## A: Datasheet

Algorithm: sensetime\_003

Developer: Sensetime Group

Submission Date: 2019\_12\_02

Template size: 2056 bytes

Template time (2.5 percentile): 907 msec

Template time (median): 911 msec

Template time (97.5 percentile): 991 msec

Investigation:

Frontal mugshot ranking 3 (out of 265) -- FNIR(1600000, 0, 1) = 0.0010 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 2 (out of 227) -- FNIR(1600000, 0, 1) = 0.0067 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 15 (out of 196) -- FNIR(1600000, 0, 1) = 0.1499 vs. lowest 0.0591 from sensetime\_005

Immigration visa-border ranking 12 (out of 148) -- FNIR(1600000, 0, 1) = 0.0026 vs. lowest 0.0013 from visionlabs\_010

Immigration visa-kiosk ranking 16 (out of 145) -- FNIR(1600000, 0, 1) = 0.0911 vs. lowest 0.0568 from hr\_000

Identification:

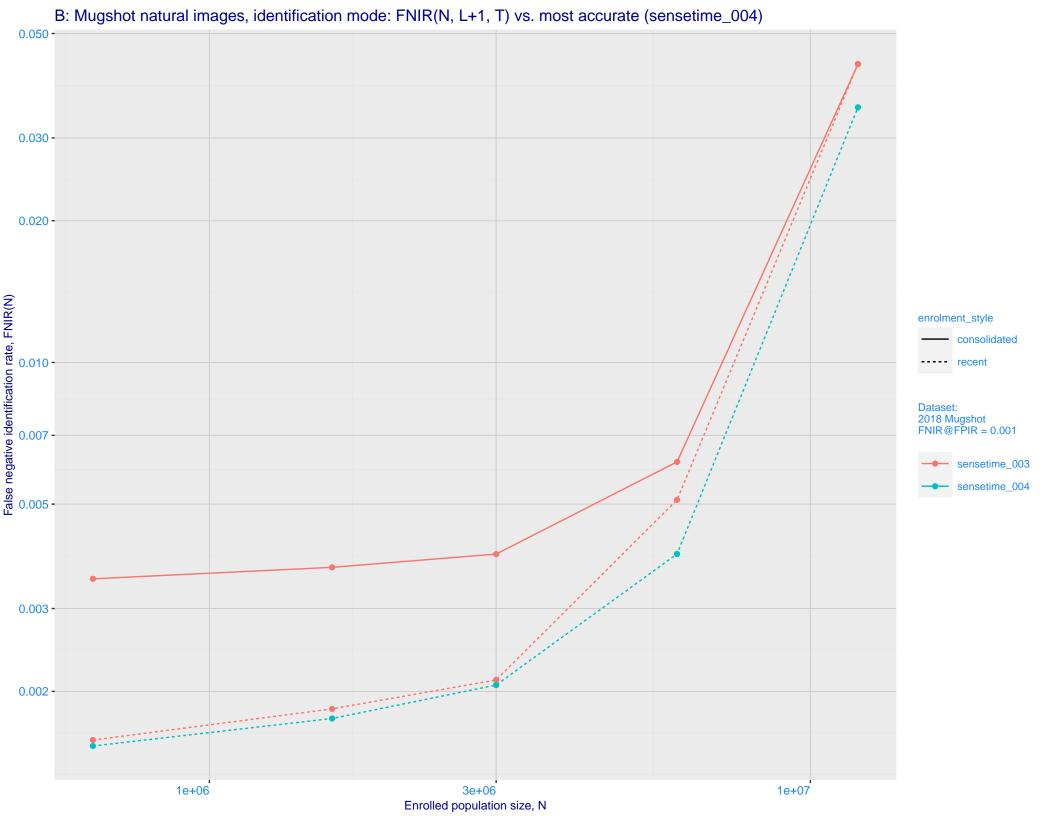
Frontal mugshot ranking 2 (out of 265) -- FNIR(1600000, T, L+1) = 0.0018, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

