## A: Datasheet

Algorithm: alchera\_2

Developer: Alchera Inc

Submission Date: 2018\_10\_30

Template size: 2048 bytes

Template time (2.5 percentile): 102 msec

Template time (median): 114 msec

Template time (97.5 percentile): 139 msec

Investigation:

Frontal mugshot ranking 217 (out of 265) -- FNIR(1600000, 0, 1) = 0.0949 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 189 (out of 227) -- FNIR(1600000, 0, 1) = 0.1664 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 145 (out of 196) -- FNIR(1600000, 0, 1) = 0.9541 vs. lowest 0.0591 from sensetime\_005

Immigration visa-border ranking 133 (out of 148) -- FNIR(1600000, 0, 1) = 0.6677 vs. lowest 0.0013 from visionlabs\_010

Immigration visa-kiosk ranking 114 (out of 145) — FNIR(1600000, 0, 1) = 0.4456 vs. lowest 0.0568 from hr\_000

Identification:

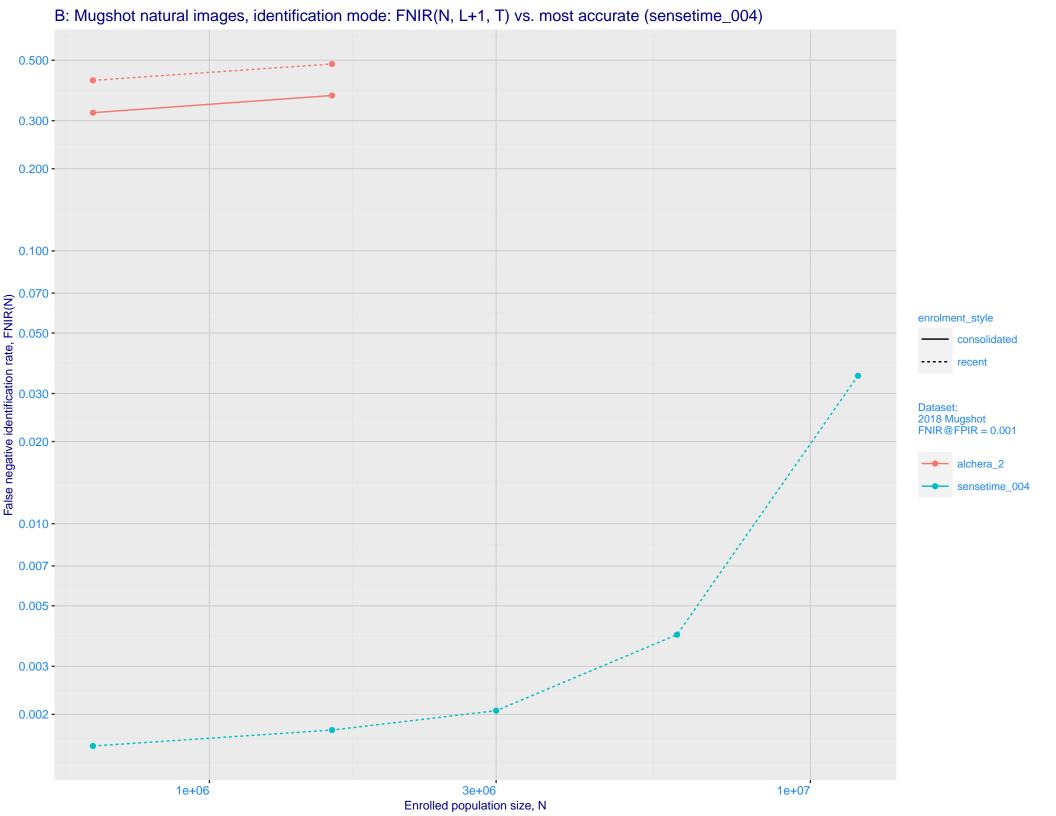
Frontal mugshot ranking 218 (out of 265) -- FNIR(1600000, T, L+1) = 0.4843, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

