## A: Datasheet

Algorithm: dermalog\_3

Developer: Dermalog

Submission Date: 2018\_06\_21

Template size: 128 bytes

Template time (2.5 percentile): 193 msec

Template time (median): 208 msec

Template time (97.5 percentile): 249 msec

Investigation:

Frontal mugshot ranking 216 (out of 259) -- FNIR(1600000, 0, 1) = 0.1259 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 189 (out of 221) -- FNIR(1600000, 0, 1) = 0.2174 vs. lowest 0.0062 from sensetime\_005

Immigration visa-border ranking 115 (out of 142) -- FNIR(1600000, 0, 1) = 0.2957 vs. lowest 0.0014 from visionlabs\_009

Immigration visa-kiosk ranking 119 (out of 139) — FNIR(1600000, 0, 1) = 0.5602 vs. lowest 0.0694 from cib\_000

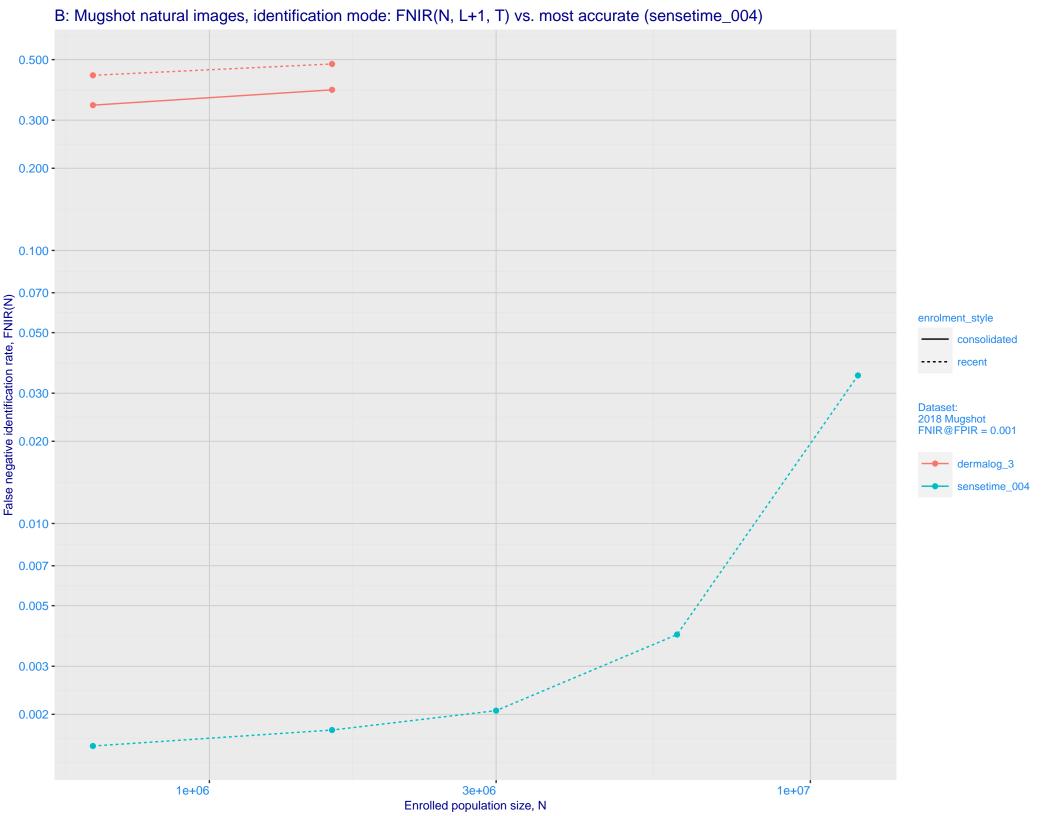
Identification:

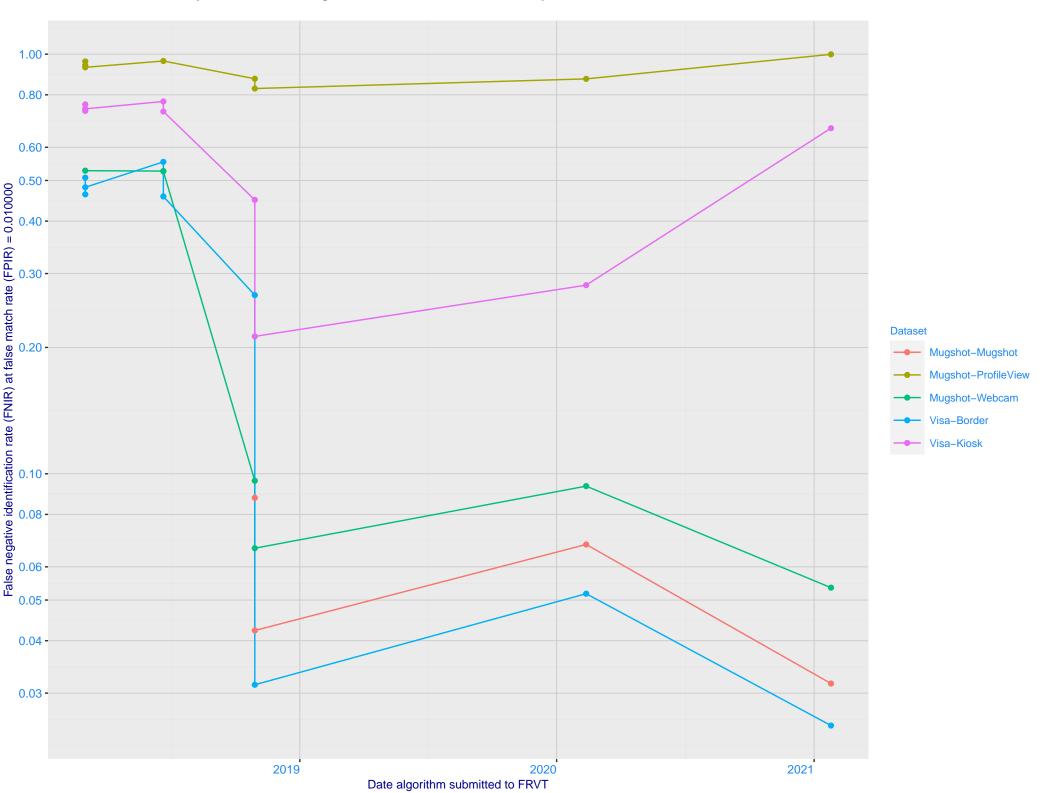
Frontal mugshot ranking 211 (out of 259) -- FNIR(1600000, T, L+1) = 0.4819, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Mugshot webcam ranking 187 (out of 219) -- FNIR(1600000, T, L+1) = 0.6547, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

Immigration visa-border ranking 108 (out of 139) -- FNIR(1600000, T, L+1) = 0.6772, FPIR=0.001000 vs. lowest 0.0059 from sensetime\_004

Immigration visa-kiosk ranking 91 (out of 134) -- FNIR(1600000, T, L+1) = 0.8700, FPIR=0.001000 vs. lowest 0.1048 from sensetime\_005

