## A: Datasheet

Algorithm: incode\_004

Developer: Incode Technologies Inc

Submission Date: 2019\_06\_24

Template size: 2048 bytes

Template time (2.5 percentile): 454 msec

Template time (median): 476 msec

Template time (97.5 percentile): 786 msec

Investigation:

Frontal mugshot ranking 60 (out of 265) -- FNIR(1600000, 0, 1) = 0.0035 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 60 (out of 227) -- FNIR(1600000, 0, 1) = 0.0172 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 43 (out of 196) — FNIR(1600000, 0, 1) = 0.4746 vs. lowest 0.0591 from sensetime\_005

Immigration visa-border ranking 56 (out of 148) -- FNIR(1600000, 0, 1) = 0.0082 vs. lowest 0.0013 from visionlabs\_010

Immigration visa-kiosk ranking 56 (out of 145) -- FNIR(1600000, 0, 1) = 0.1346 vs. lowest 0.0568 from hr\_000

Identification:

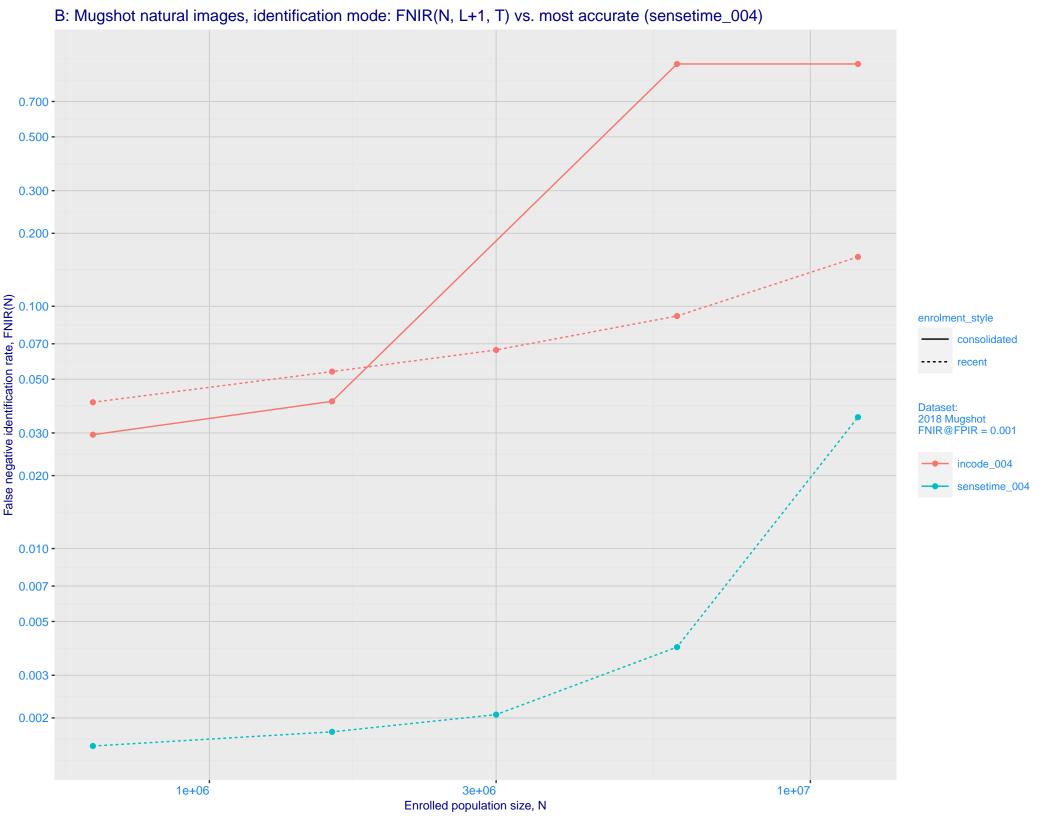
Frontal mugshot ranking 93 (out of 265) -- FNIR(1600000, T, L+1) = 0.0537, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