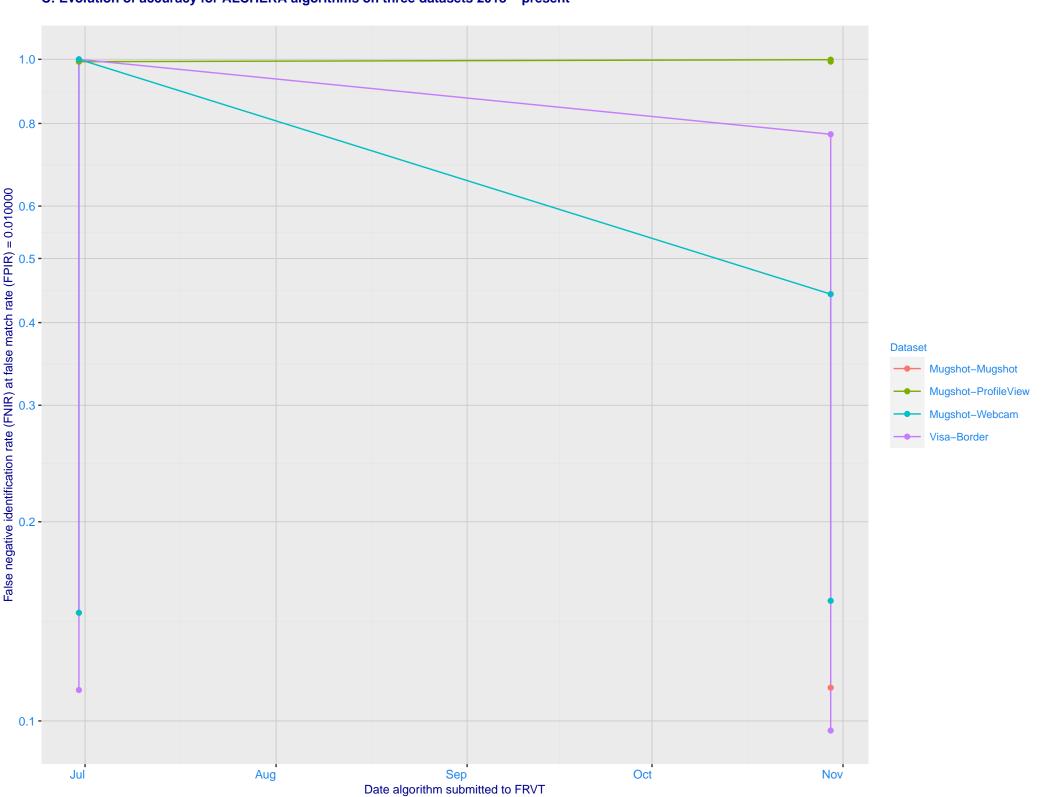
Mugshot webcam ranking 188 (out of 225) -- FNIR(1600000, T, L+1) = 0.5907, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

Mugshot profile ranking 149 (out of 195) -- FNIR(1600000, T, L+1) = 0.9996, FPIR=0.001000 vs. lowest 0.1331 from hr\_000

Immigration visa-border ranking 119 (out of 146) -- FNIR(1600000, T, L+1) = 0.8266, FPIR=0.001000 vs. lowest 0.0049 from hr\_000

Immigration visa-kiosk ranking 89 (out of 141) — FNIR(1600000, T, L+1) = 0.8159, FPIR=0.001000 vs. lowest 0.0996 from hr\_000