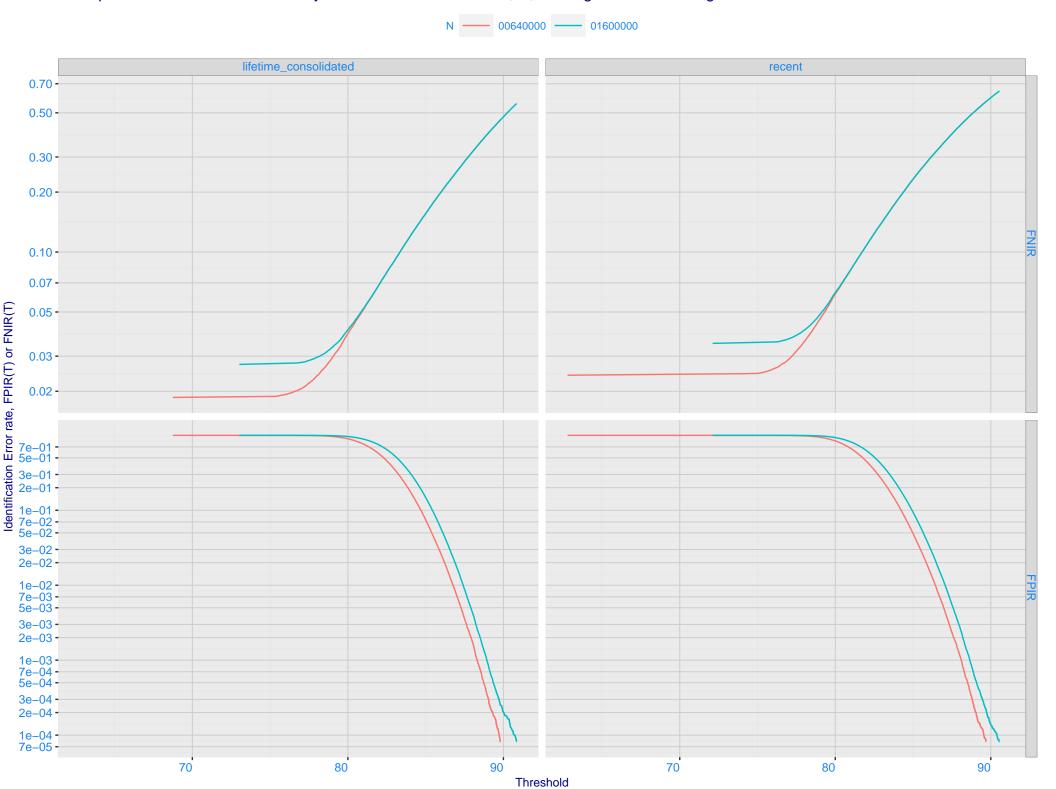




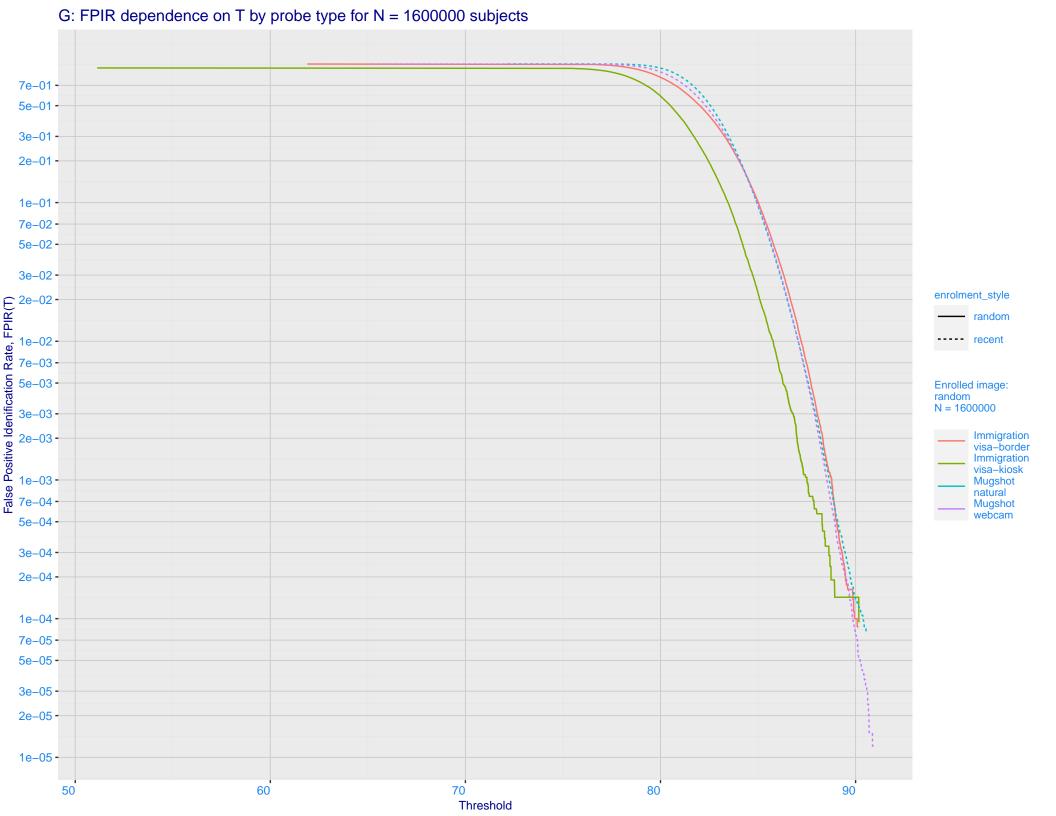
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration** Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 - 0.005 - 0.005 - 0.002 - 0.001 - 0.001 - 0.700 - 0.500 - 0.200 enrolment\_style consolidated-ONE-MATE random-ONE-MATE recent-ONE-MATE 0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -0.002 -0.001 -

