## A: Datasheet

Algorithm: neurotechnology\_007

Developer: Neurotechnology

Submission Date: 2019\_10\_03

Template size: 256 bytes

Template time (2.5 percentile): 161 msec

Template time (median): 161 msec

Template time (97.5 percentile): 233 msec

Investigation:

Frontal mugshot ranking 66 (out of 265) -- FNIR(1600000, 0, 1) = 0.0039 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 80 (out of 227) -- FNIR(1600000, 0, 1) = 0.0213 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 93 (out of 196) -- FNIR(1600000, 0, 1) = 0.7965 vs. lowest 0.0591 from sensetime\_005

Immigration visa-border ranking 59 (out of 148) -- FNIR(1600000, 0, 1) = 0.0090 vs. lowest 0.0013 from visionlabs\_010

Immigration visa-kiosk ranking 73 (out of 145) -- FNIR(1600000, 0, 1) = 0.1801 vs. lowest 0.0568 from hr\_000

Identification:

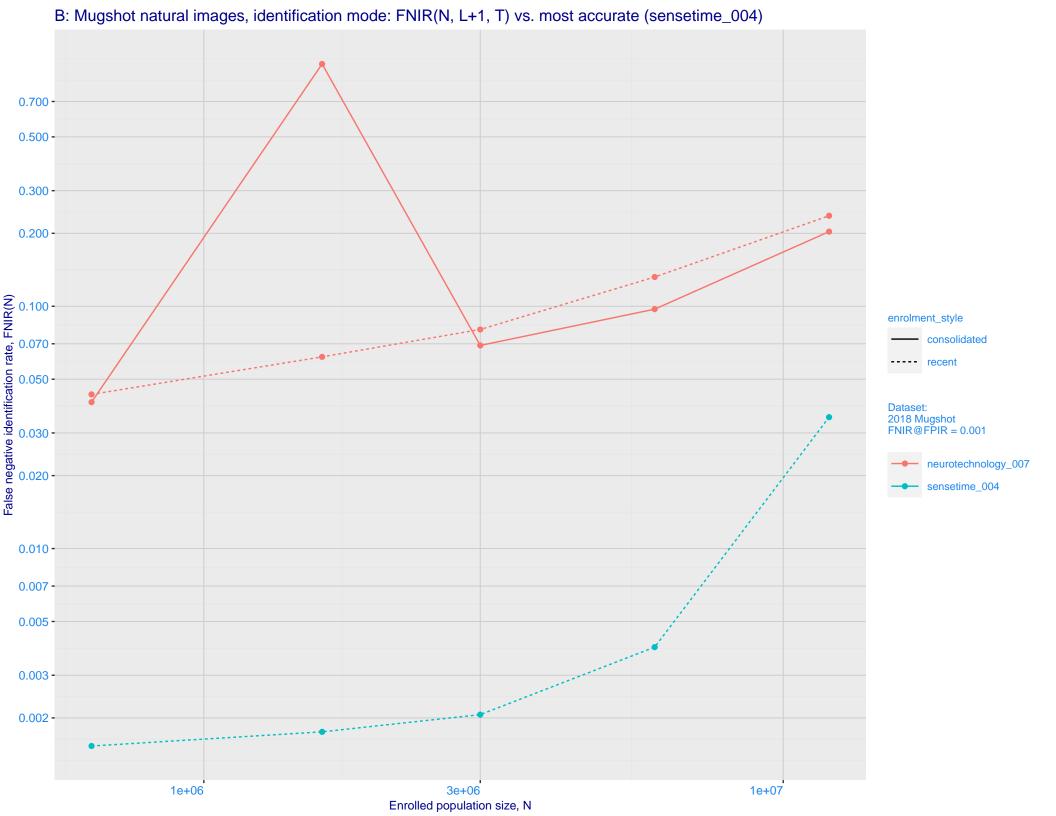
Frontal mugshot ranking 103 (out of 265) -- FNIR(1600000, T, L+1) = 0.0618, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

