## A: Datasheet

Algorithm: acer\_000

Developer: Acer Incorporated

Submission Date: 2020\_08\_12

Template size: 512 bytes

Template time (2.5 percentile): 198 msec

Template time (median): 199 msec

Template time (97.5 percentile): 215 msec

Investigation:

Frontal mugshot ranking 126 (out of 259) -- FNIR(1600000, 0, 1) = 0.0106 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 115 (out of 221) -- FNIR(1600000, 0, 1) = 0.0359 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 97 (out of 190) -- FNIR(1600000, 0, 1) = 0.8265 vs. lowest 0.0591 from sensetime\_005

Immigration visa-border ranking 73 (out of 142) -- FNIR(1600000, 0, 1) = 0.0255 vs. lowest 0.0014 from visionlabs\_009

Immigration visa-kiosk ranking 74 (out of 139) -- FNIR(1600000, 0, 1) = 0.2094 vs. lowest 0.0694 from cib\_000

Identification:

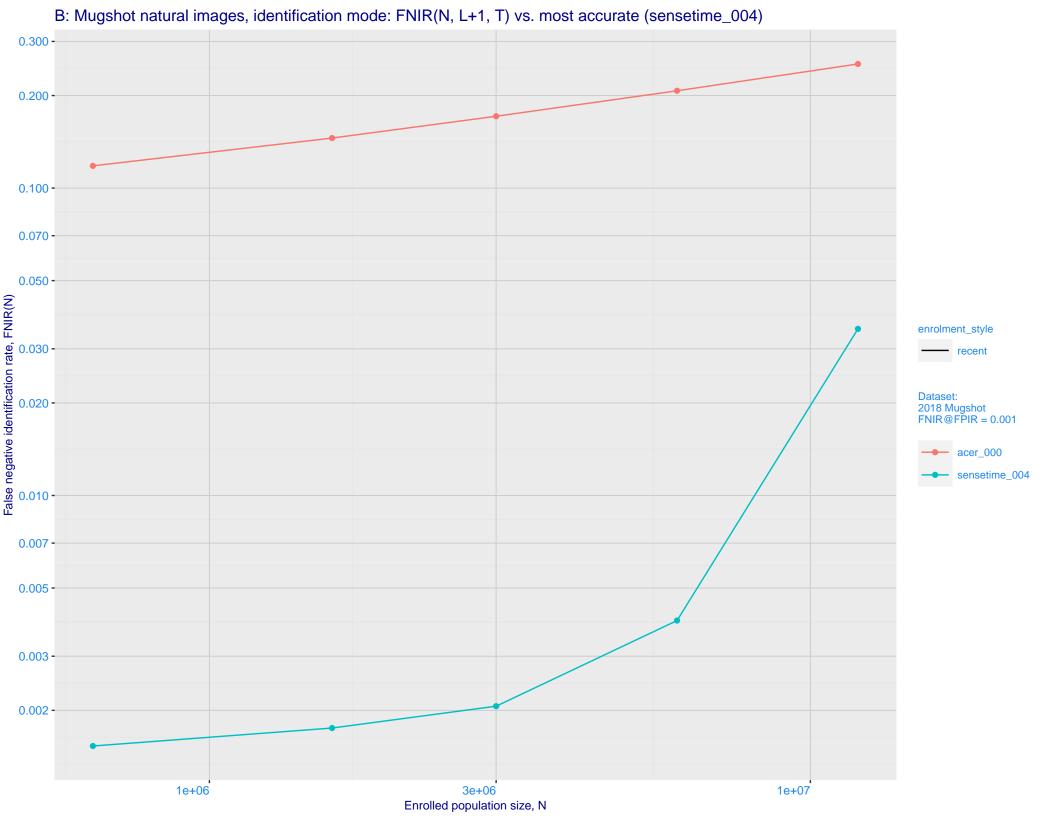
Frontal mugshot ranking 151 (out of 259) -- FNIR(1600000, T, L+1) = 0.1455, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Mugshot webcam ranking 137 (out of 219) -- FNIR(1600000, T, L+1) = 0.2460, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

