## 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 250 (out of 259) -- FNIR(1600000, 0, 1) = 0.4505 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 214 (out of 221) -- FNIR(1600000, 0, 1) = 0.6845 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 188 (out of 190) -- FNIR(1600000, 0, 1) = 0.9958 vs. lowest 0.0591 from sensetime\_005

Immigration visa-border ranking 126 (out of 142) -- FNIR(1600000, 0, 1) = 0.6075 vs. lowest 0.0014 from visionlabs\_009

Immigration visa-kiosk ranking 129 (out of 139) -- FNIR(1600000, 0, 1) = 0.8673 vs. lowest 0.0694 from cib\_000

Identification:

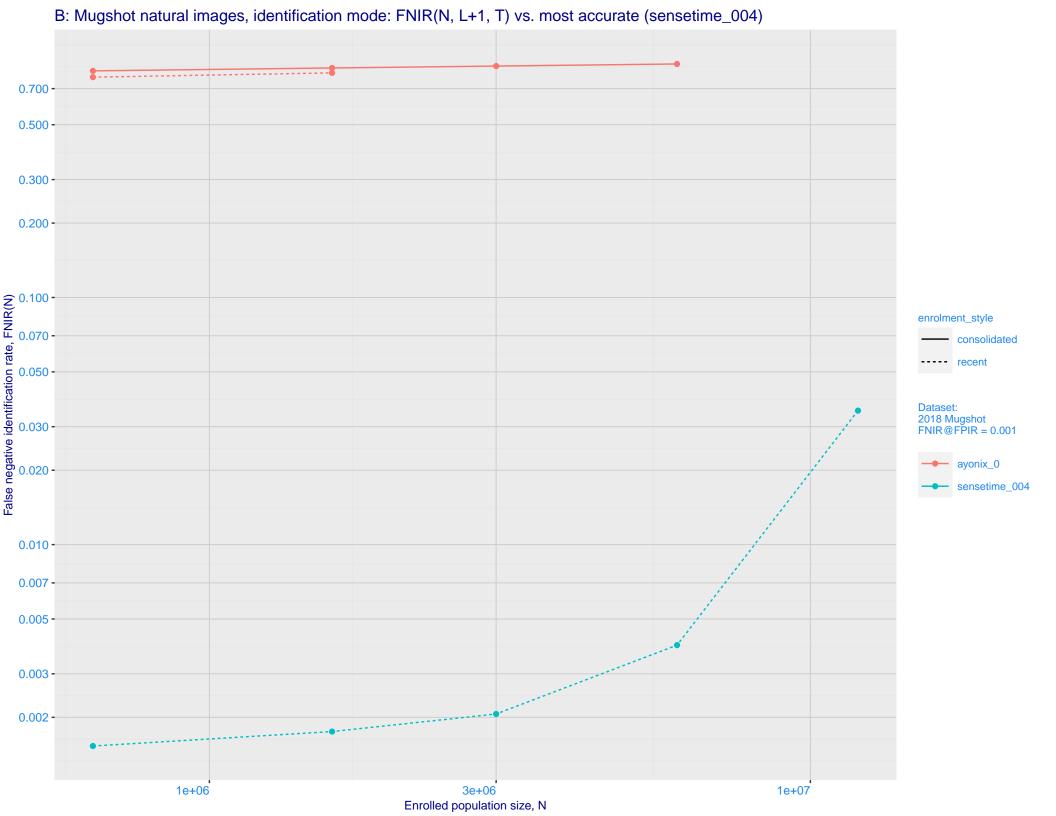
Frontal mugshot ranking 237 (out of 259) -- FNIR(1600000, T, L+1) = 0.8107, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