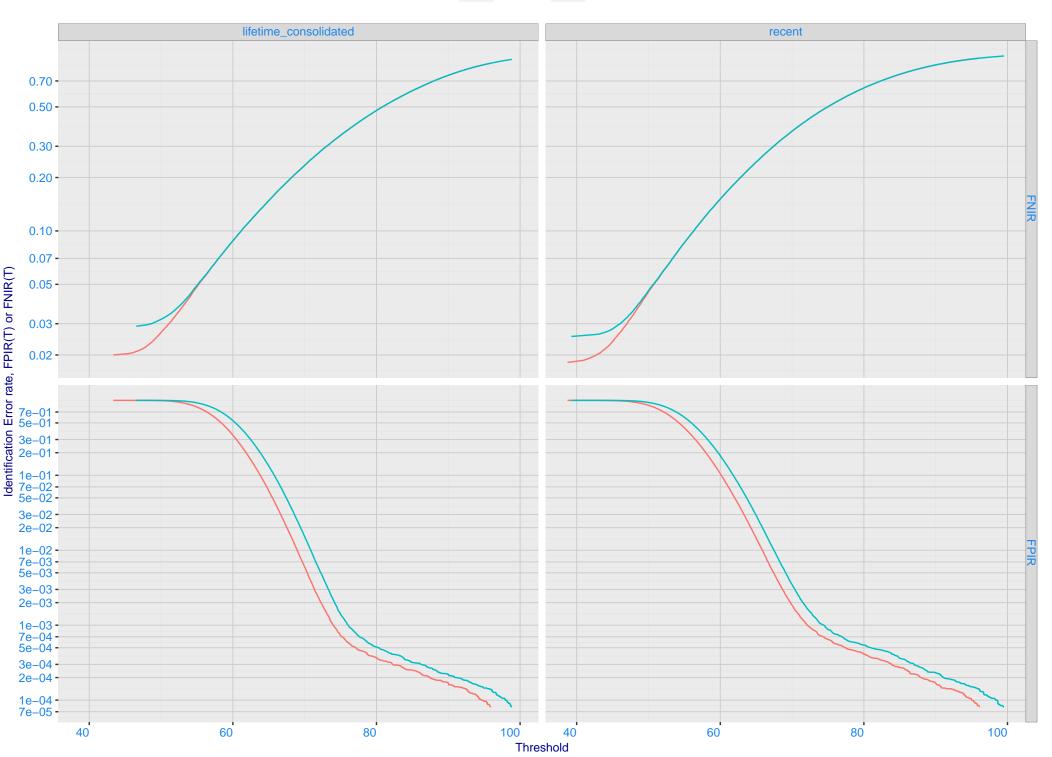


D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration** Mugshot **Immigration** visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 - 0.005 - 0.005 - 0.002 - 0.001 - 0.001 - 0.500 - 0.300 - 0.200 enrolment\_style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

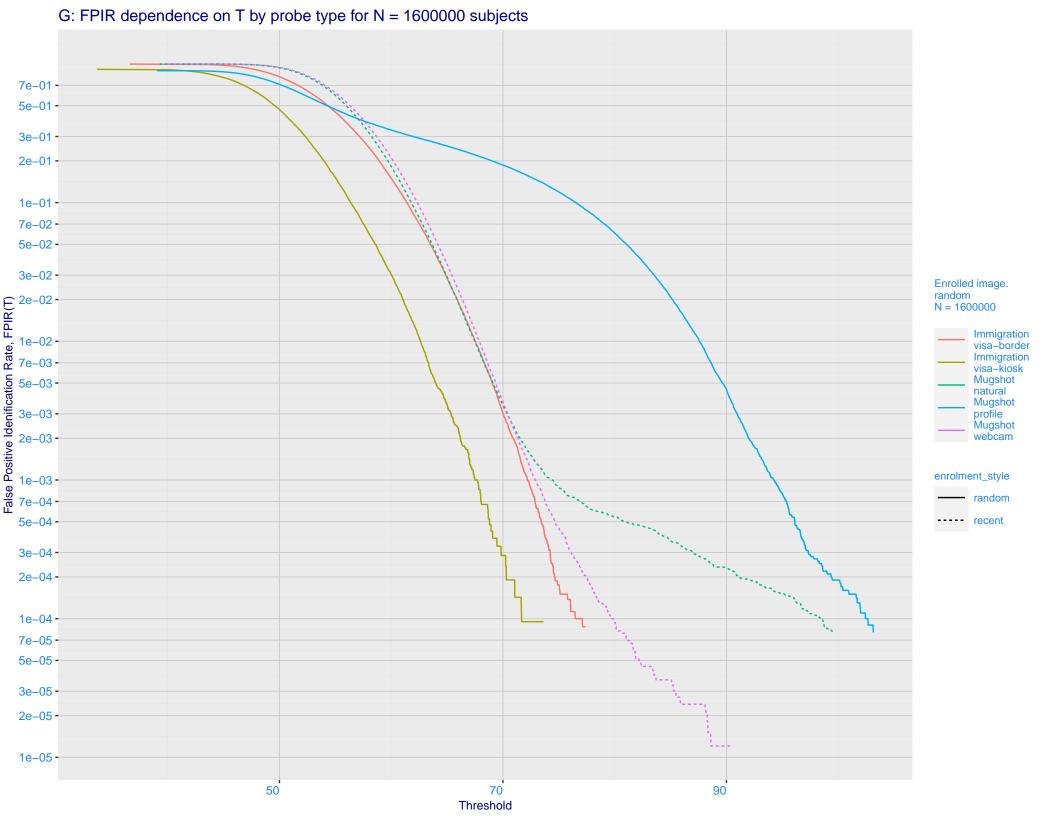
False positive identification rate, FPIR(T)

