## 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 230 (out of 279) -- FNIR(1600000, 0, 1) = 0.0949 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 201 (out of 241) -- FNIR(1600000, 0, 1) = 0.1664 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 159 (out of 210) — FNIR(1600000, 0, 1) = 0.9541 vs. lowest 0.0587 from xforwardai\_002

Immigration visa-border ranking 153 (out of 168) -- FNIR(1600000, 0, 1) = 0.6677 vs. lowest 0.0013 from visionlabs\_010

Immigration visa-kiosk ranking 132 (out of 165) -- FNIR(1600000, 0, 1) = 0.4456 vs. lowest 0.0568 from cloudwalk\_hr\_000

Identification:

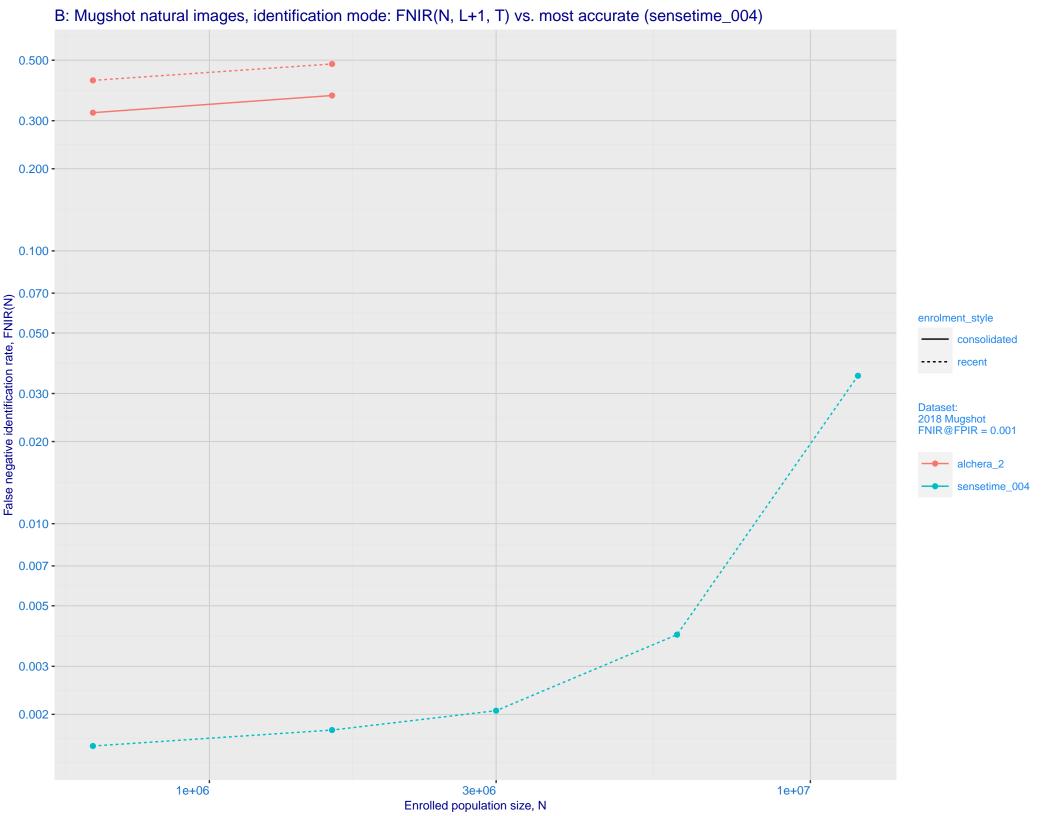
Frontal mugshot ranking 230 (out of 279) -- FNIR(1600000, T, L+1) = 0.4843, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

