## A: Datasheet

Algorithm: dermalog\_5

Developer: Dermalog

Submission Date: 2018\_10\_26

Template size: 128 bytes

Template time (2.5 percentile): 506 msec

Template time (median): 528 msec

Template time (97.5 percentile): 583 msec

Investigation:

Frontal mugshot ranking 146 (out of 259) -- FNIR(1600000, 0, 1) = 0.0149 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 117 (out of 221) -- FNIR(1600000, 0, 1) = 0.0367 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 71 (out of 190) -- FNIR(1600000, 0, 1) = 0.7008 vs. lowest 0.0591 from sensetime\_005

Immigration visa-border ranking 114 (out of 142) -- FNIR(1600000, 0, 1) = 0.2421 vs. lowest 0.0014 from visionlabs\_009

Immigration visa-kiosk ranking 103 (out of 139) -- FNIR(1600000, 0, 1) = 0.3845 vs. lowest 0.0694 from cib\_000

Identification:

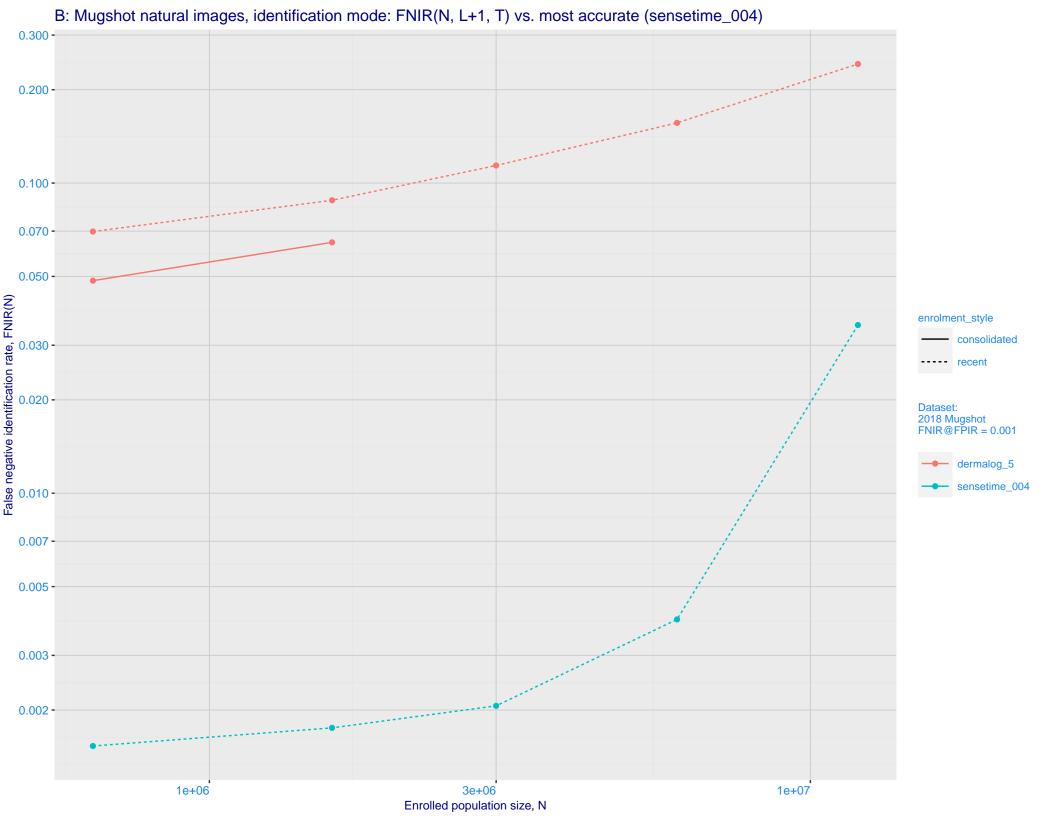
Frontal mugshot ranking 121 (out of 259) -- FNIR(1600000, T, L+1) = 0.0880, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

