## 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 18 (out of 259) -- FNIR(1600000, 0, 1) = 0.0018 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 39 (out of 221) -- FNIR(1600000, 0, 1) = 0.0149 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 17 (out of 190) -- FNIR(1600000, 0, 1) = 0.2112 vs. lowest 0.0591 from sensetime\_005

Immigration visa-border ranking 17 (out of 142) -- FNIR(1600000, 0, 1) = 0.0036 vs. lowest 0.0014 from visionlabs\_009

Immigration visa-kiosk ranking 17 (out of 139) -- FNIR(1600000, 0, 1) = 0.0954 vs. lowest 0.0694 from cib\_000

Identification:

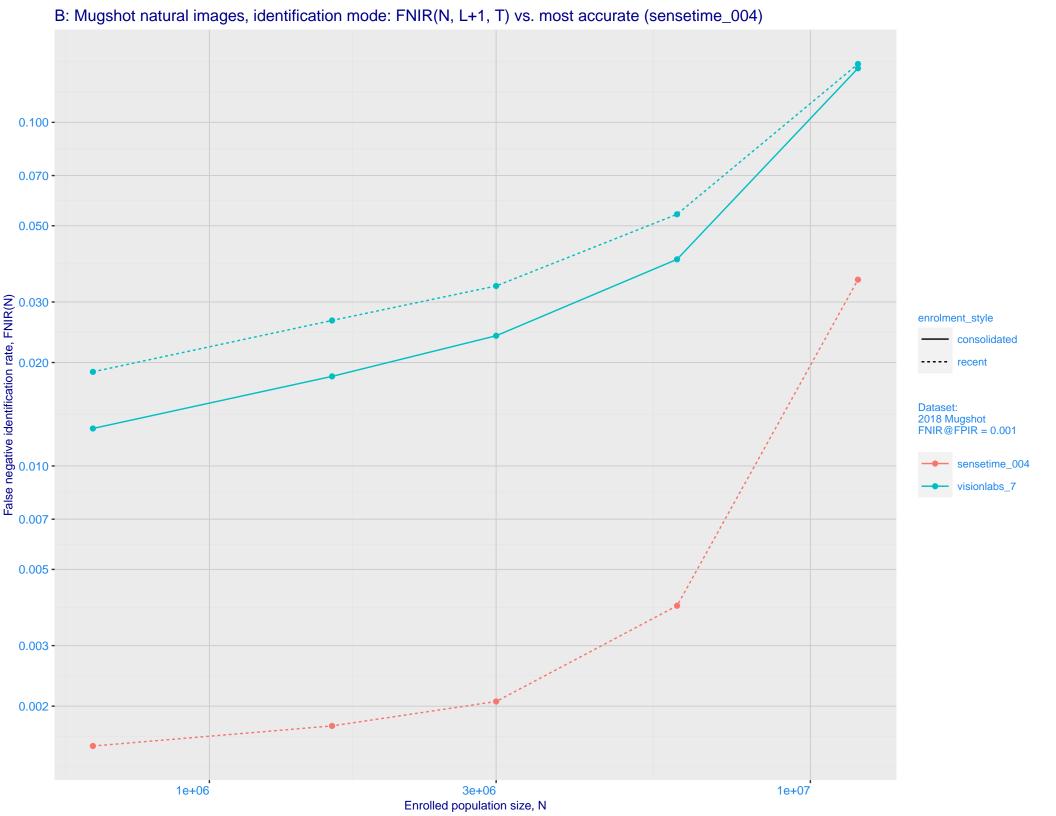
Frontal mugshot ranking 45 (out of 259) -- FNIR(1600000, T, L+1) = 0.0265, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