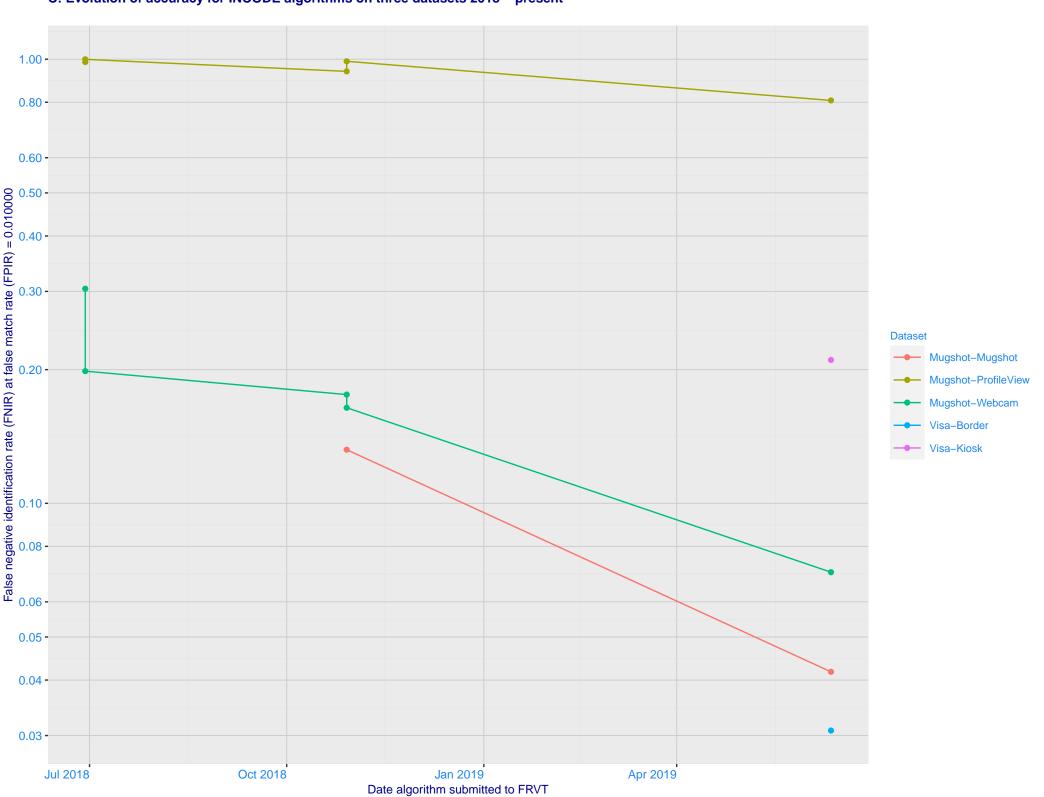
Mugshot webcam ranking 86 (out of 225) -- FNIR(1600000, T, L+1) = 0.1198, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

Mugshot profile ranking 96 (out of 195) -- FNIR(1600000, T, L+1) = 0.9945, FPIR=0.001000 vs. lowest 0.1331 from hr\_000

Immigration visa-border ranking 54 (out of 146) -- FNIR(1600000, T, L+1) = 0.0625, FPIR=0.001000 vs. lowest 0.0049 from hr\_000

Immigration visa-kiosk ranking 42 (out of 141) — FNIR(1600000, T, L+1) = 0.3136, FPIR=0.001000 vs. lowest 0.0996 from hr\_000