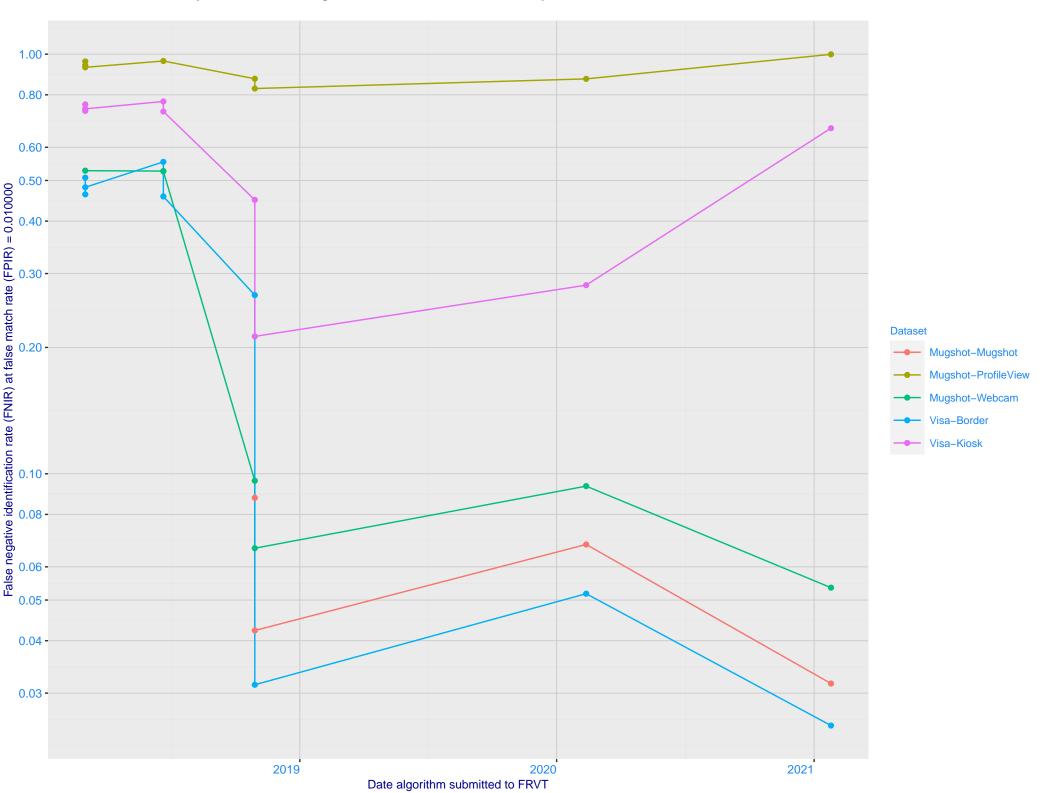
Mugshot webcam ranking 101 (out of 219) -- FNIR(1600000, T, L+1) = 0.1538, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

Mugshot profile ranking 74 (out of 189) -- FNIR(1600000, T, L+1) = 0.9902, FPIR=0.001000 vs. lowest 0.1733 from sensetime\_005

Immigration visa-border ranking 87 (out of 139) -- FNIR(1600000, T, L+1) = 0.3004, FPIR=0.001000 vs. lowest 0.0059 from sensetime\_004

Immigration visa-kiosk ranking 68 (out of 134) -- FNIR(1600000, T, L+1) = 0.6191, FPIR=0.001000 vs. lowest 0.1048 from sensetime\_005

