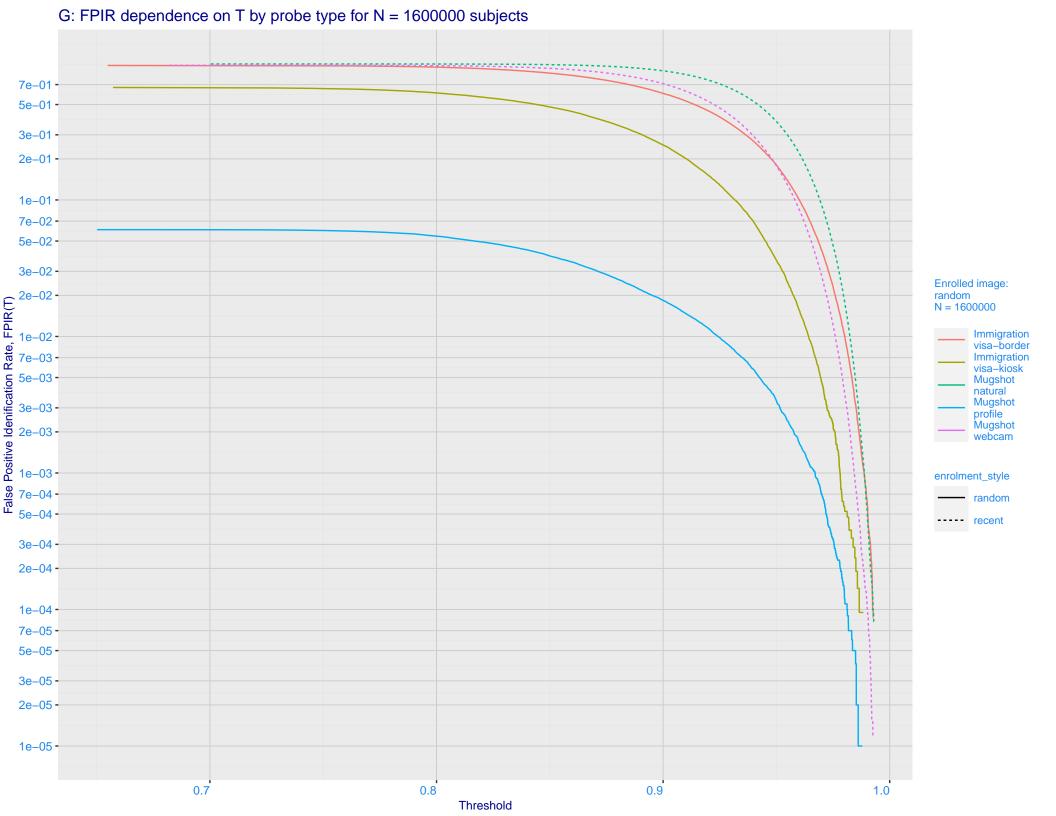
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration** Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 - 0.005 - 0.005 - 0.002 - 0.001 - 0.001 - 0.700 - 0.500 - 0.200 enrolment_style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

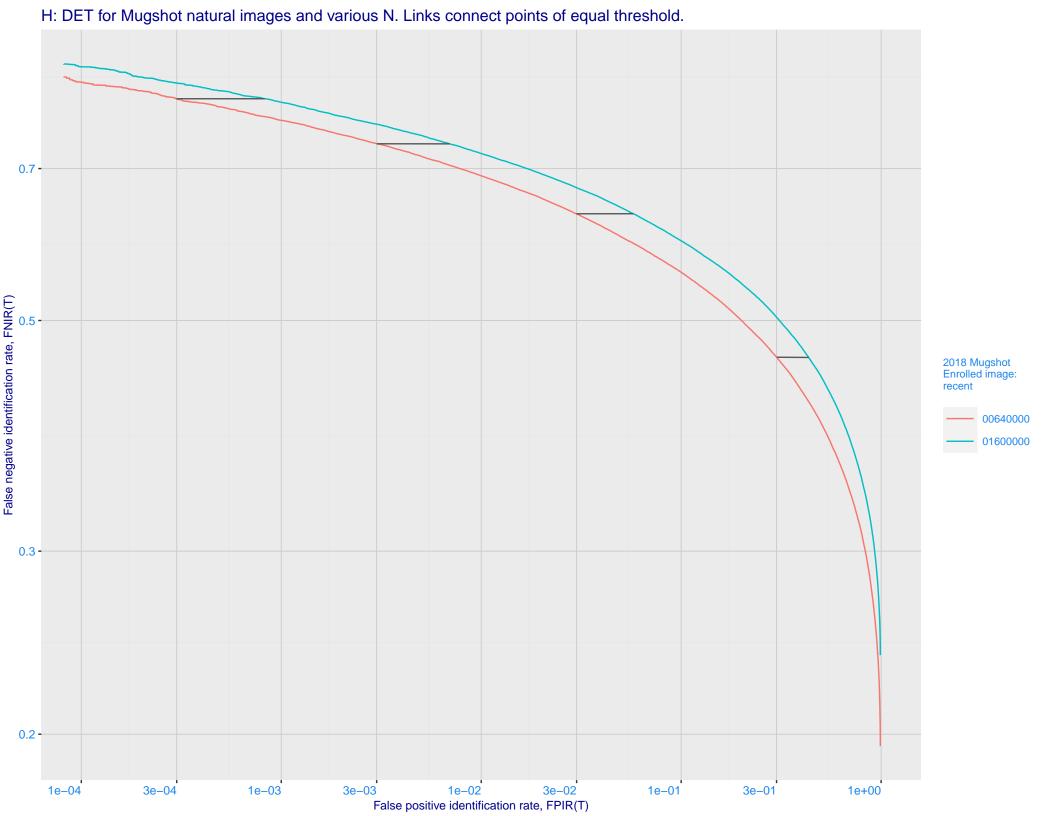
False positive identification rate, FPIR(T)

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 0.700 -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 - 0.700 - 0.500 - 0.300 - 0.200 enrolment_style consolidated ---- random --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 ayonix_0 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 ayonix_0 sensetime_005 0.700 -0.500 -0.300 -0.200 -0.100 enrolment_style False negative identification rate, FNIR(N) 0.000 - 0.000 - 0.000 - 0.010 - 0. lifetime_consolidated ---- random --- recent FNIR(R) N = 1600000 Immigration visa-border Immigration visa-kiosk Mugshot natural Mugshot webcam 0.007 -0.005 -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 Log Model ---- Power Law Model 300 -200 -100 -70 -50 -30 -20 -10 -7e+05 8e+05 1e+06 Enrolled population size, N, one image per person

Search Duration (milliseconds)

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



