## A: Datasheet

Algorithm: 3divi\_3

Developer: 3Divi

Submission Date: 2018\_06\_19

Template size: 512 bytes

Template time (2.5 percentile): 486 msec

Template time (median): 610 msec

Template time (97.5 percentile): 826 msec

Investigation:

Frontal mugshot ranking 229 (out of 279) -- FNIR(1600000, 0, 1) = 0.0833 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 204 (out of 241) -- FNIR(1600000, 0, 1) = 0.2060 vs. lowest 0.0062 from sensetime\_005

Immigration visa-border ranking 126 (out of 168) -- FNIR(1600000, 0, 1) = 0.1407 vs. lowest 0.0013 from visionlabs\_010

Immigration visa-kiosk ranking 135 (out of 165) -- FNIR(1600000, 0, 1) = 0.4742 vs. lowest 0.0568 from cloudwalk\_hr\_000

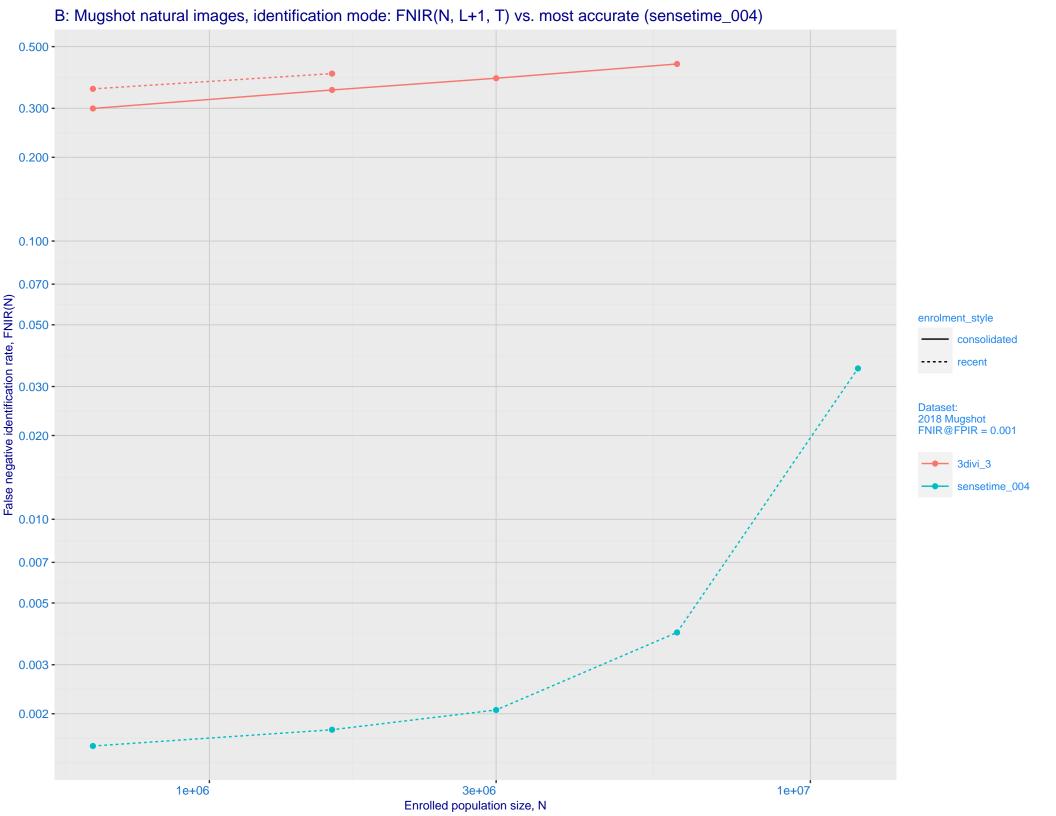
Identification:

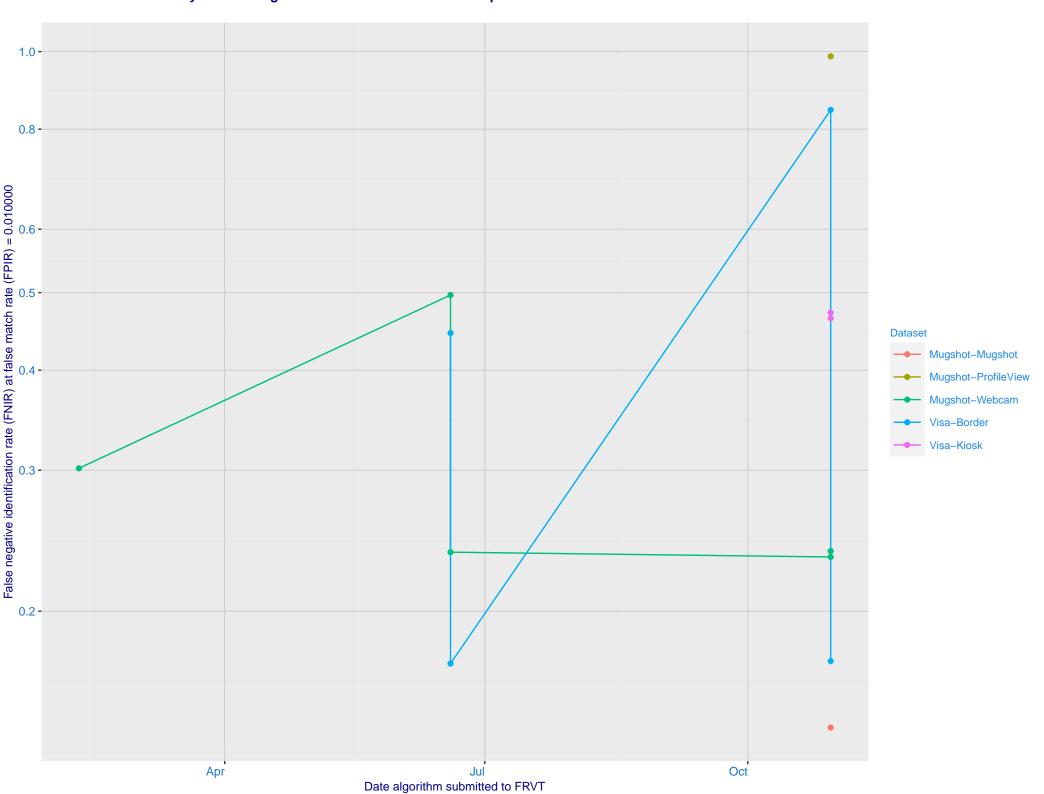
Frontal mugshot ranking 222 (out of 279) -- FNIR(1600000, T, L+1) = 0.3999, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Mugshot webcam ranking 202 (out of 236) -- FNIR(1600000, T, L+1) = 0.6257, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

Immigration visa-border ranking 126 (out of 167) -- FNIR(1600000, T, L+1) = 0.6066, FPIR=0.001000 vs. lowest 0.0047 from idemia\_008

Immigration visa-kiosk ranking 104 (out of 162) -- FNIR(1600000, T, L+1) = 0.8221, FPIR=0.001000 vs. lowest 0.0996 from cloudwalk\_hr\_000