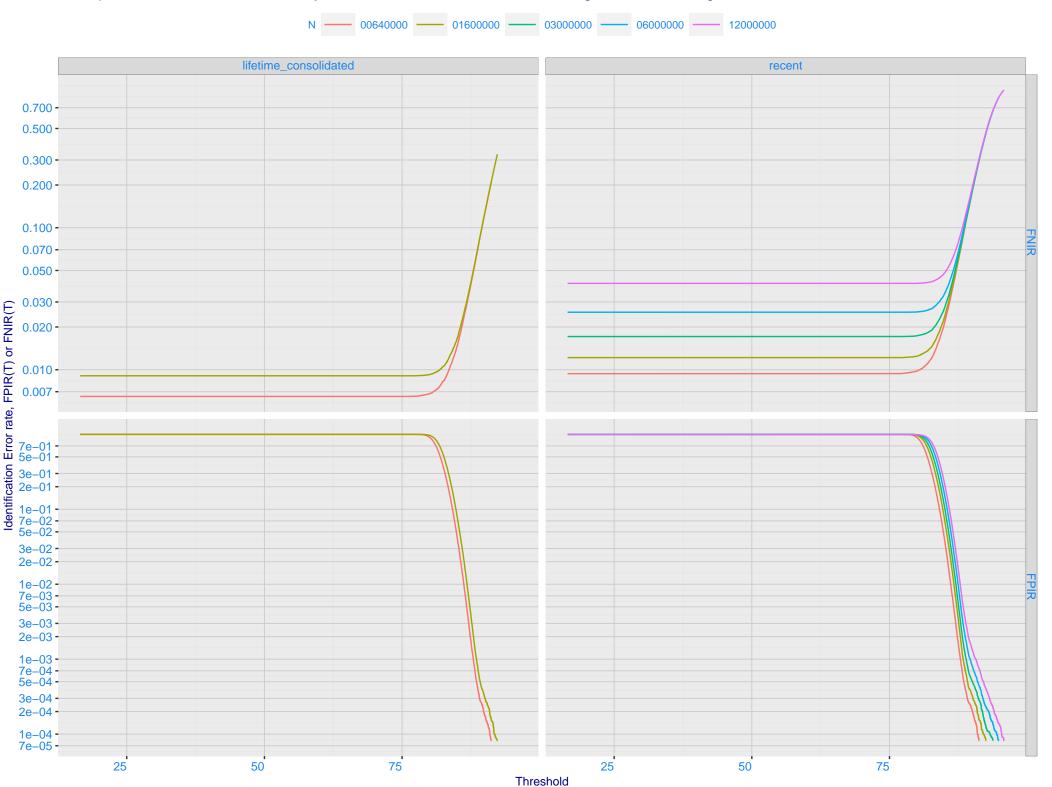




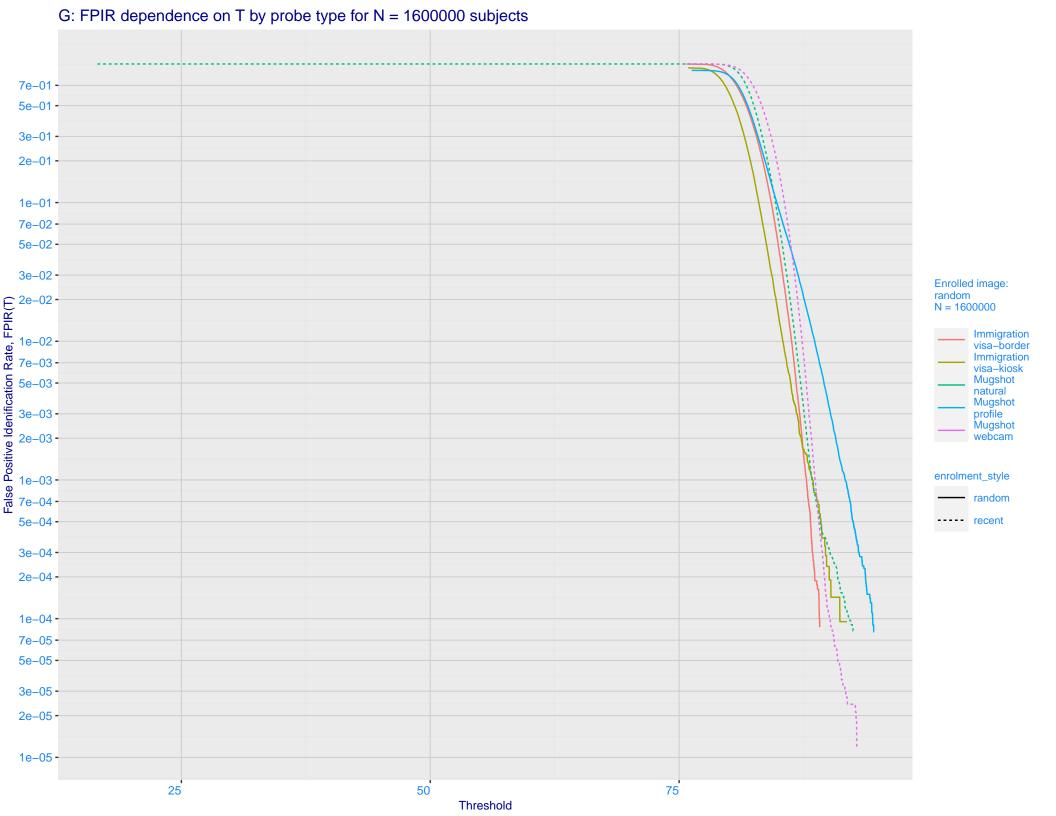
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration Immigration** Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.002 - 0.001 - 0.500 - 0.500 - 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 -