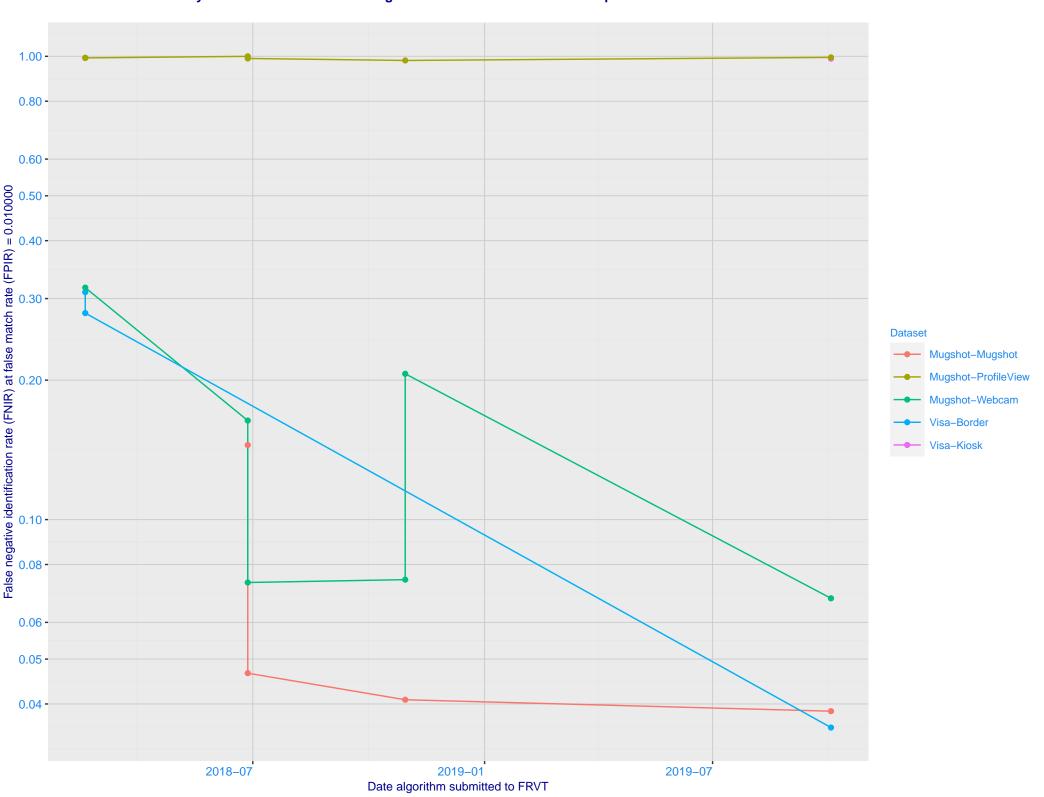
Mugshot webcam ranking 119 (out of 225) -- FNIR(1600000, T, L+1) = 0.1684, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

Mugshot profile ranking 158 (out of 195) -- FNIR(1600000, T, L+1) = 0.9998, FPIR=0.001000 vs. lowest 0.1331 from hr\_000

Immigration visa-border ranking 94 (out of 146) -- FNIR(1600000, T, L+1) = 0.3392, FPIR=0.001000 vs. lowest 0.0049 from hr\_000

Immigration visa-kiosk ranking 136 (out of 141) -- FNIR(1600000, T, L+1) = 1.0000, FPIR=0.001000 vs. lowest 0.0996 from hr\_000