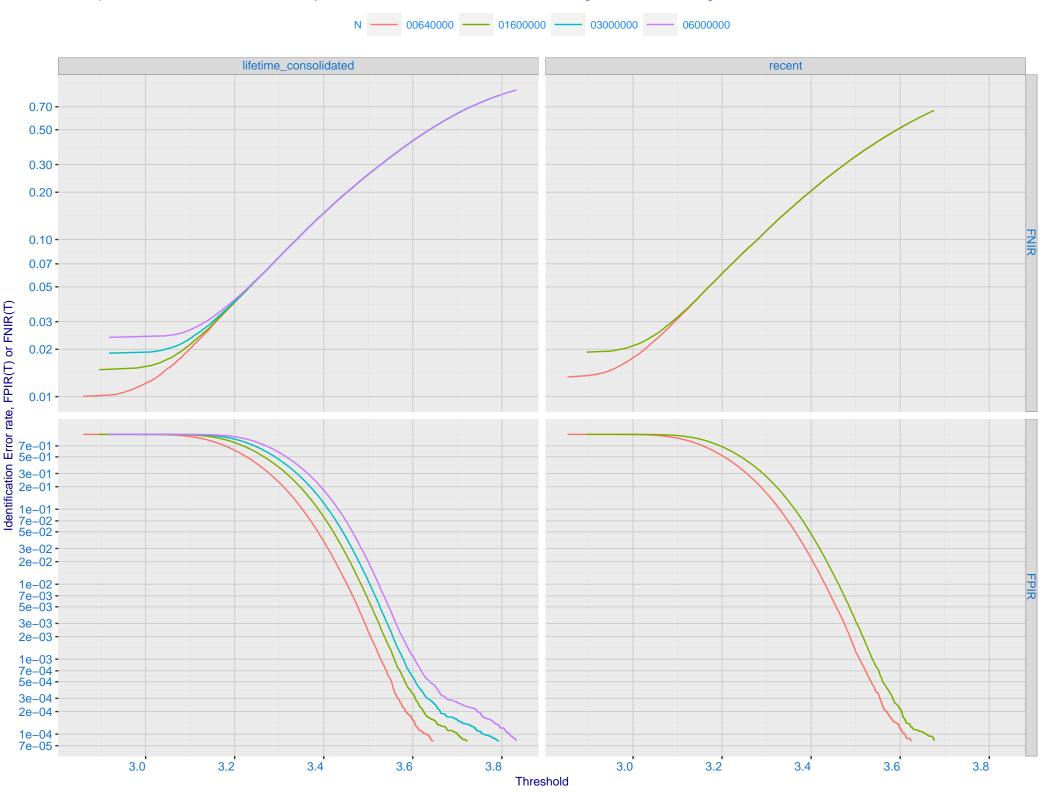




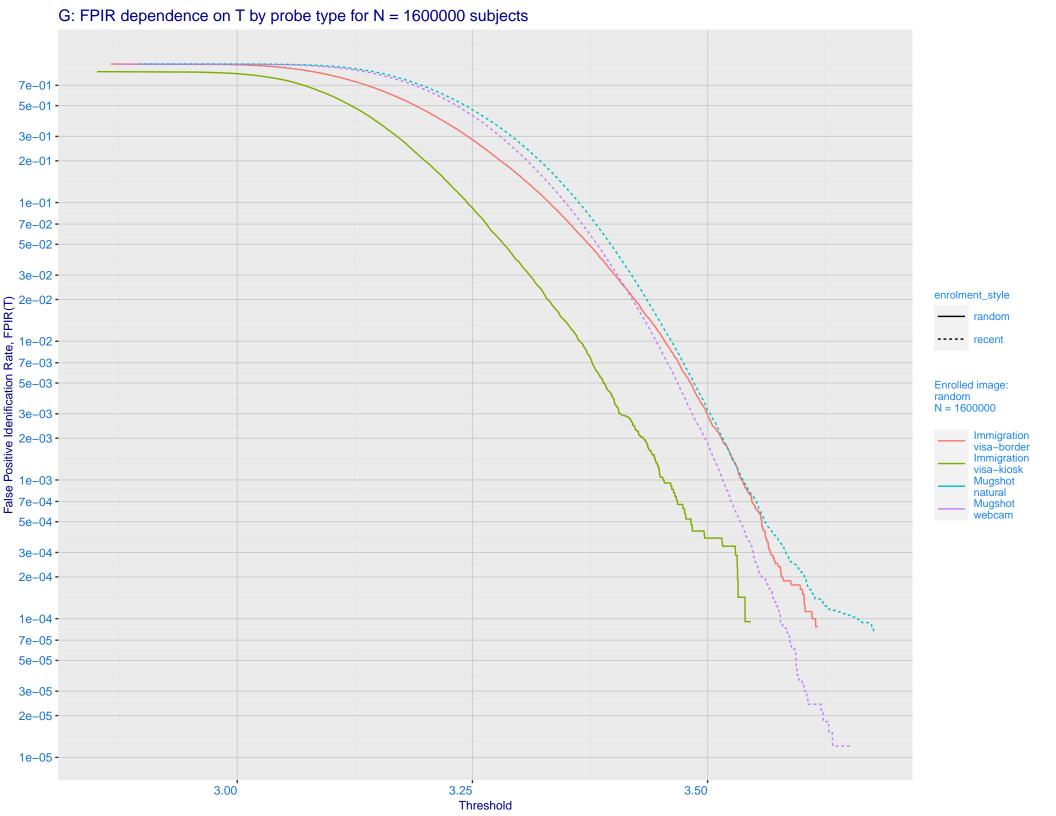
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.002 - 0.001 - 0.200 - 0.300 - 0.200 - 0. 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 -1e-04e-03e-04e-03e-03e-02e-02e-01e-01e-04e-04e-03e-04e-03e-04e-03e-04e-03e-01e+00