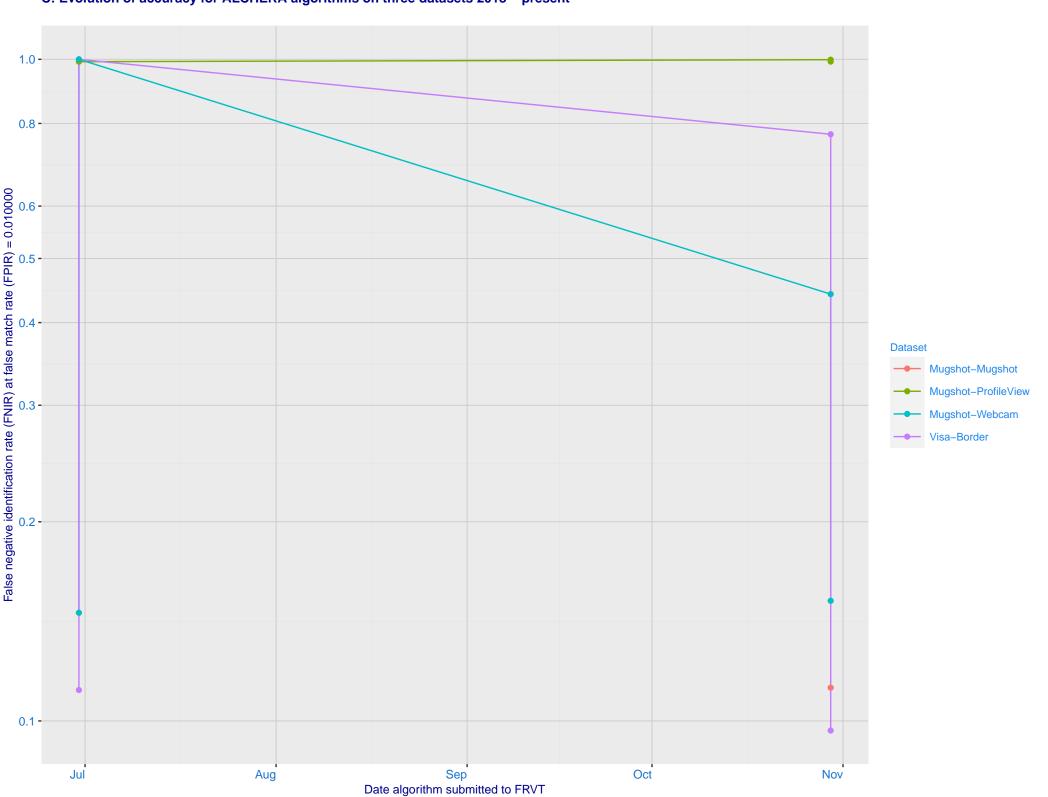
Mugshot webcam ranking 198 (out of 236) -- FNIR(1600000, T, L+1) = 0.5907, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

Mugshot profile ranking 158 (out of 209) -- FNIR(1600000, T, L+1) = 0.9996, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk\_hr\_000

Immigration visa-border ranking 138 (out of 167) -- FNIR(1600000, T, L+1) = 0.8266, FPIR=0.001000 vs. lowest 0.0047 from idemia\_008

Immigration visa-kiosk ranking 101 (out of 162) — FNIR(1600000, T, L+1) = 0.8159, FPIR=0.001000 vs. lowest 0.0996 from cloudwalk\_hr\_000