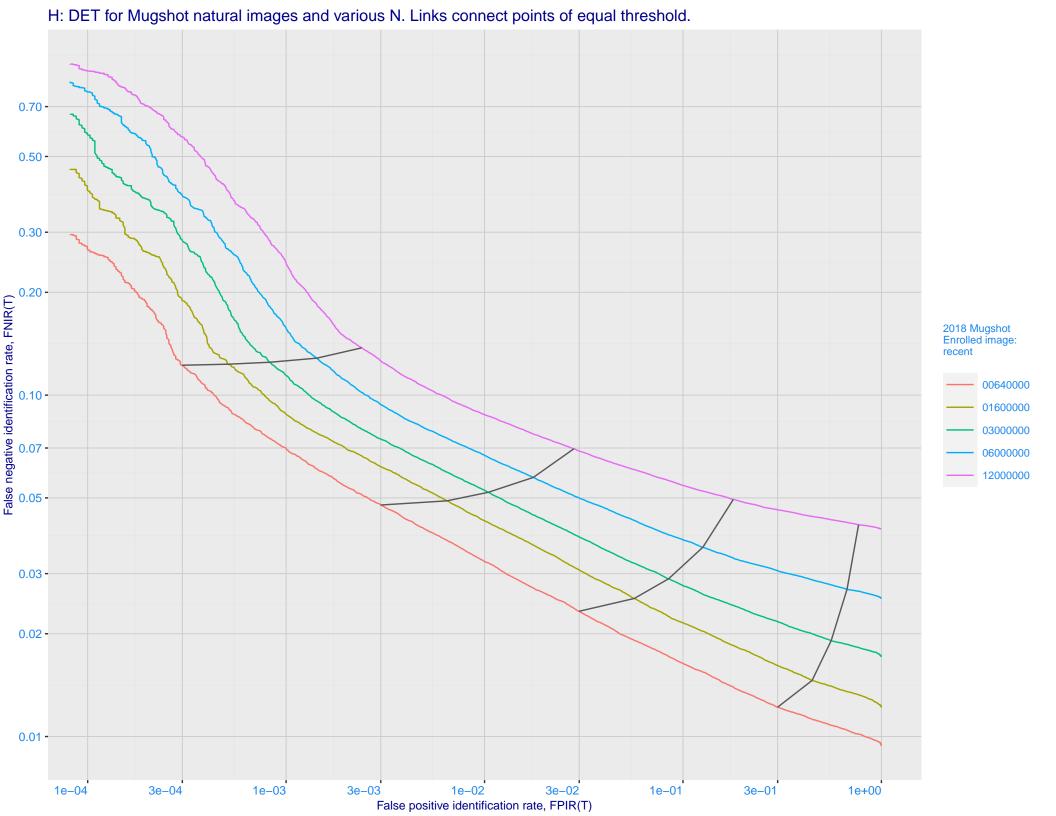
False positive identification rate, FPIR(T)

