## A: Datasheet

Algorithm: visionlabs\_7

Developer: VisionLabs

Submission Date: 2018\_10\_30

Template size: 512 bytes

Template time (2.5 percentile): 289 msec

Template time (median): 289 msec

Template time (97.5 percentile): 308 msec

Investigation:

Frontal mugshot ranking 23 (out of 279) -- FNIR(1600000, 0, 1) = 0.0018 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 53 (out of 241) -- FNIR(1600000, 0, 1) = 0.0149 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 24 (out of 210) -- FNIR(1600000, 0, 1) = 0.2112 vs. lowest 0.0587 from xforwardai\_002

Immigration visa-border ranking 25 (out of 168) — FNIR(1600000, 0, 1) = 0.0036 vs. lowest 0.0013 from visionlabs\_010

Immigration visa-kiosk ranking 26 (out of 165) -- FNIR(1600000, 0, 1) = 0.0954 vs. lowest 0.0568 from cloudwalk\_hr\_000

Identification:

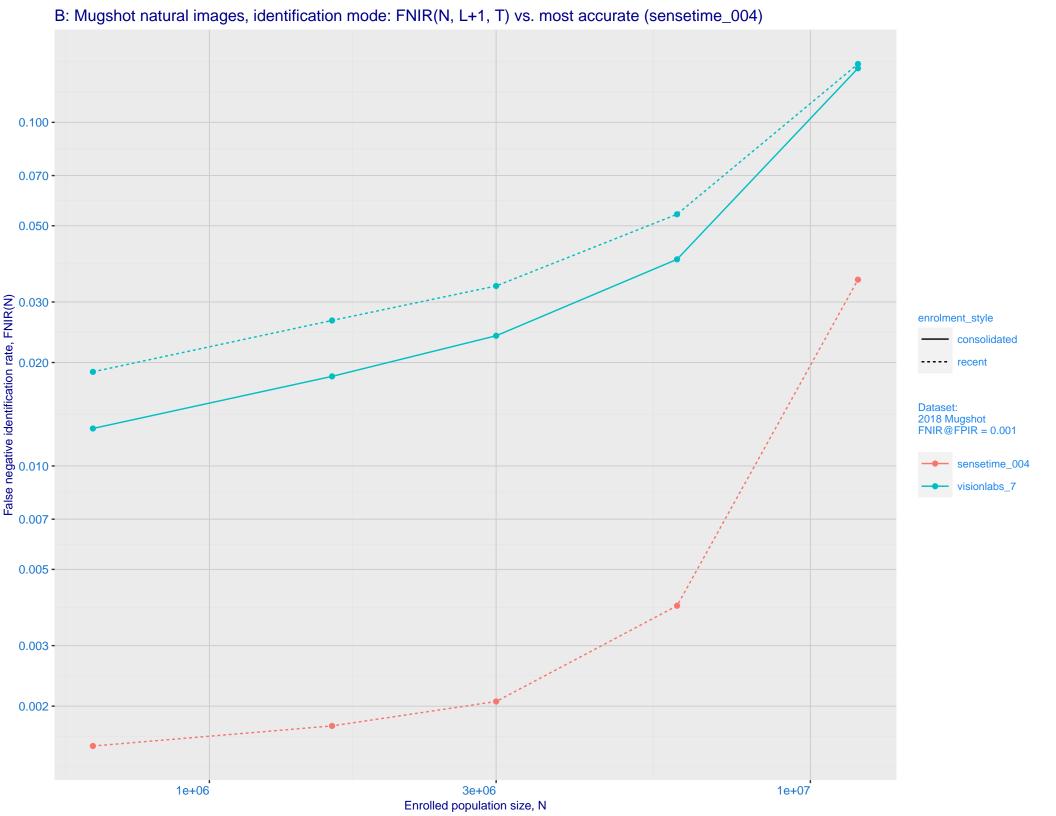
Frontal mugshot ranking 53 (out of 279) -- FNIR(1600000, T, L+1) = 0.0265, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