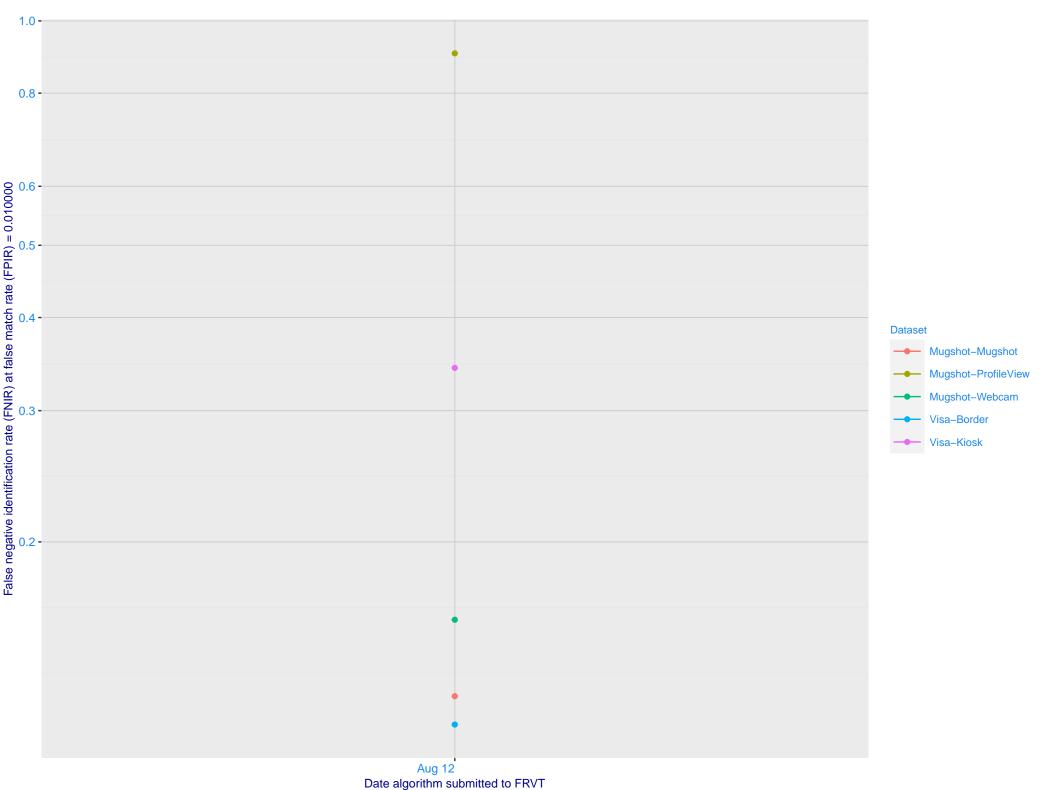
Mugshot profile ranking 57 (out of 189) -- FNIR(1600000, T, L+1) = 0.9809, FPIR=0.001000 vs. lowest 0.1733 from sensetime\_005

Immigration visa-border ranking 81 (out of 139) -- FNIR(1600000, T, L+1) = 0.2006, FPIR=0.001000 vs. lowest 0.0059 from sensetime\_004

Immigration visa-kiosk ranking 57 (out of 134) -- FNIR(1600000, T, L+1) = 0.4936, FPIR=0.001000 vs. lowest 0.1048 from sensetime\_005



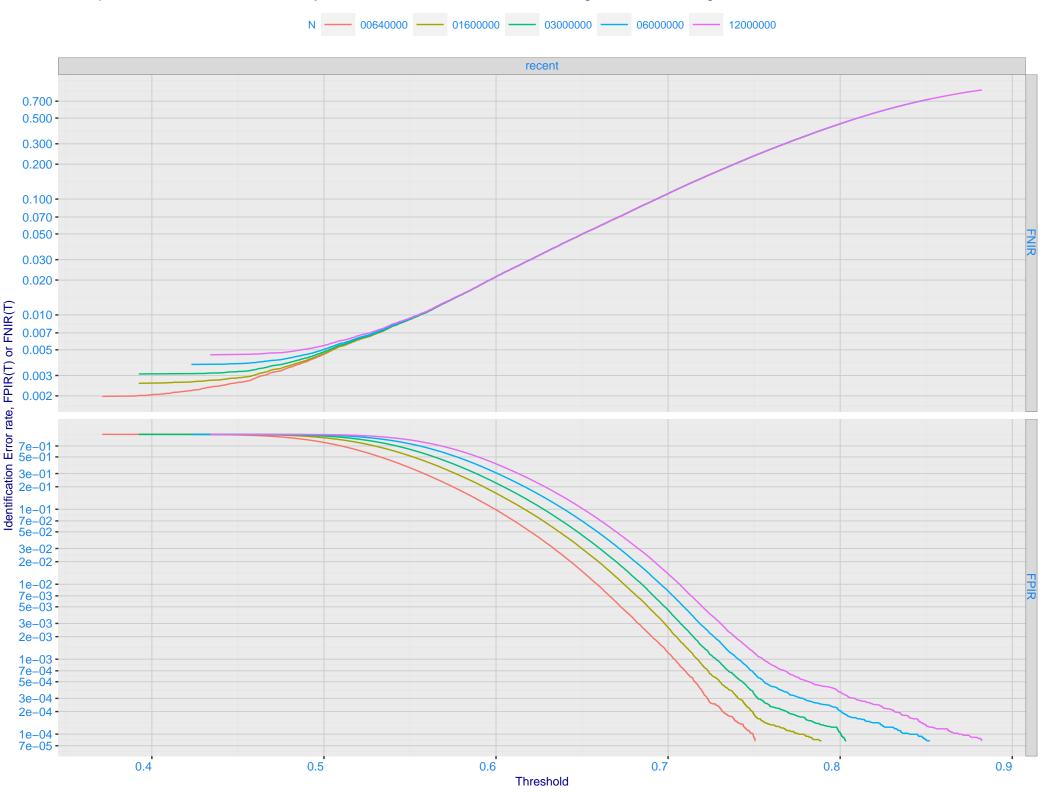
## C: Evolution of accuracy for ACER algorithms on three datasets 2018 – present