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

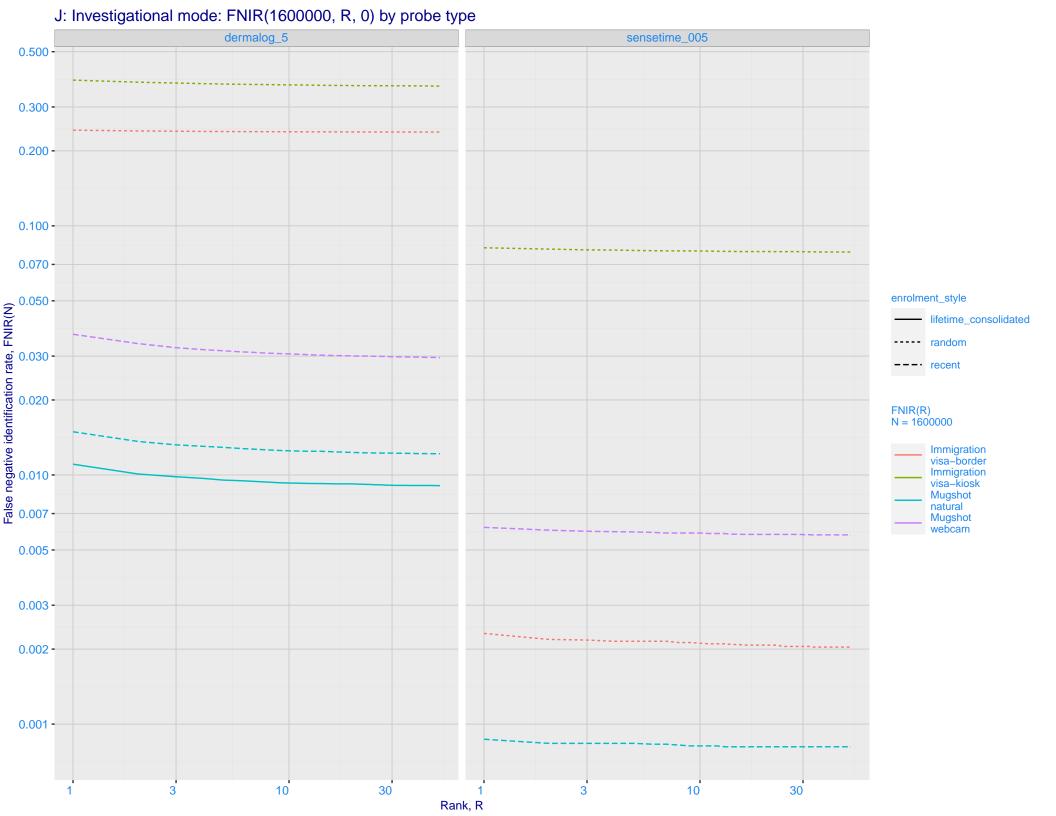


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 -5e-02 -5e-02 -2e-02 -**Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam 1e-02 -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 -3e-02 1e-05 3e-05 1e-04 3e-04 1e-03 3e-03 1e-02 1e-01 3e-01 False Positive Idenification Rate, FPIR(T)

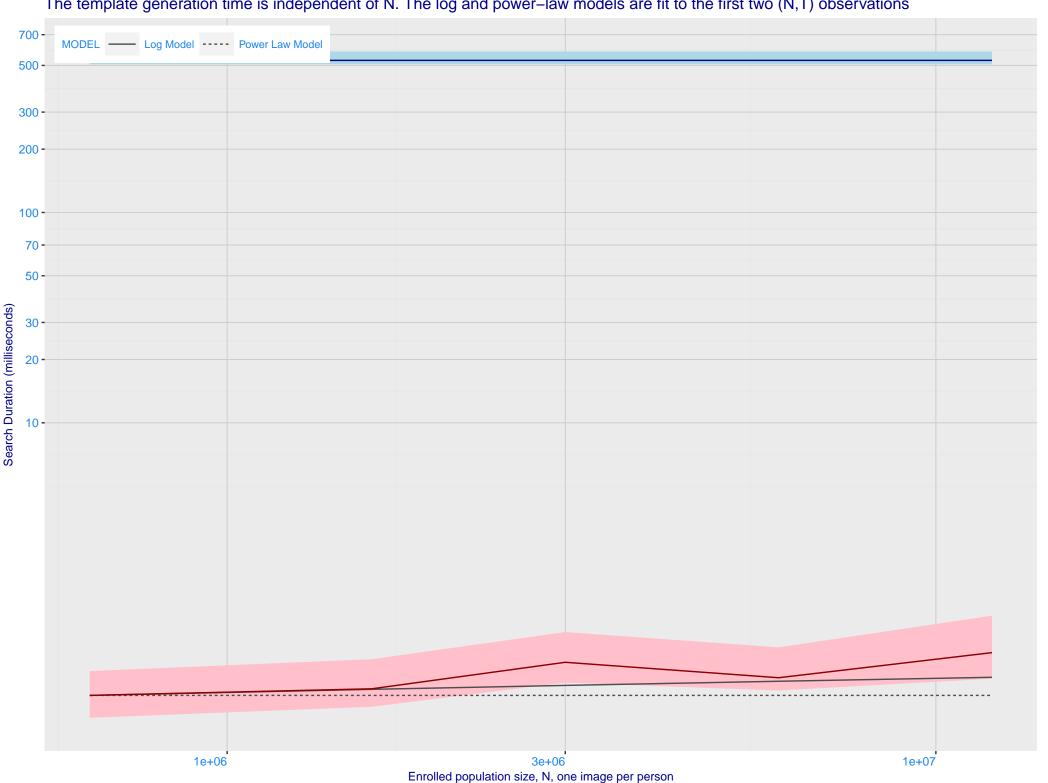




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.500 -0.300 -• 0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -Palse negative identification rate, FNIR(N) 0.003 - 0.001 - 0.500 - 0.200 - 0.100 - 0. enrolment\_style consolidated ---- random --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 dermalog\_5 sensetime\_005 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



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