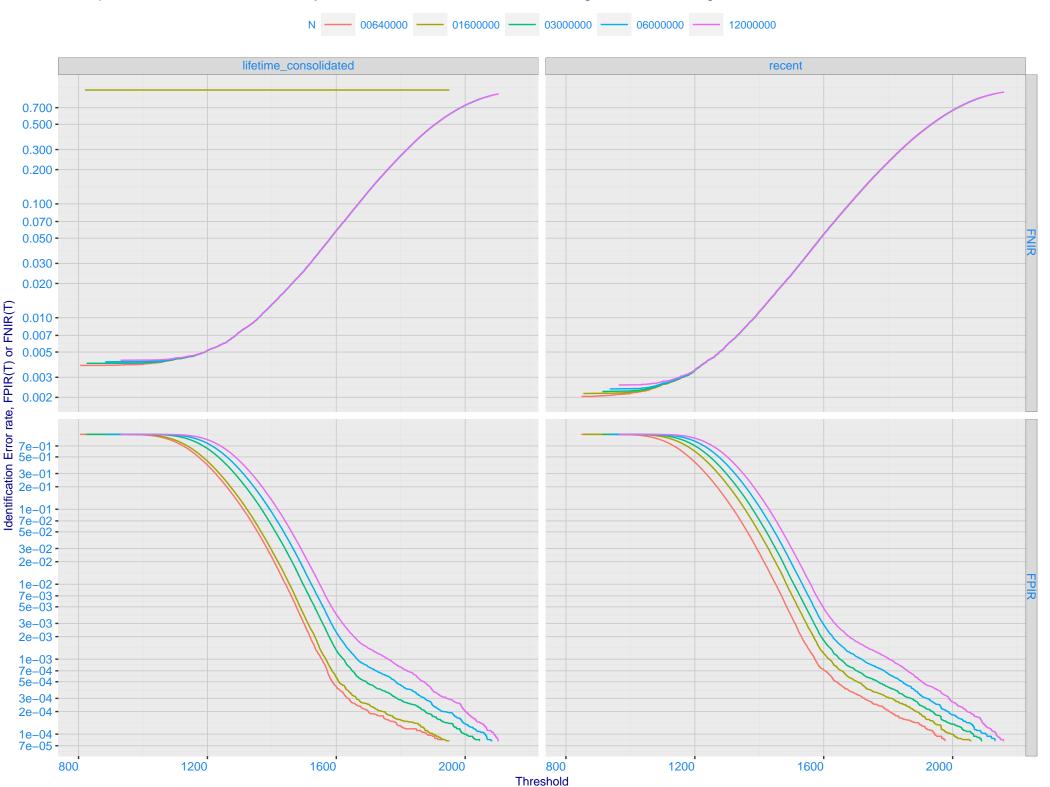




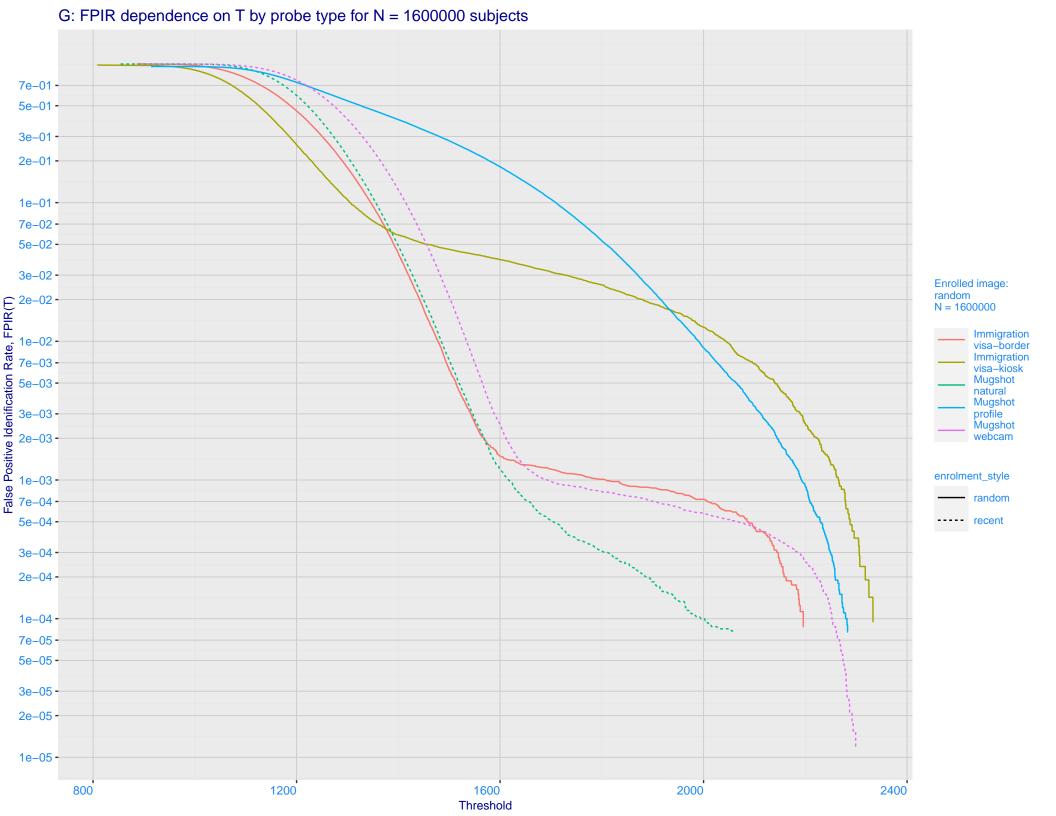
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration** Mugshot **Immigration** visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 - 0.005 - 0.005 - 0.002 - 0.001 - 0.001 - 0.700 - 0.500 - 0.200 enrolment\_style 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 -