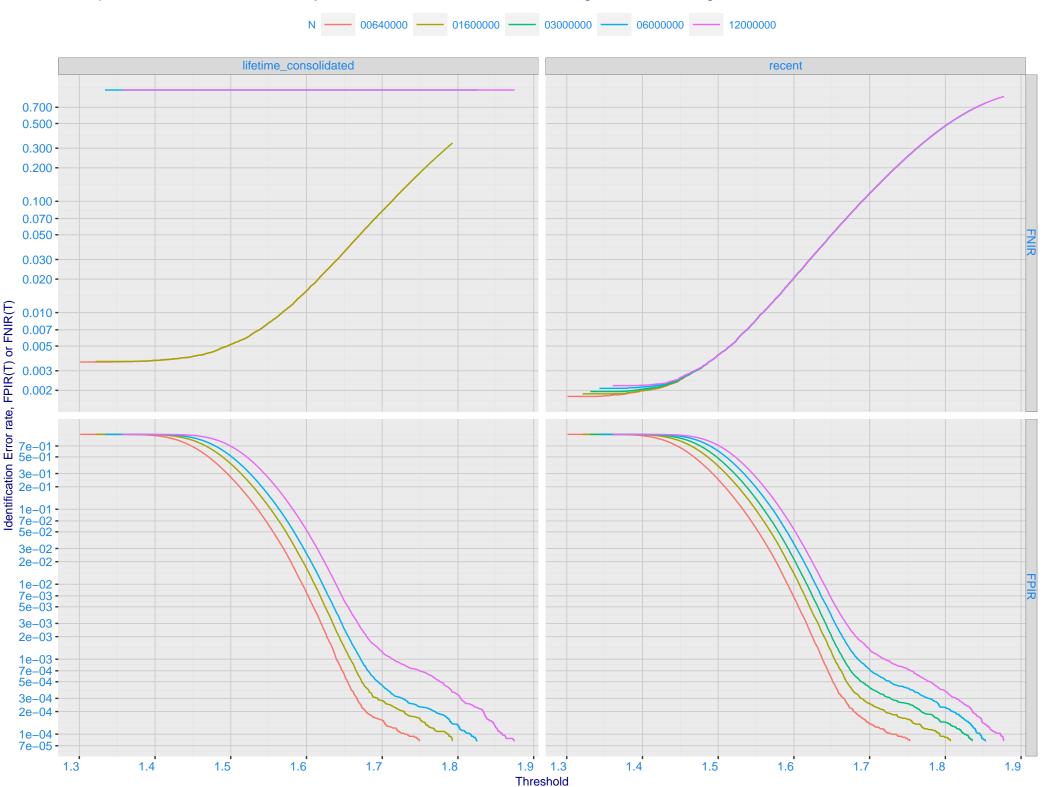




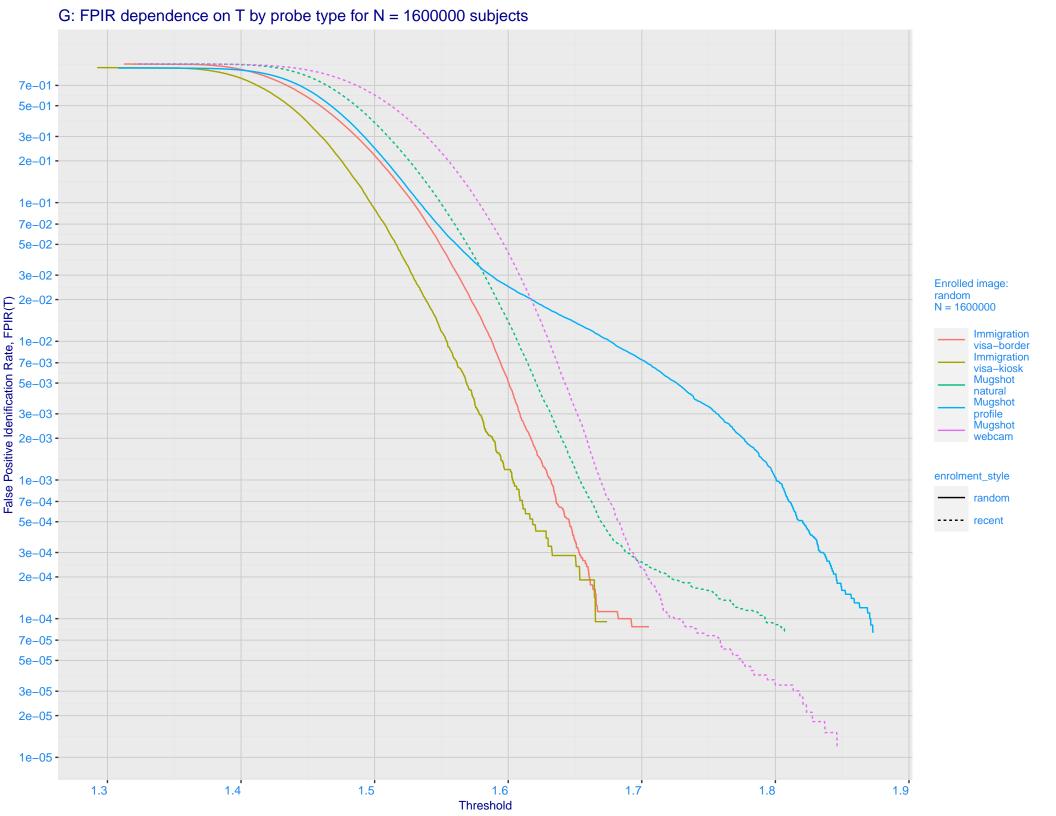
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration** Mugshot **Immigration** visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.000 - 0.000 - 0.500 - 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 -

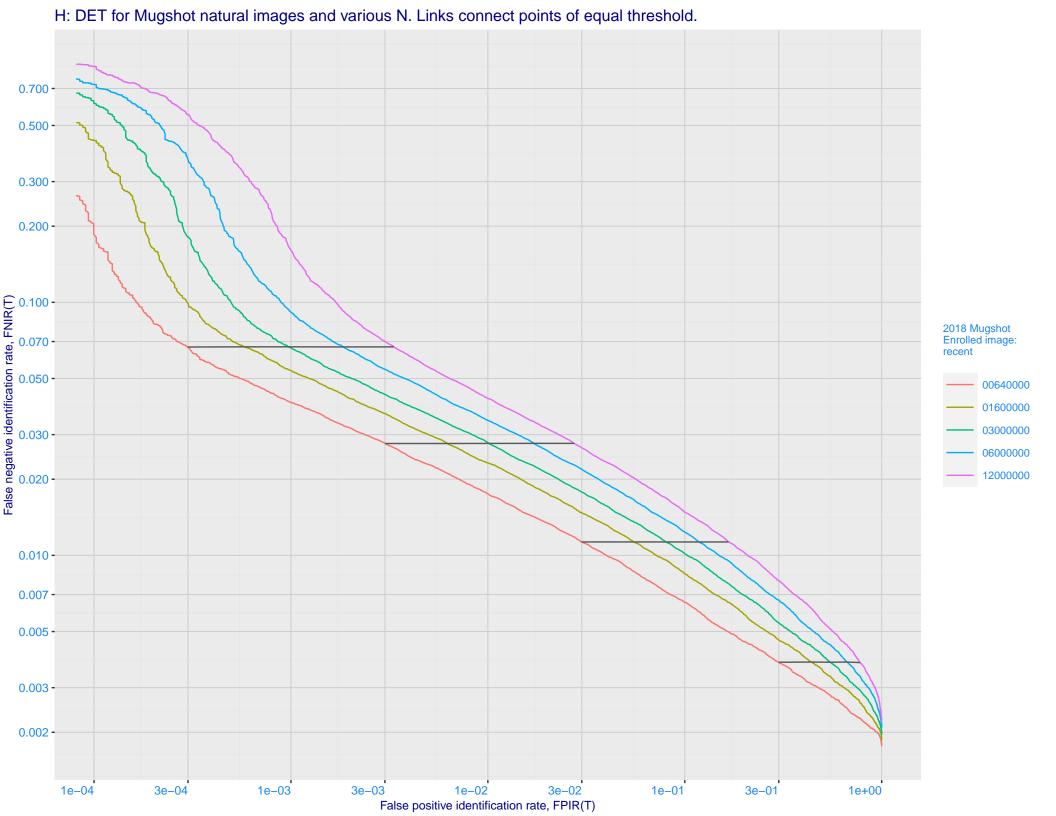
False positive identification rate, FPIR(T)