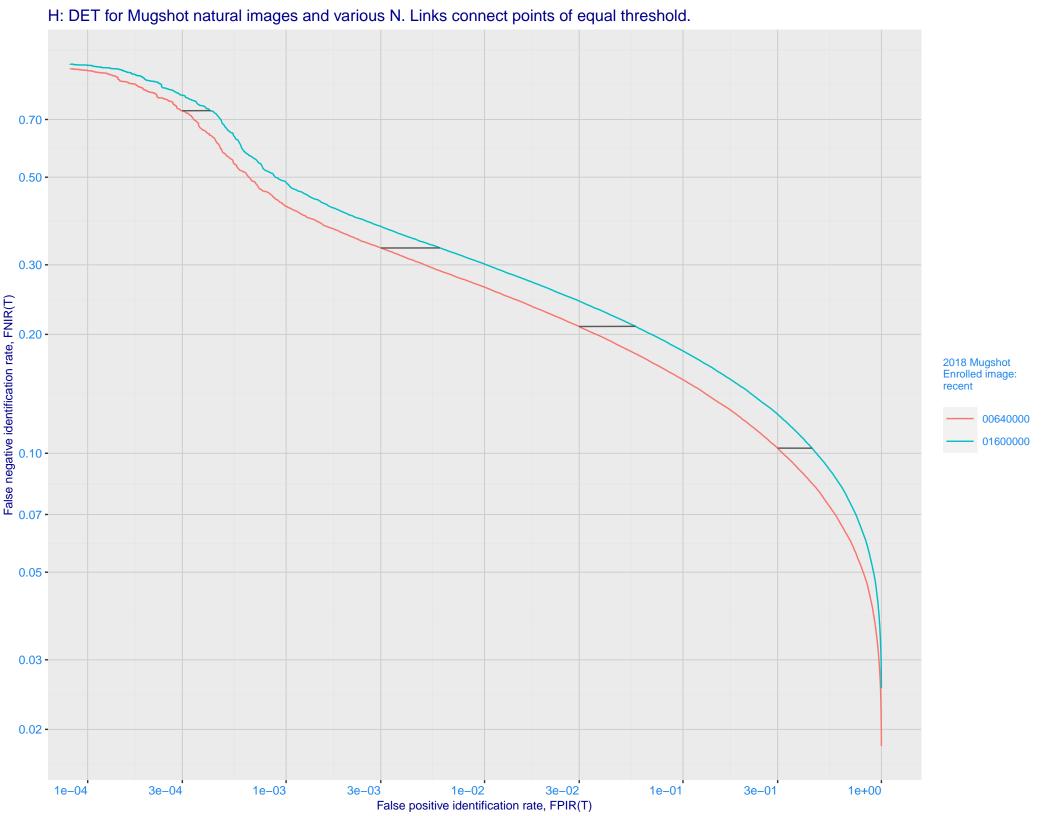
E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images