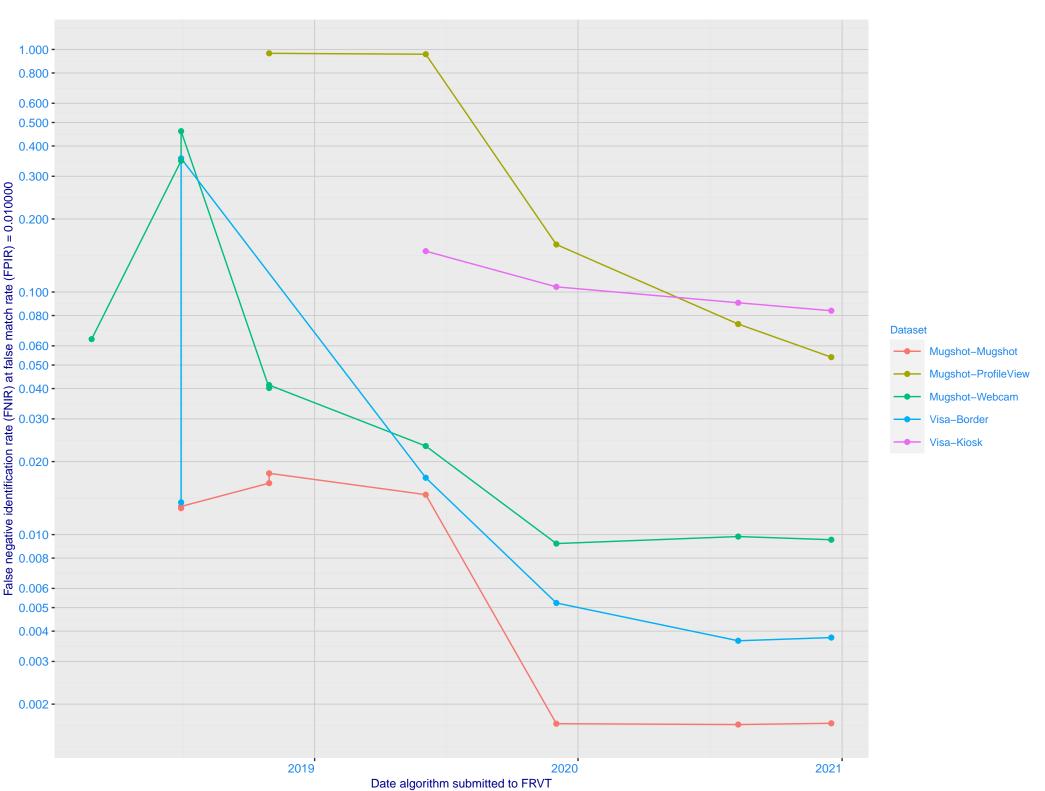
Mugshot webcam ranking 1 (out of 225) -- FNIR(1600000, T, L+1) = 0.0122, FPIR=0.001000

Mugshot profile ranking 8 (out of 195) -- FNIR(1600000, T, L+1) = 0.4770, FPIR=0.001000 vs. lowest 0.1331 from hr\_000

Immigration visa-border ranking 7 (out of 146) -- FNIR(1600000, T, L+1) = 0.0079, FPIR=0.001000 vs. lowest 0.0049 from hr\_000

Immigration visa-kiosk ranking 8 (out of 141) -- FNIR(1600000, T, L+1) = 0.1332, FPIR=0.001000 vs. lowest 0.0996 from hr\_000