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 Enrolled images: recent N = 1600000 Mugshot natural Mugshot webcam 1e-02 -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-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)

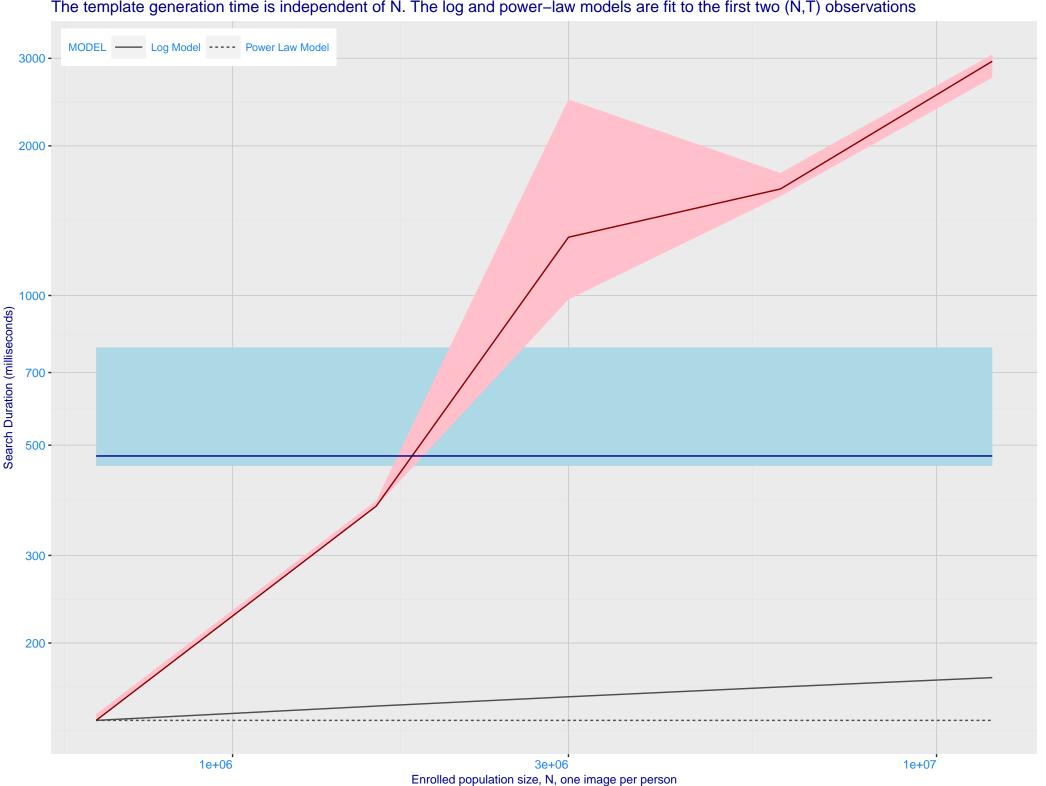




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 - 0.003 - 0.002 - 0.001 - 0.001 - 0.000 - 0.300 - 0.200 enrolment\_style consolidated ---- random --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 incode\_004 sensetime\_005 0.100 -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

J: Investigational mode: FNIR(1600000, R, 0) by probe type incode\_004 sensetime\_005 0.100 -0.070 -0.050 -0.030 enrolment\_style False negative identification rate, FNIR(N) 0.000 - 0.000 - 0.0007 - 0.0005 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



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