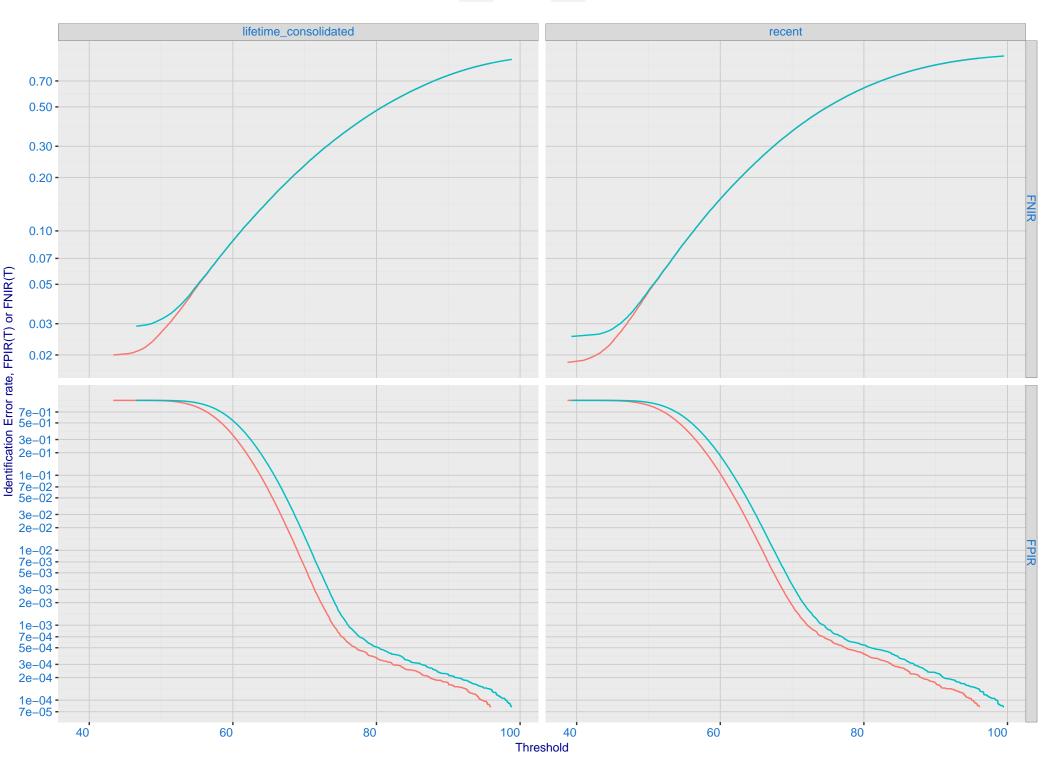


D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration** Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 alchera 0.030 -0.020 -0.010 -0.007 - 0.005 - 0.005 - 0.002 - 0.001 - 0.001 - 0.500 - 0.300 - 0.200 enrolment\_style consolidated-ONE-MATE random-ONE-MATE recent-ONE-MATE unconsolidated-ALL-MATES unconsolidated-ANY-MATE 0.100 -0.070 sensetime 004 0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -0.002 -0.001 -

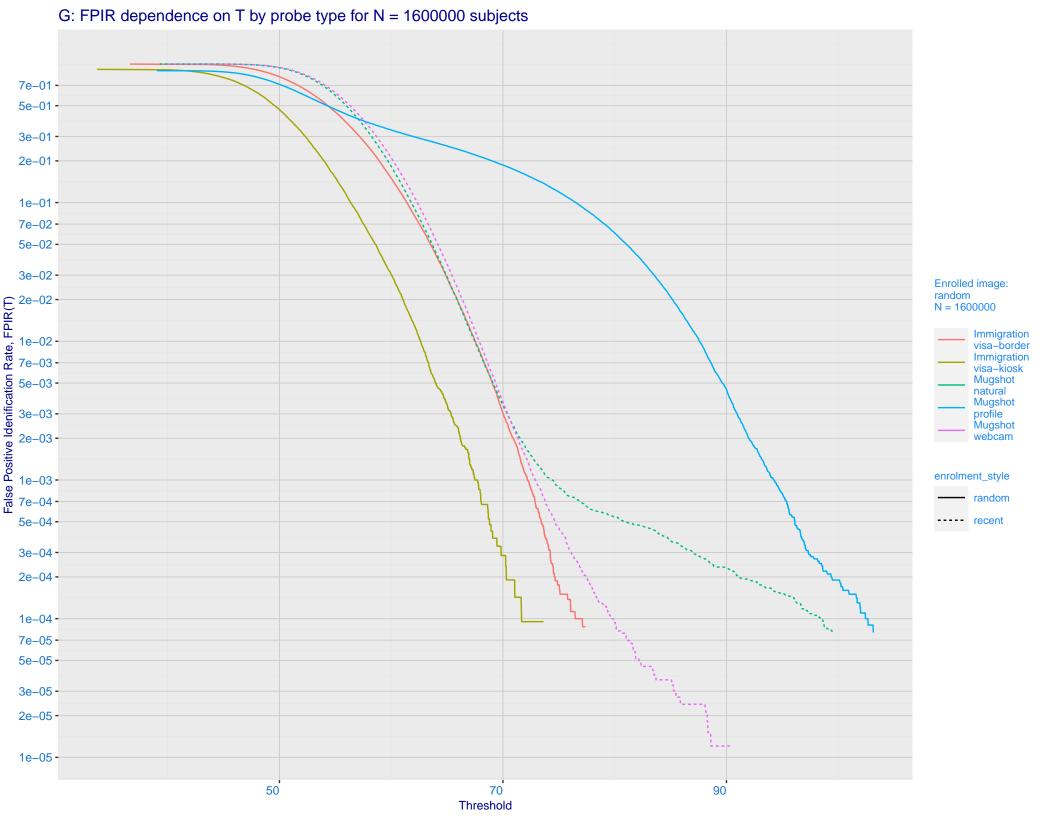
False positive identification rate, FPIR(T)