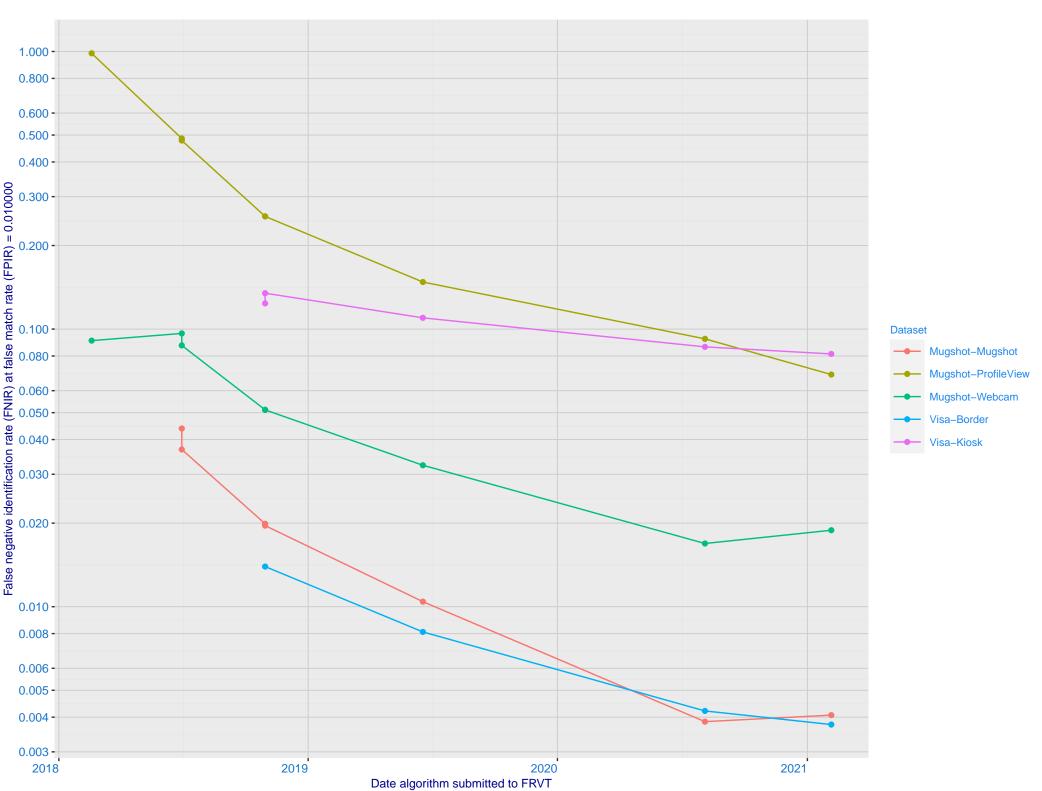
Mugshot webcam ranking 62 (out of 236) -- FNIR(1600000, T, L+1) = 0.0902, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

Mugshot profile ranking 18 (out of 209) — FNIR(1600000, T, L+1) = 0.6723, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk\_hr\_000

Immigration visa-border ranking 33 (out of 167) -- FNIR(1600000, T, L+1) = 0.0313, FPIR=0.001000 vs. lowest 0.0047 from idemia\_008

Immigration visa-kiosk ranking 21 (out of 162) — FNIR(1600000, T, L+1) = 0.1847, FPIR=0.001000 vs. lowest 0.0996 from cloudwalk\_hr\_000