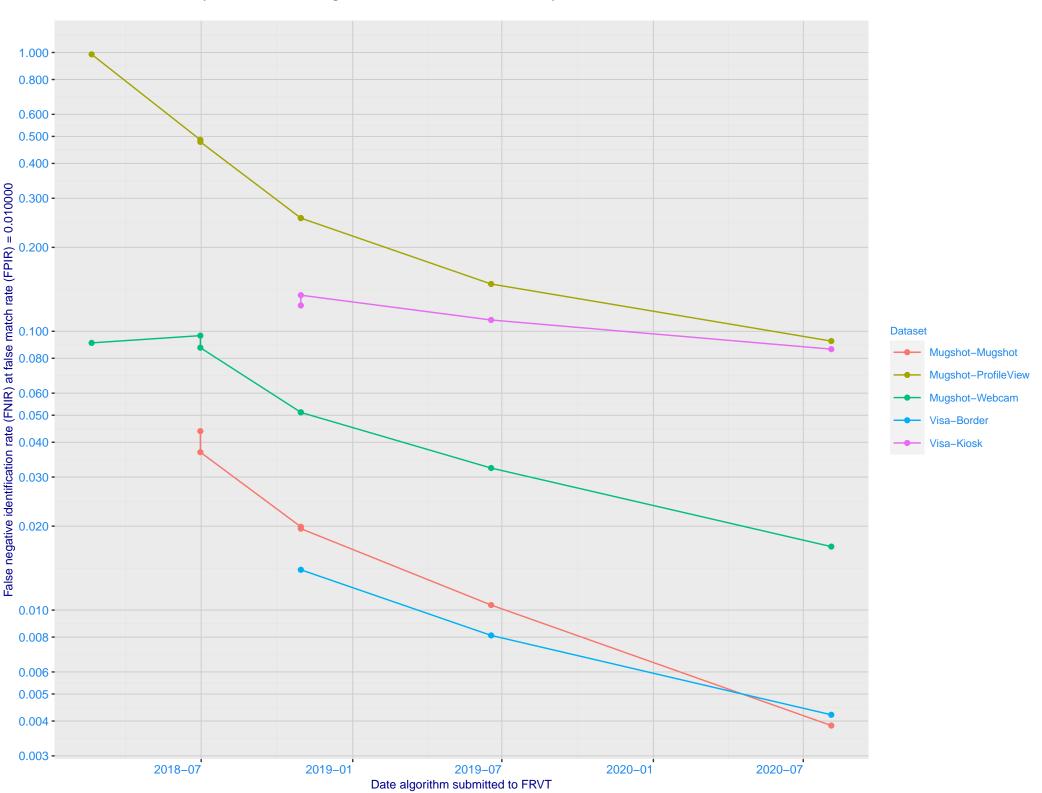
Mugshot webcam ranking 48 (out of 219) -- FNIR(1600000, T, L+1) = 0.0902, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

Mugshot profile ranking 13 (out of 189) -- FNIR(1600000, T, L+1) = 0.6723, FPIR=0.001000 vs. lowest 0.1733 from sensetime\_005

Immigration visa-border ranking 24 (out of 139) -- FNIR(1600000, T, L+1) = 0.0313, FPIR=0.001000 vs. lowest 0.0059 from sensetime\_004

Immigration visa-kiosk ranking 14 (out of 134) -- FNIR(1600000, T, L+1) = 0.1847, FPIR=0.001000 vs. lowest 0.1048 from sensetime\_005