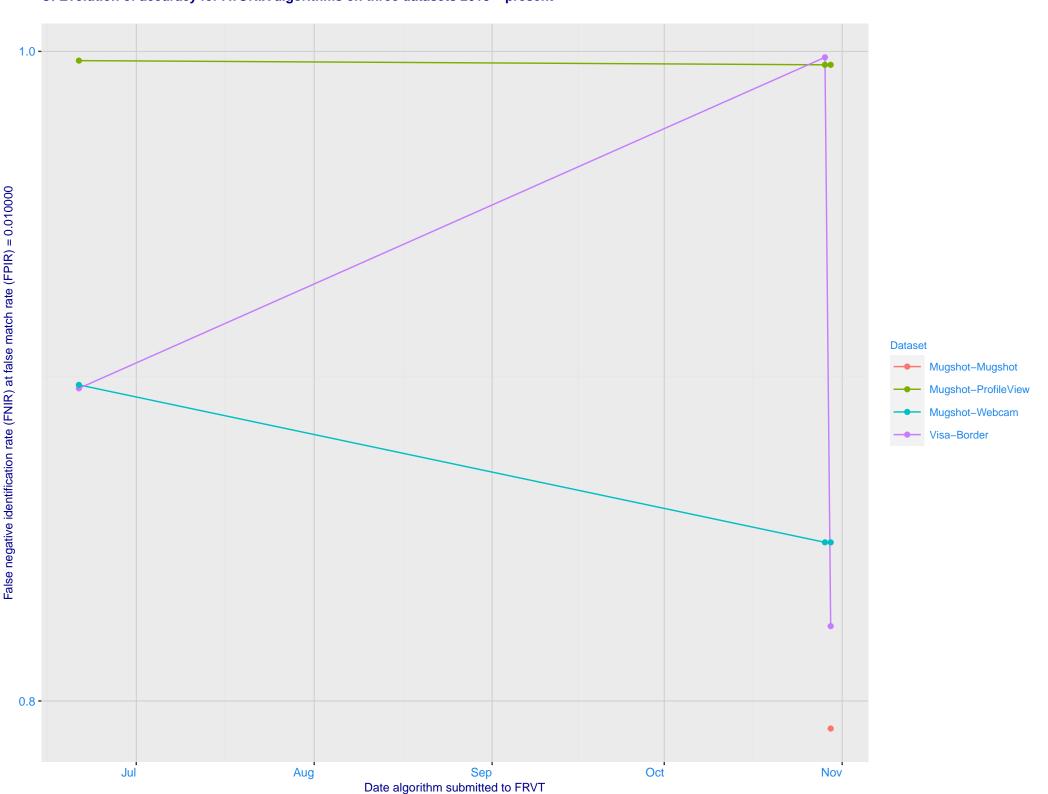
Mugshot webcam ranking 207 (out of 219) -- FNIR(1600000, T, L+1) = 0.9389, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

Mugshot profile ranking 112 (out of 189) -- FNIR(1600000, T, L+1) = 0.9978, FPIR=0.001000 vs. lowest 0.1733 from sensetime\_005

Immigration visa-border ranking 121 (out of 139) -- FNIR(1600000, T, L+1) = 0.9536, FPIR=0.001000 vs. lowest 0.0059 from sensetime\_004

Immigration visa-kiosk ranking 112 (out of 134) -- FNIR(1600000, T, L+1) = 0.9821, FPIR=0.001000 vs. lowest 0.1048 from sensetime\_005