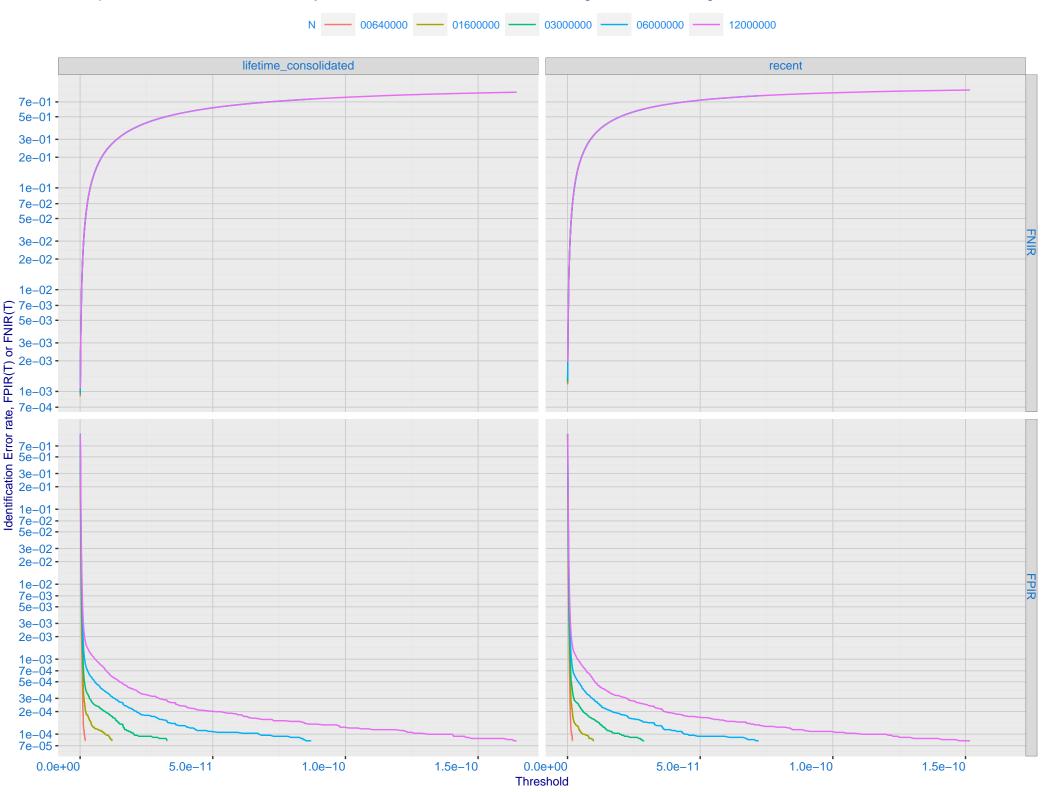




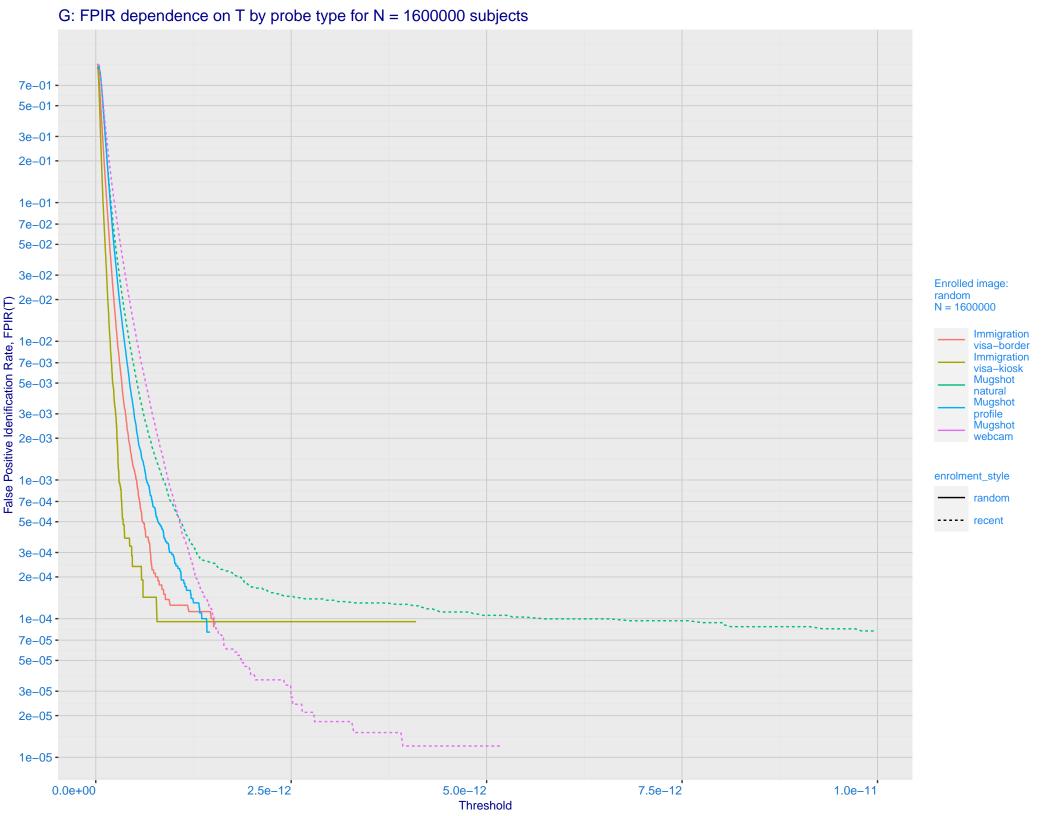
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration **Immigration** Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 sensetime 004 0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.002 - 0.001 - 0.500 - 0.200 - 0. enrolment\_style consolidated-ONE-MATE random-ONE-MATE recent-ONE-MATE unconsolidated-ALL-MATES unconsolidated-ANY-MATE 0.100 -0.070 -0.050 visionlabs 0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -0.002 -0.001 -