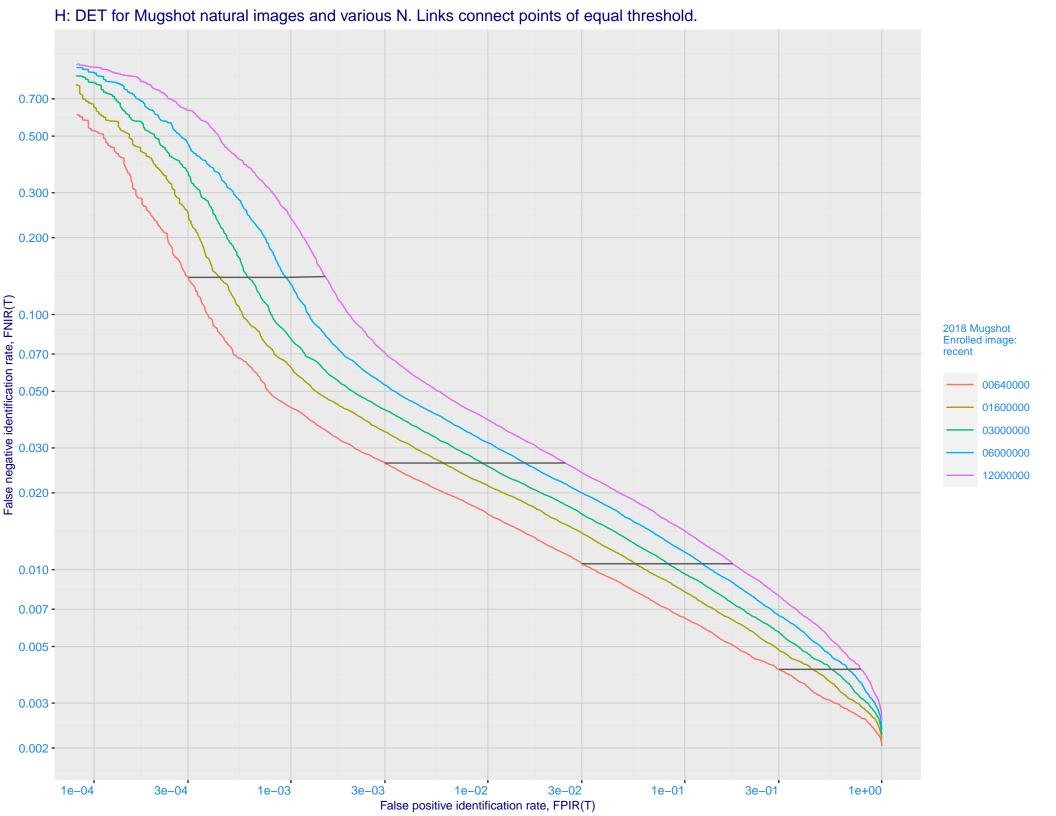
False positive identification rate, FPIR(T)