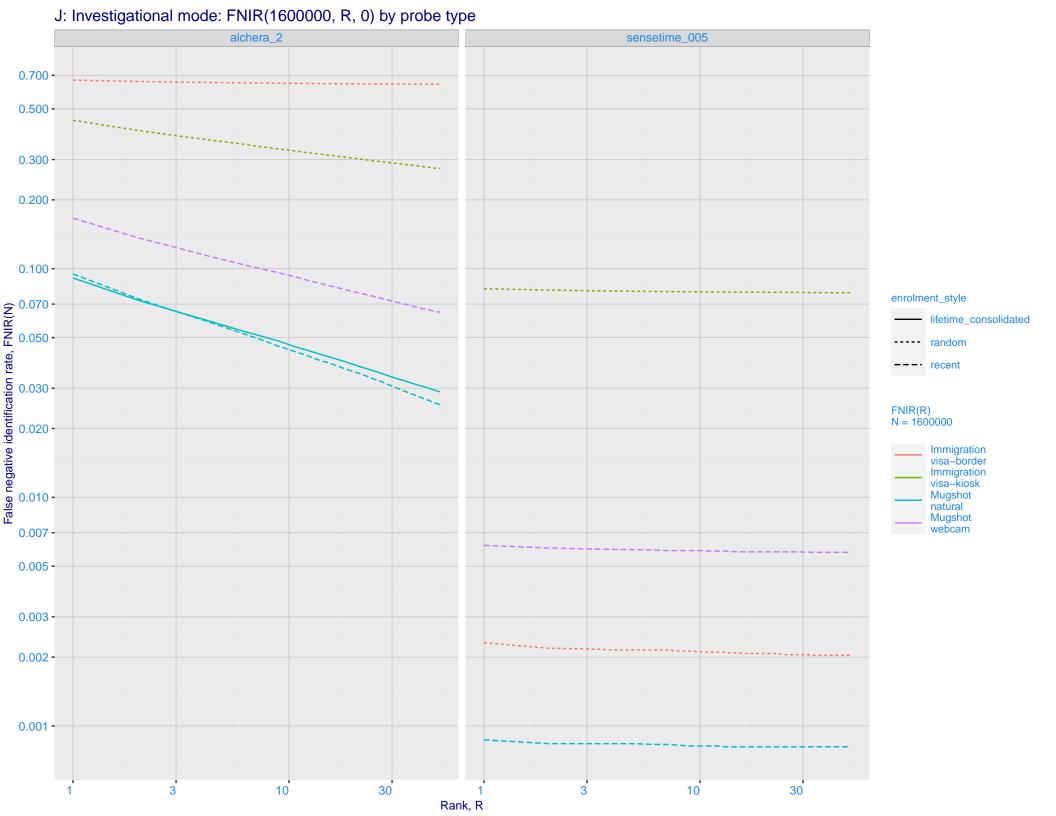


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 -7e-02 -5e-02 -2e-02 -2e-02 -**Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam 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 3e-05 1e-04 3e-04 1e-03 3e-03 1e-02 3e-02 1e-01 3e-01 False Positive Idenification Rate, FPIR(T)

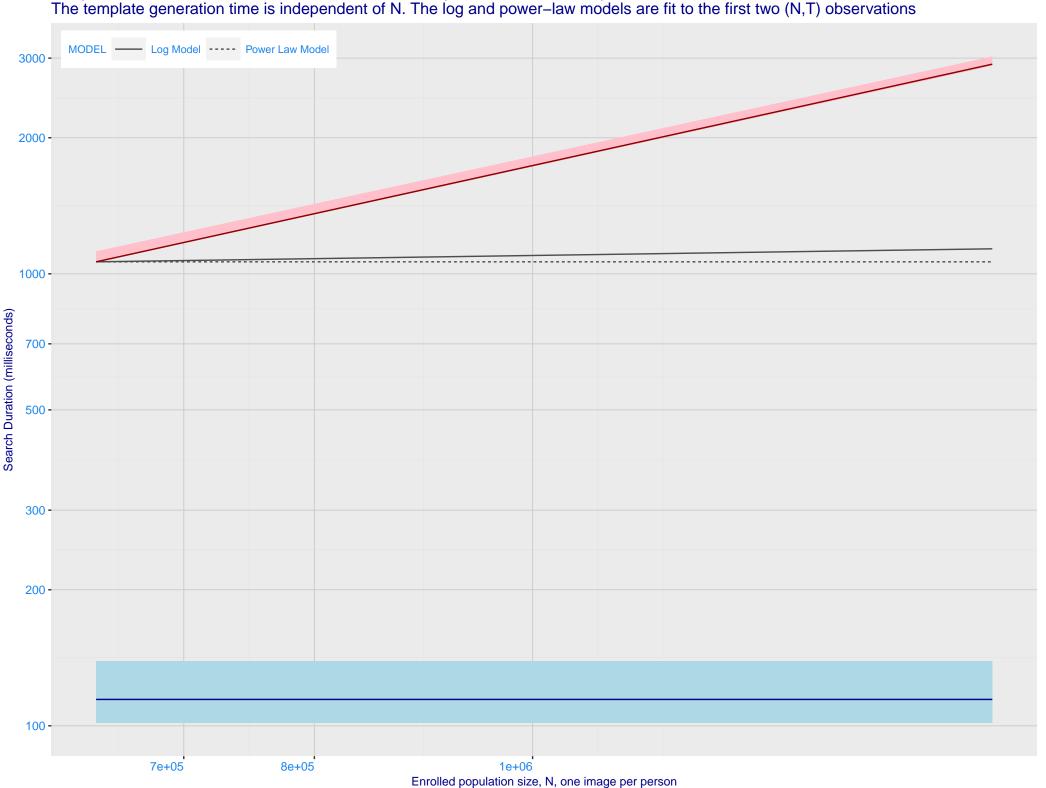




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.700 -0.500 -• 0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -Ealse negative identification rate, FNIR(N) 0.003 - 0.001 - 0.001 - 0.500 - 0.500 - 0.200 - 0. enrolment\_style consolidated ---- random --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 alchera\_2 sensetime\_005 0.100 -**6**-----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



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