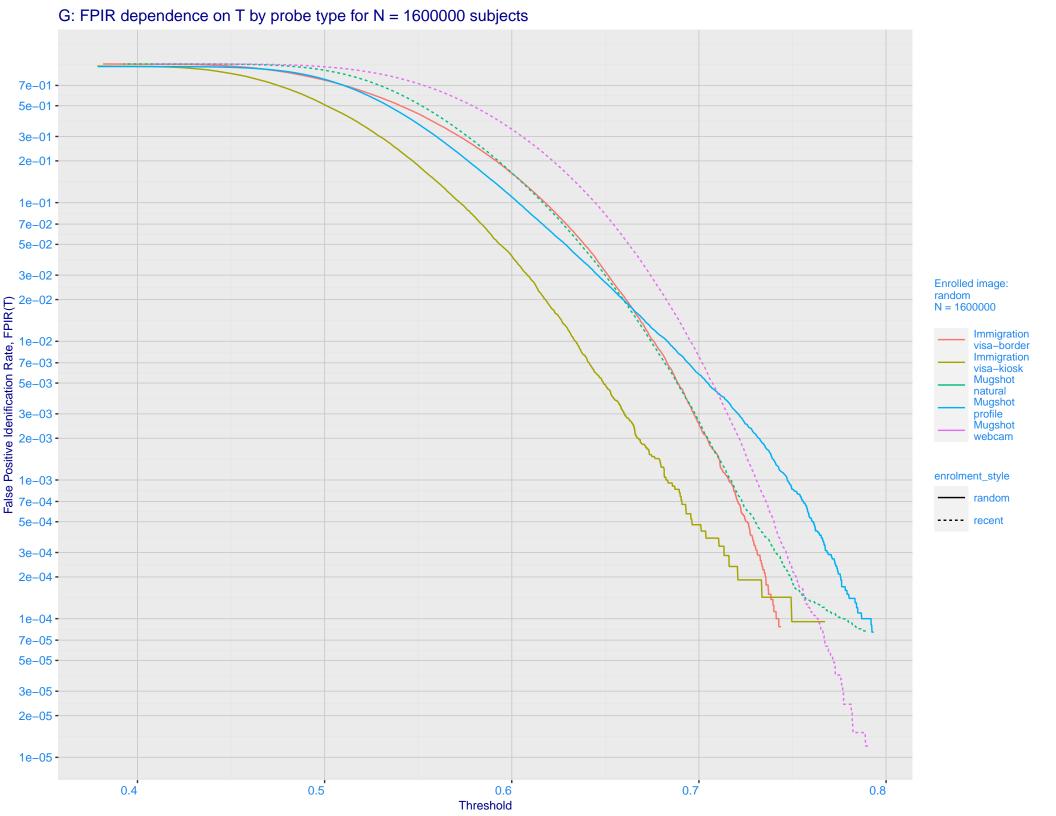
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.002 - 0.0001 - 0.700 - 0.500 - 0.200 - 0 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 -