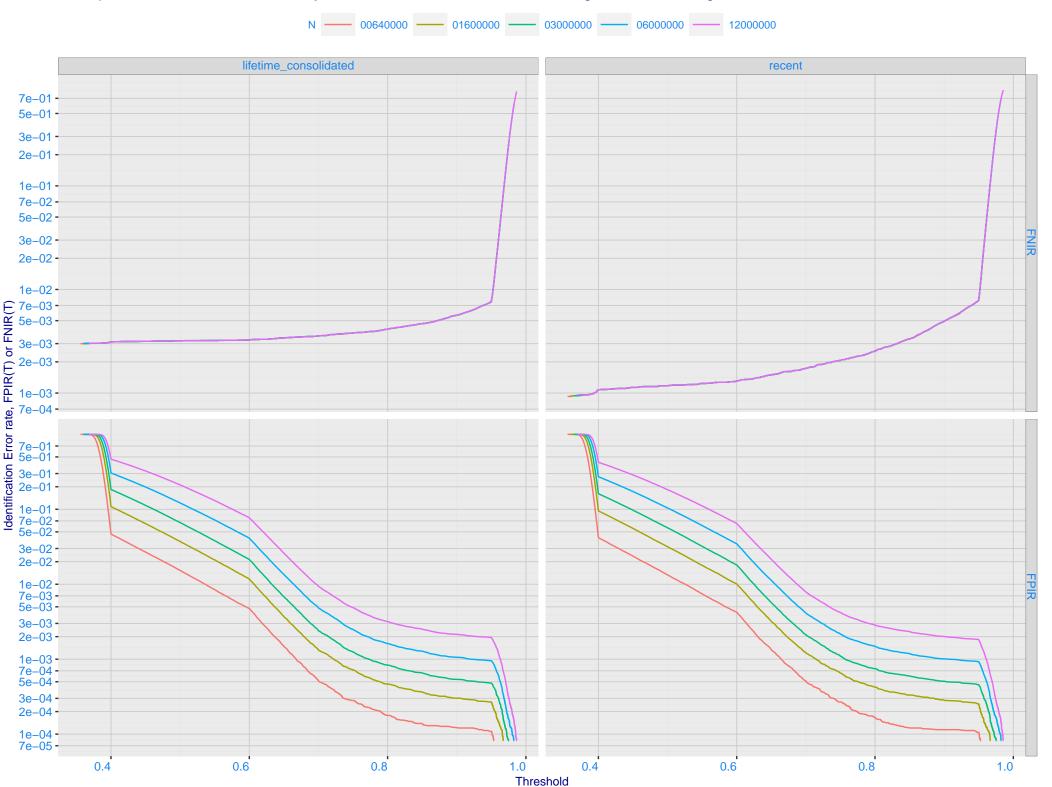




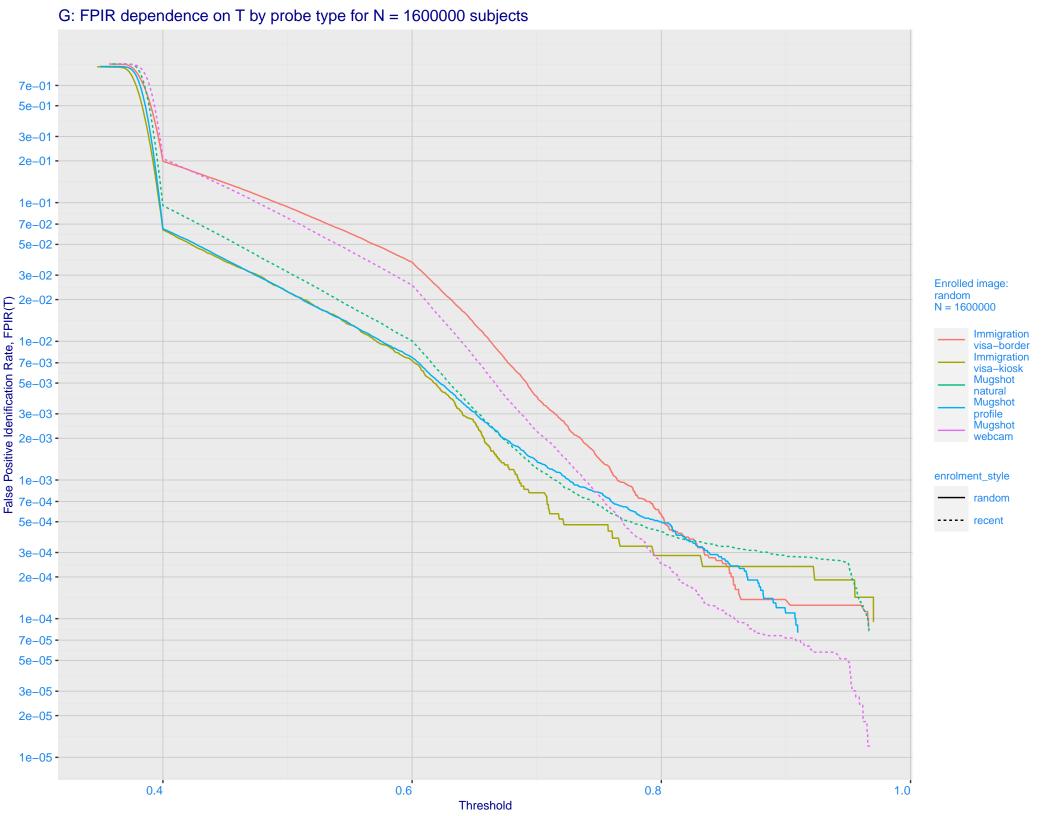
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration** Mugshot **Immigration** visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 - 4 