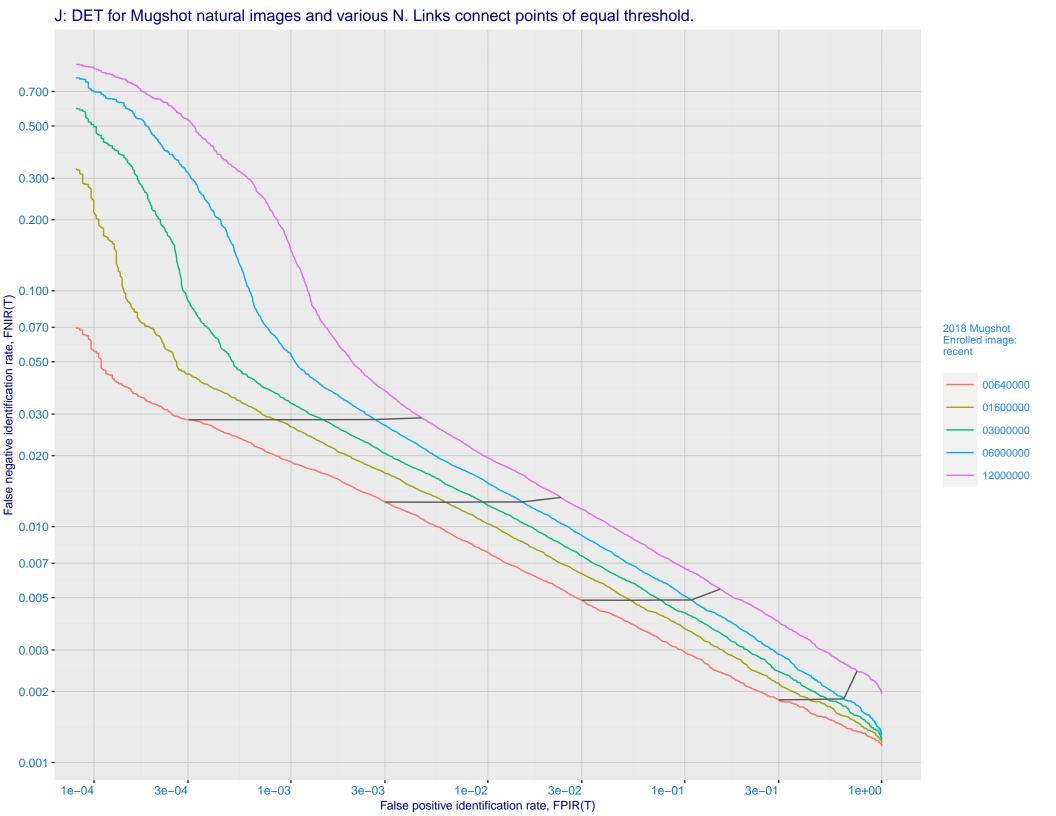
False positive identification rate, FPIR(T)