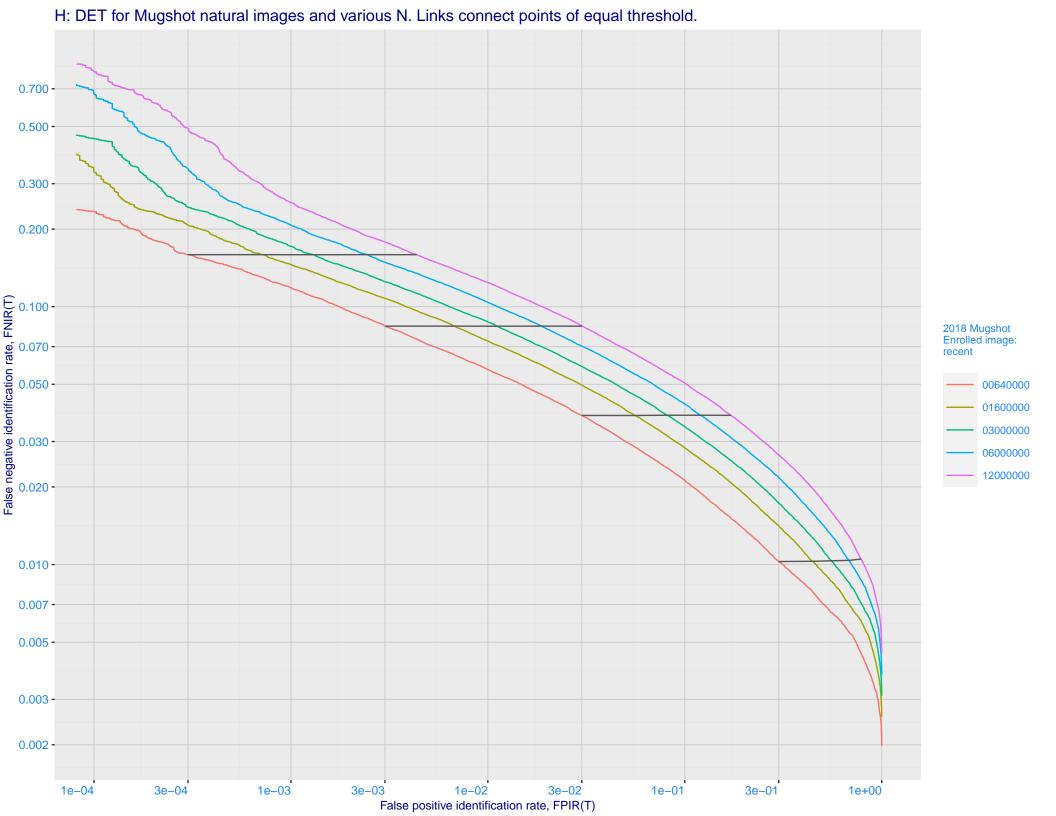
False positive identification rate, FPIR(T)