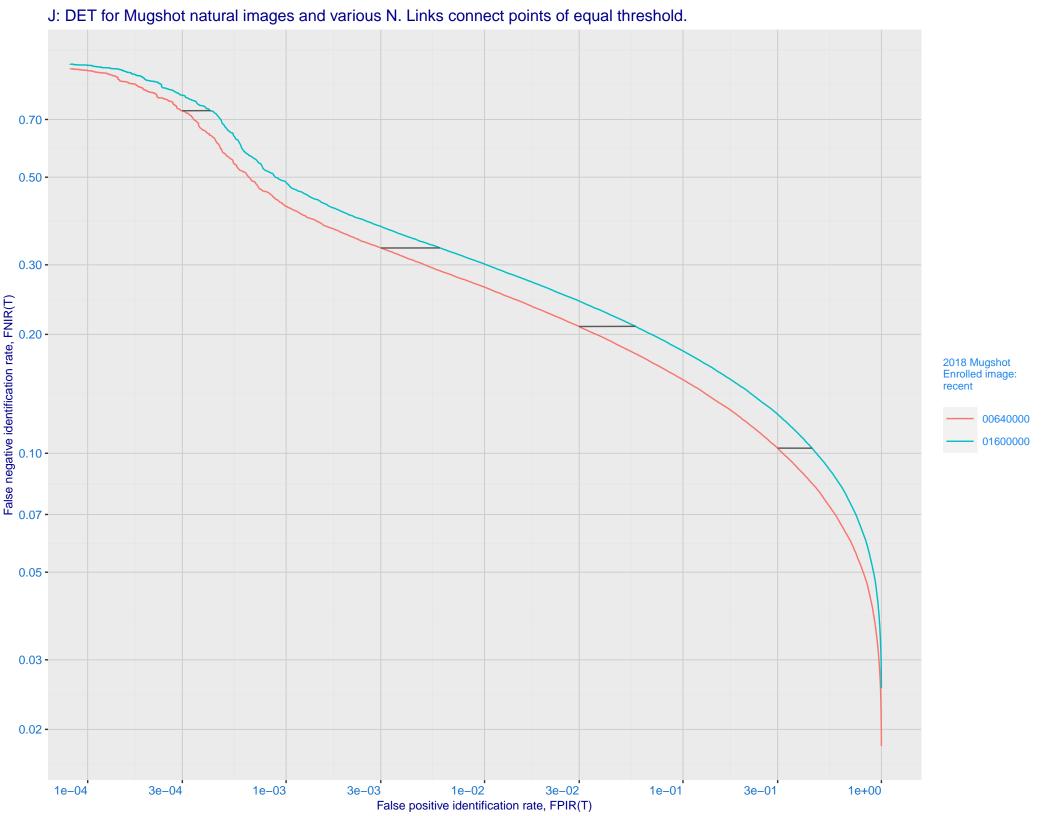
E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images