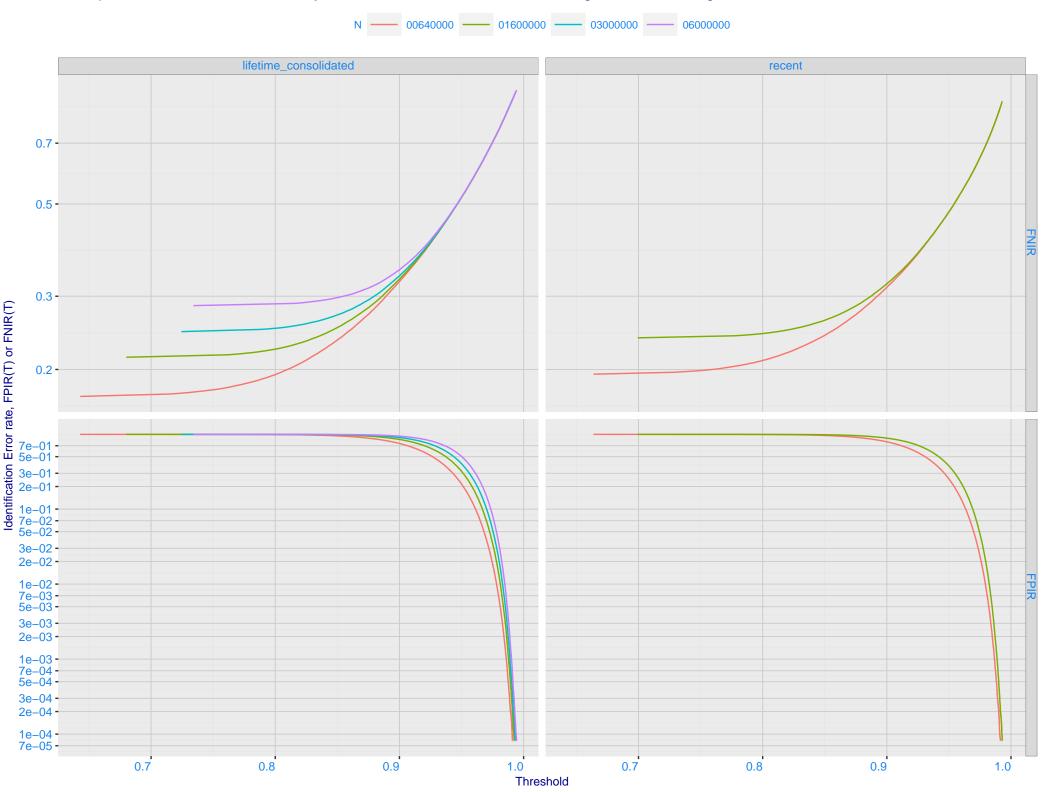




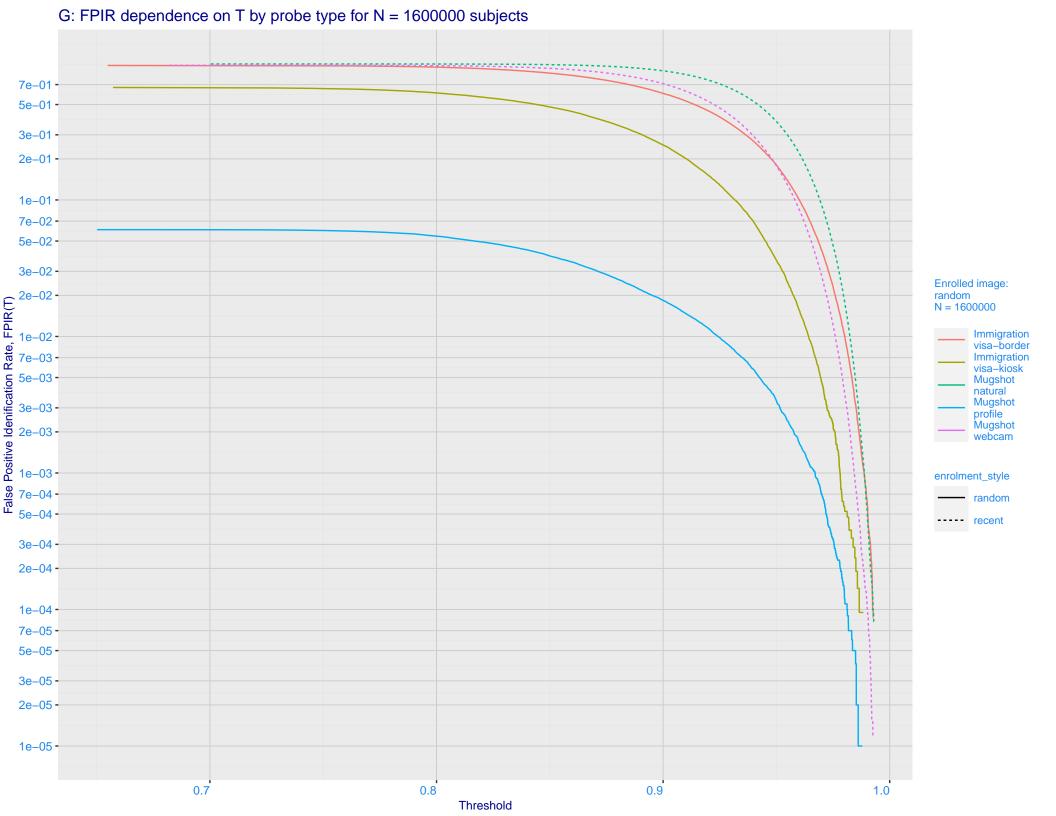
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration** Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 - 0.005 - 0.005 - 0.002 - 0.001 - 0.001 - 0.700 - 0.500 - 0.200 enrolment\_style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