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

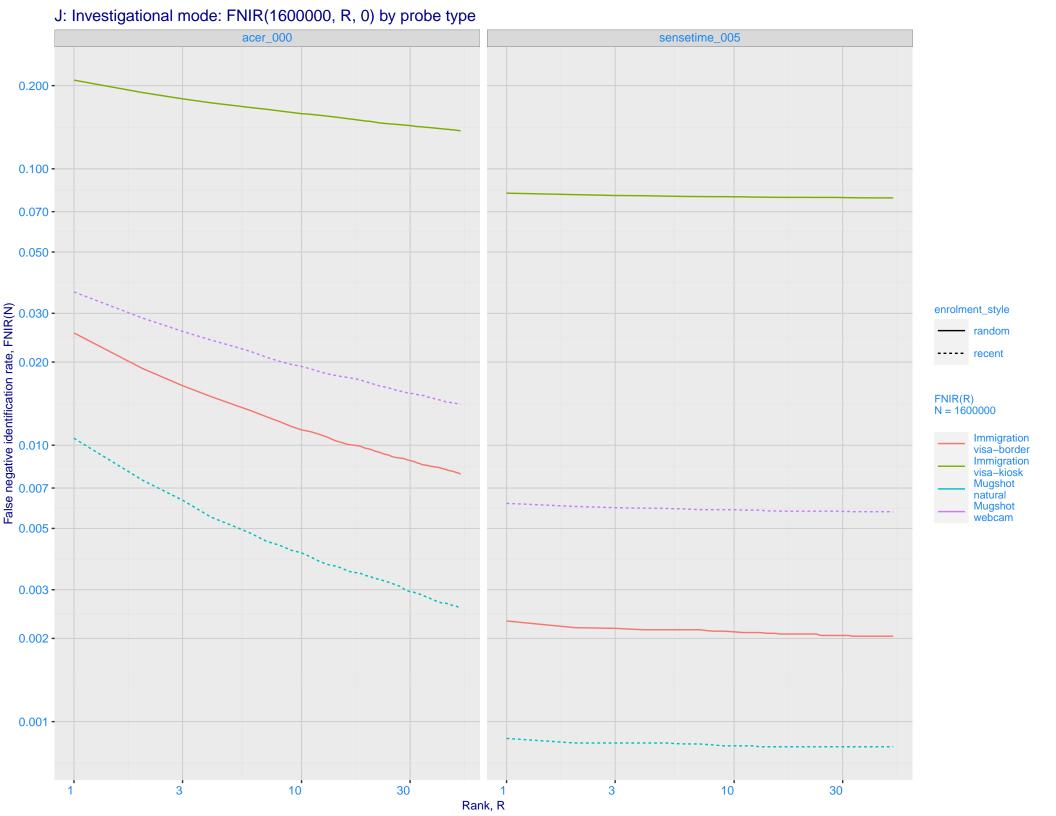


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 -5e-02 -3e-02 -3e-02 -1e-02 -**Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam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

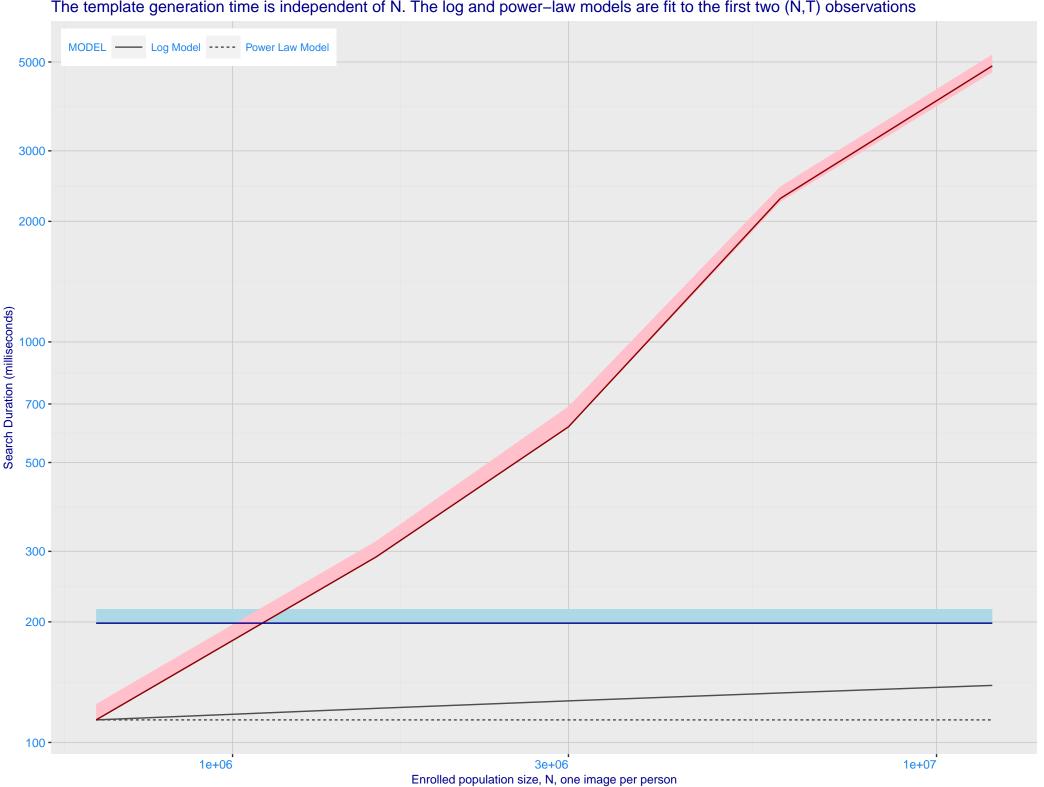




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -Ealse negative identification rate, FNIR(N) 0.003 - 0.001 - 0.001 - 0.100 - 0.100 - 0.070 - 0. enrolment\_style random ---- recent Mugshot webcam Mugshot natural FNIR@Rank = 1 --- acer\_000 sensetime\_005 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