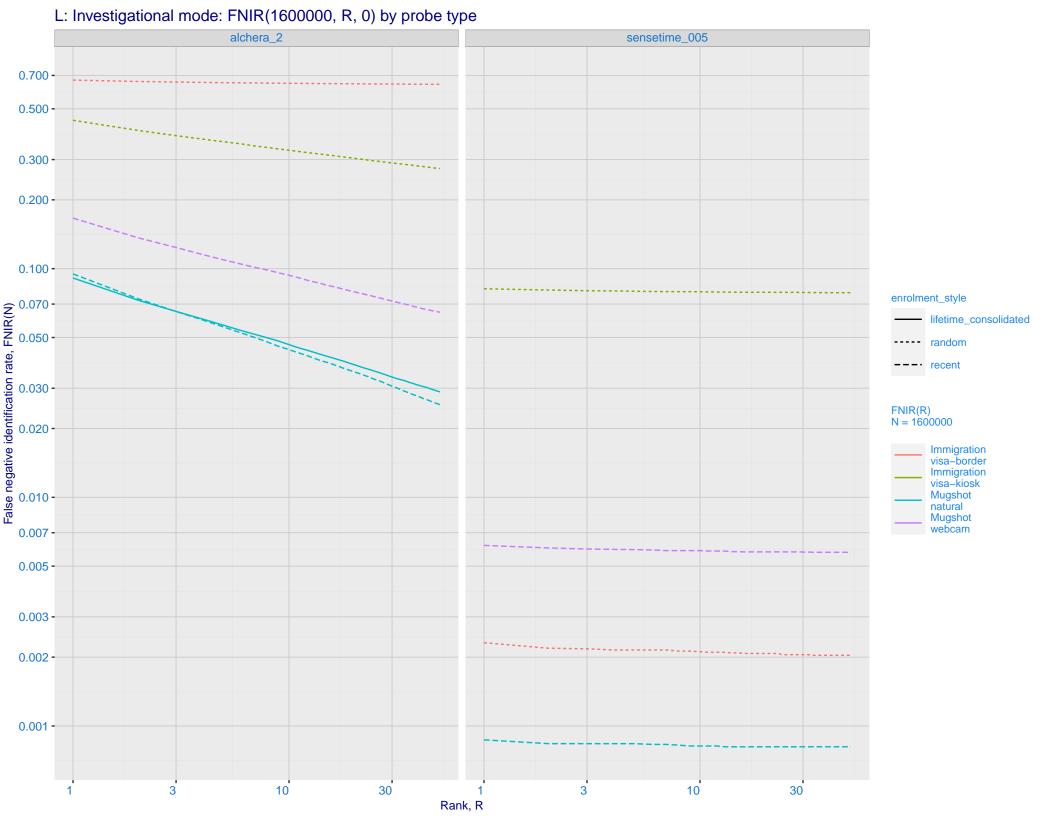


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 -7e-02 -5e-02 -2e-02 -2e-02 -**Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam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

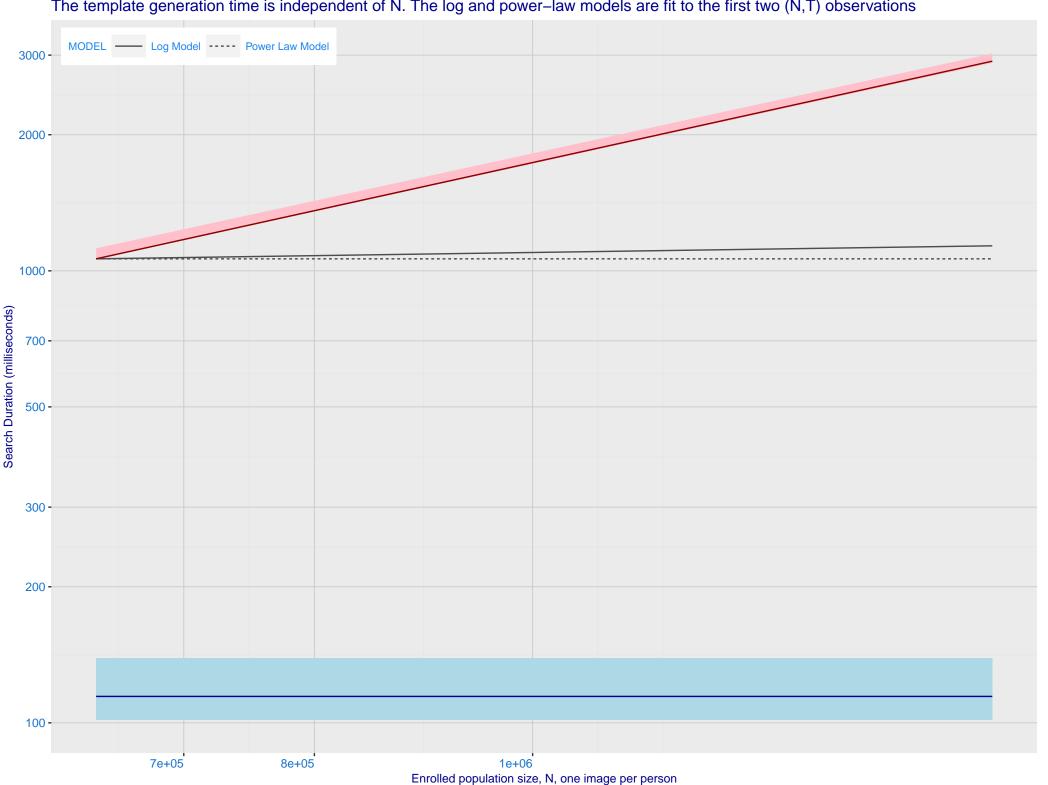




K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.700 -0.500 -• 0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -Ealse negative identification rate, FNIR(N) 0.003 - 0.001 - 0.001 - 0.500 - 0.500 - 0.200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



M: 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



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