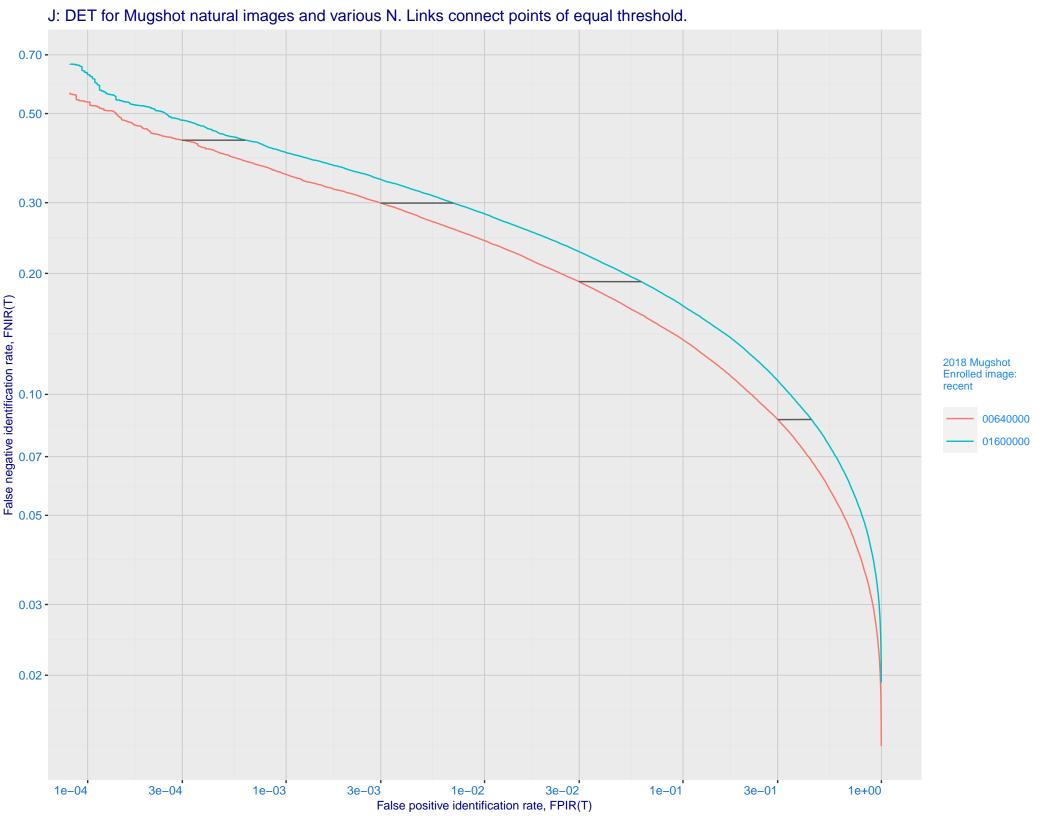
False positive identification rate, FPIR(T)