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

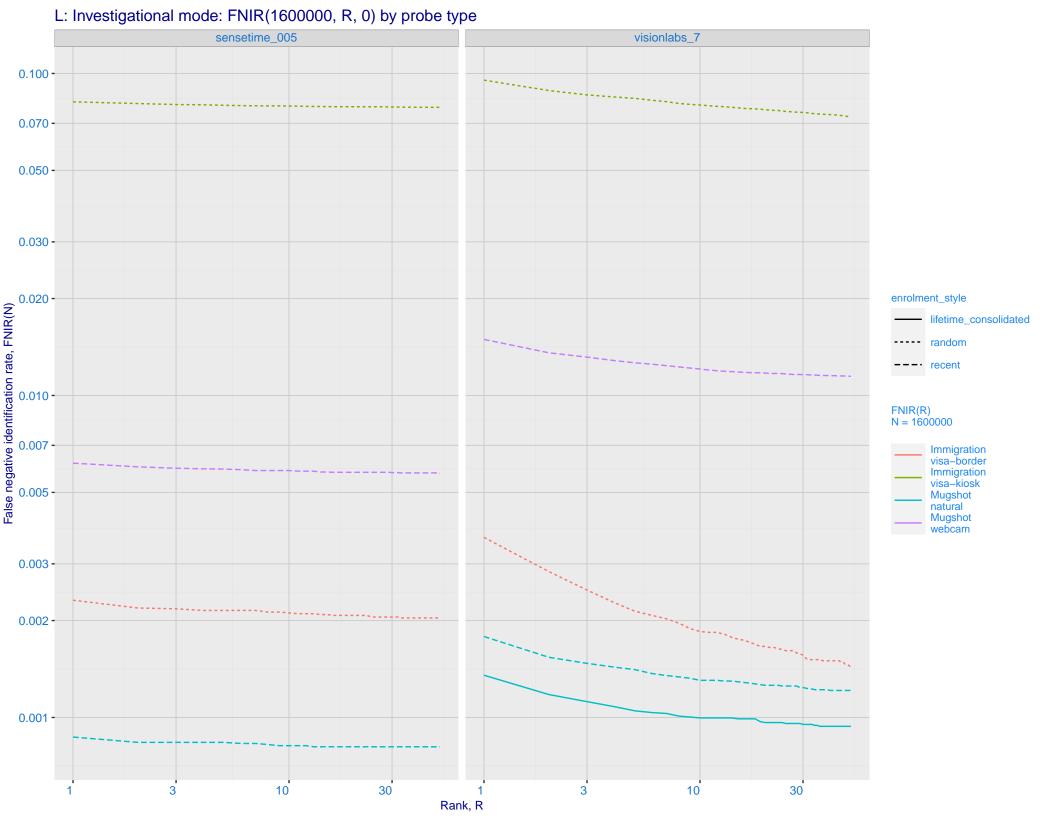


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 · 3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 -5e-02 -5e-02 -3e-02 -1e-02 -**Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam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



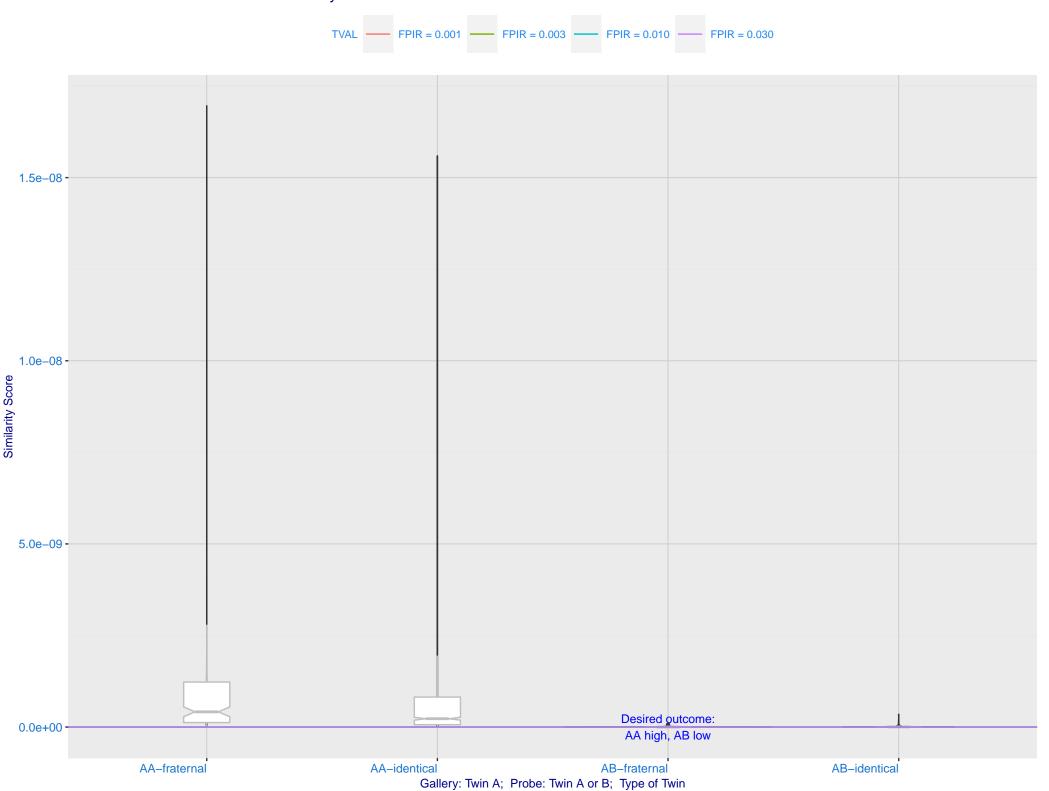


K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -Ealse negative identification rate, FNIR(N) 0.002 - 0.001 - 0.000 - 0. enrolment\_style consolidated ---- random --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 sensetime\_005 visionlabs\_7 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 300 -200 -100 -70 -50 -1e+06 3e+06 1e+07 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