0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.002 - 0.0001 - 0.700 - 0.500 - 0.200 - 0 enrolment\_style 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 -

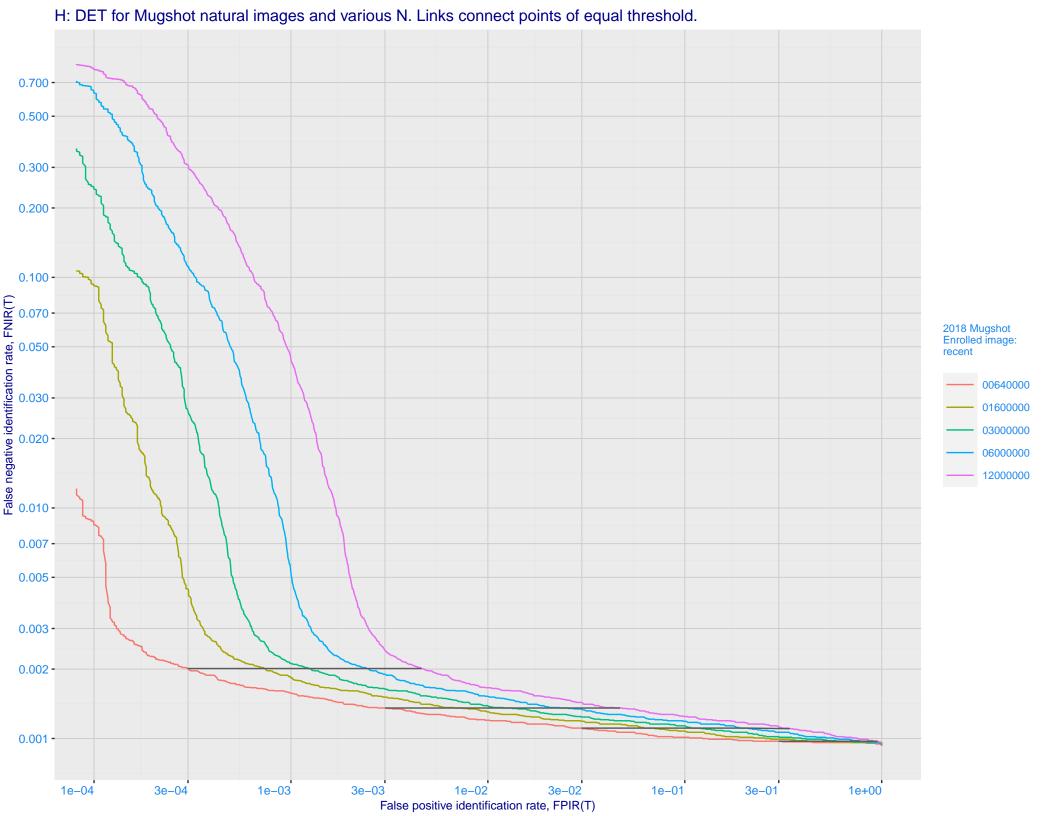
False positive identification rate, FPIR(T)