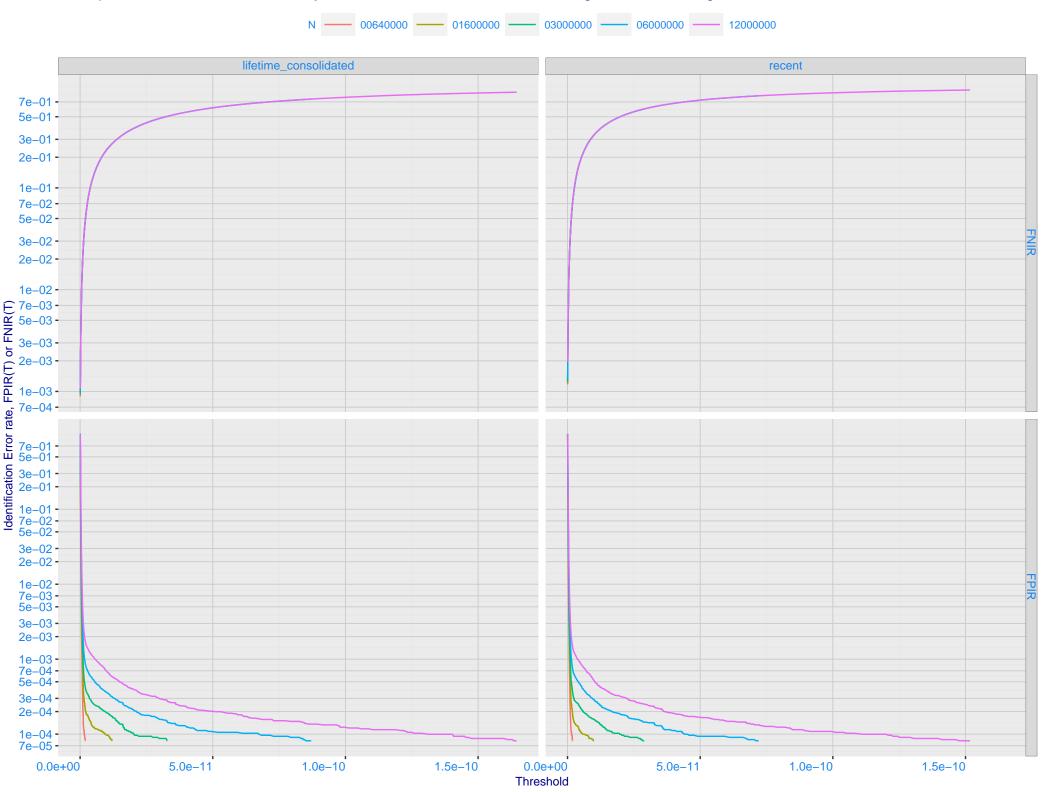




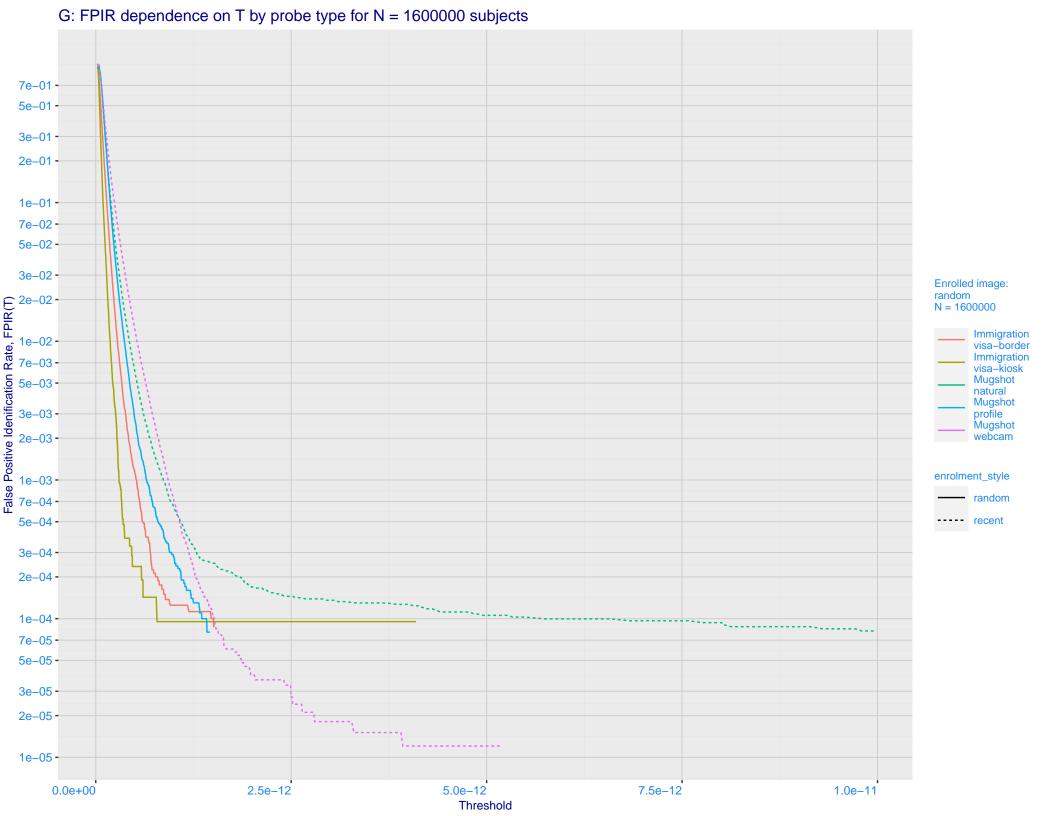
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration Immigration** Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.002 - 0.001 - 0.500 - 0.200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

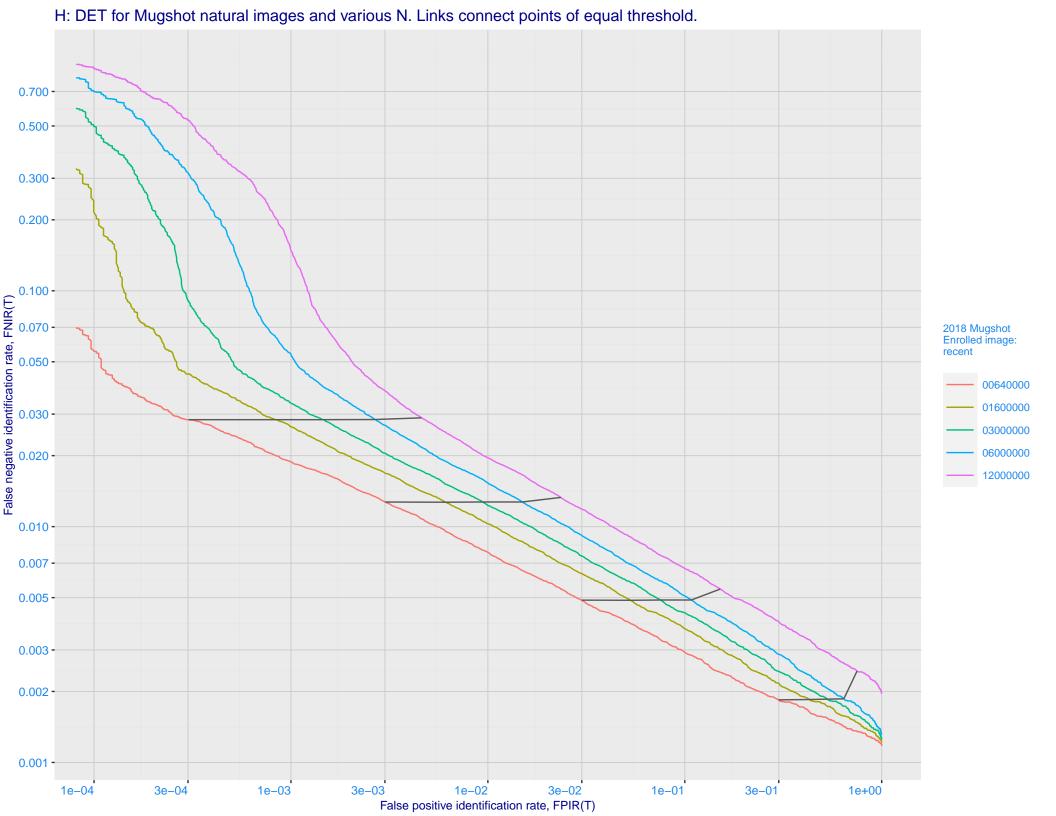
False positive identification rate, FPIR(T)