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

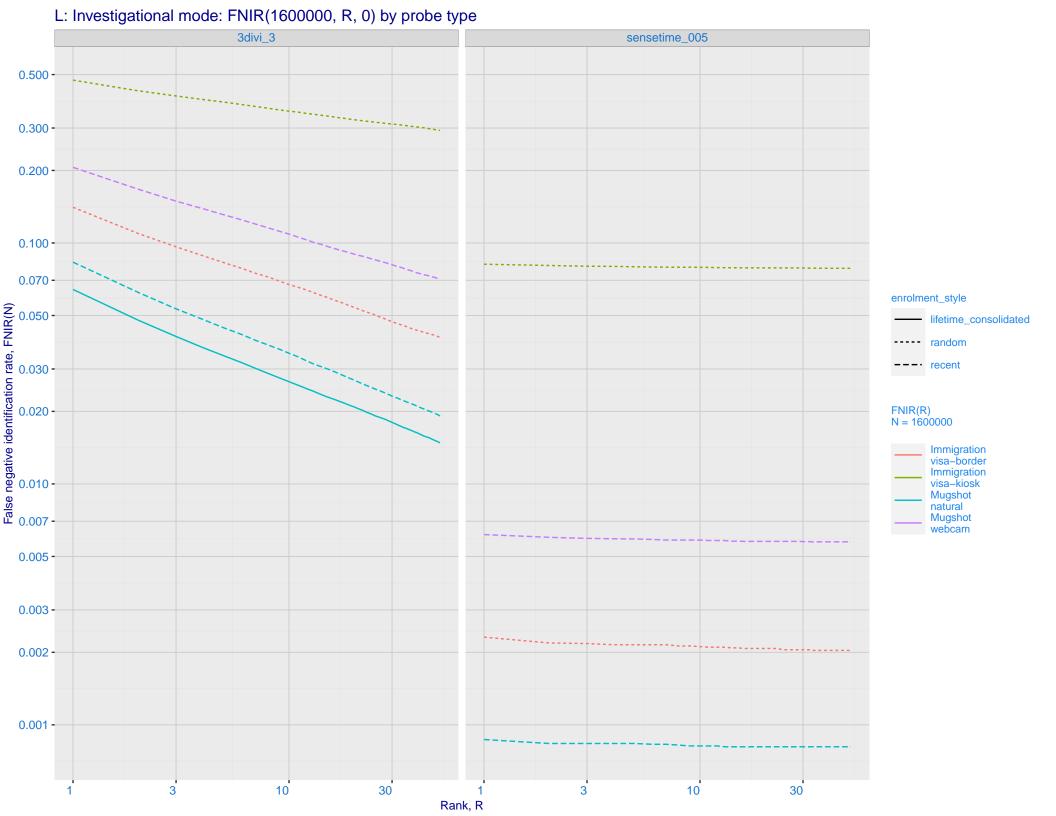


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 -5e-02 -5e-02 -3e-02 -1e-02 -**Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam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





K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 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 - 0.500 - 0.200 - 0.100 - 0. enrolment\_style consolidated ---- random --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 --- 3divi\_3 sensetime\_005 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 - Log Model ---- Power Law Model 700 -500 -300 -200 -100 -70 -50 -30 -7e+05 8e+05 1e+06

Enrolled population size, N, one image per person

Search Duration (milliseconds)

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