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-02 1e-05 3e-05 1e-04 3e-04 1e-03 3e-03 3e-02 1e-01 3e-01 False Positive Idenification Rate, FPIR(T)

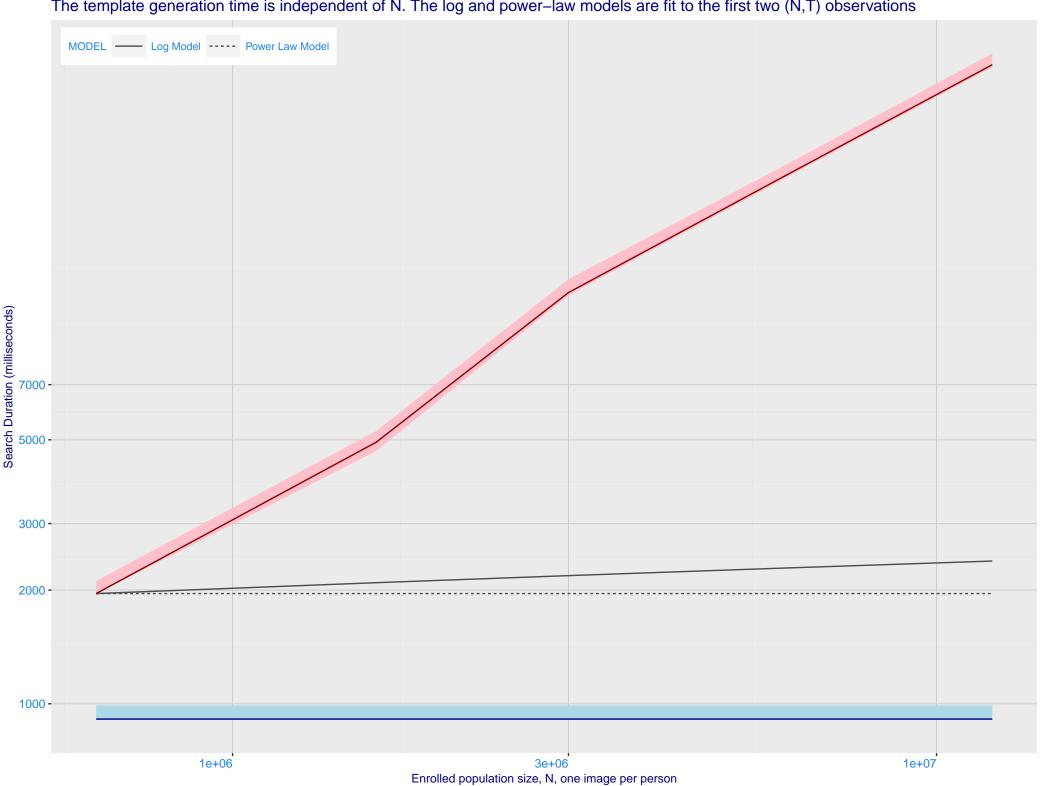




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -Ealse negative identification rate, FNIR(N) 0.002 - 0.001 - 0.100 - 0.050 - 0.050 - 0.030 - 0. enrolment\_style consolidated ---- random --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 sensetime\_003 - sensetime\_005 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\_003 sensetime\_005 0.100 -0.070 -0.050 -0.030 -0.020 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 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



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