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)

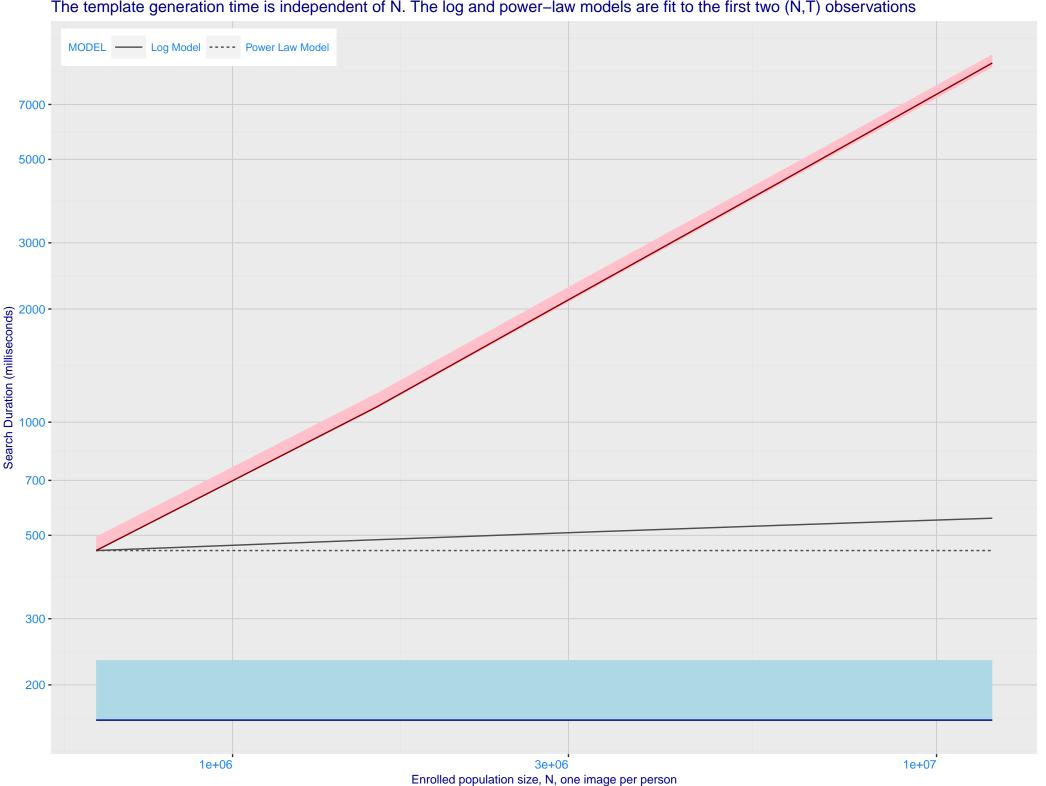




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.700 -0.500 -0.300 -0.200 -• 0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 - 0.003 - 0.002 - 0.001 - 0.001 - 0.000 - 0.300 - 0.200 enrolment\_style consolidated ---- random --- recent Mugshot webcam Mugshot natural FNIR@Rank = 1 neurotechnology\_007 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 neurotechnology\_007 sensetime\_005 0.700 -0.500 -0.300 -0.200 -0.100 enrolment\_style Ealse negative identification rate, FNIR(N) 0.000 - 0. lifetime\_consolidated ---- random --- recent FNIR(R) N = 1600000 Immigration visa-border Immigration visa-kiosk Mugshot natural Mugshot webcam 0.007 -0.005 -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