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)



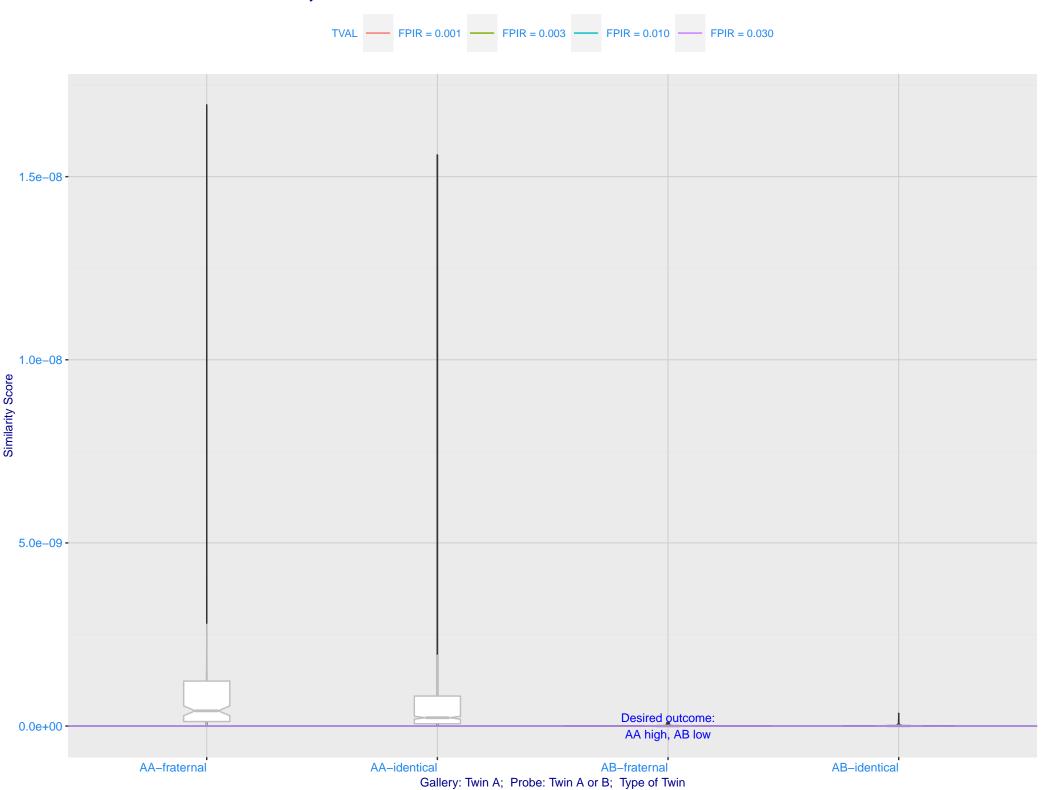


I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -Ealse negative identification rate, FNIR(N) 0.002 - 0.001 - 0.000 - 0. enrolment\_style consolidated ---- random --- recent Mugshot webcam Mugshot 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

J: Investigational mode: FNIR(1600000, R, 0) by probe type sensetime\_005 visionlabs\_7 0.100 -0.070 -0.050 -0.030 -0.020 - 0.000 enrolment\_style lifetime\_consolidated ---- random --- recent FNIR(R) N = 1600000 Immigration visa-border Immigration visa-kiosk Mugshot natural Mugshot webcam 0.003 -0.002 -0.001 -10 30 3 10 30 Rank, R

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)



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