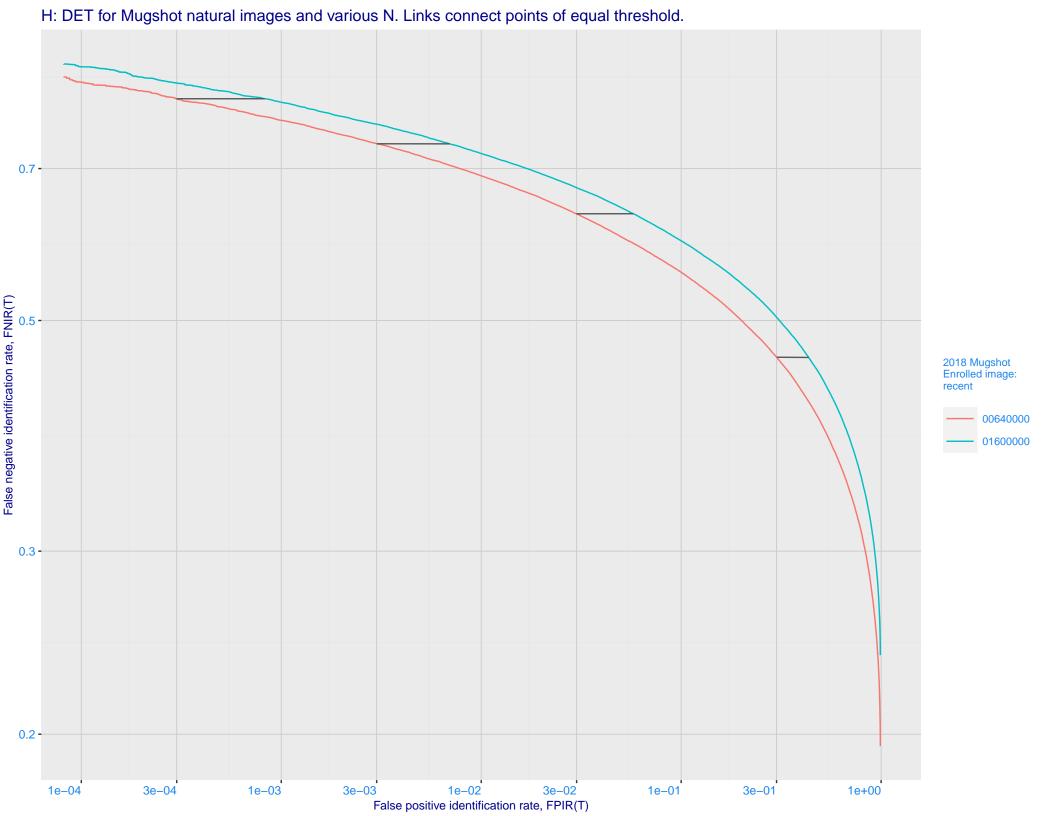
False positive identification rate, FPIR(T)

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