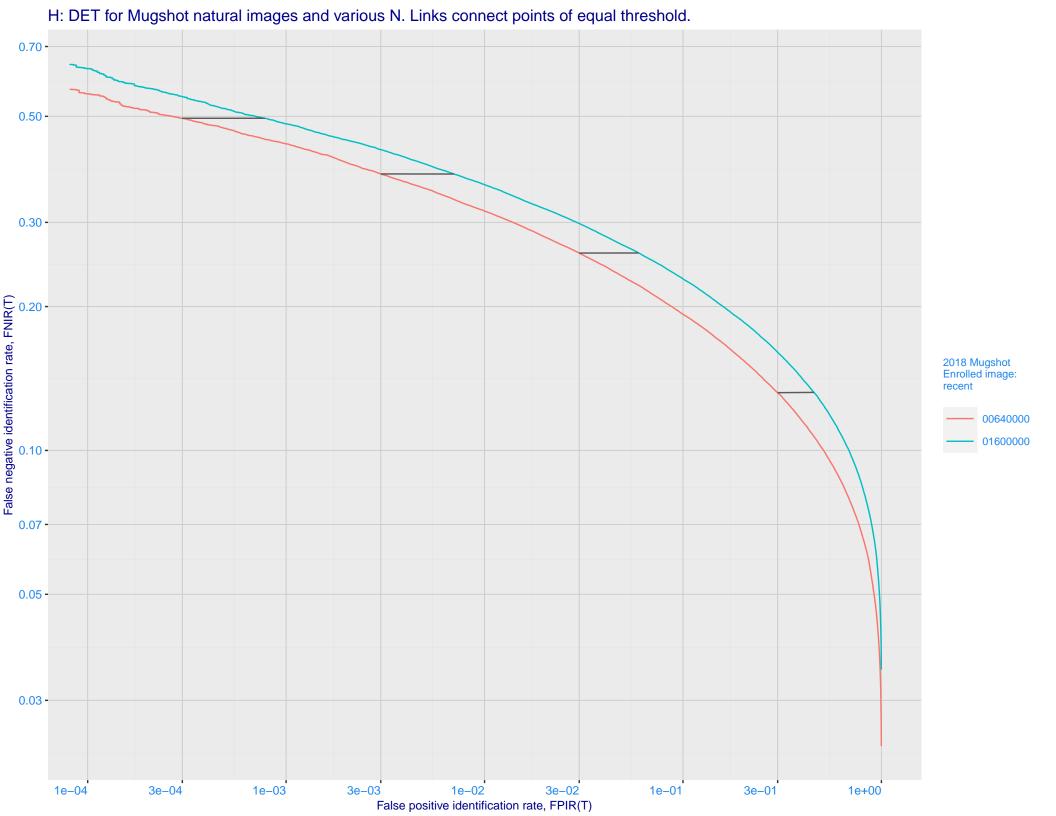
False positive identification rate, FPIR(T)

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 -Ealse negative identification rate, FNIR(N) 0.003 - 0.001 - 0.700 - 0.500 - 0.200 - 0. enrolment\_style consolidated ---- random --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 dermalog\_3 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 dermalog\_3 sensetime\_005 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 enrolment\_style False negative identification rate, FNIR(N) lifetime\_consolidated ---- random --- recent FNIR(R) N = 1600000 Immigration visa-border Immigration visa-kiosk Mugshot natural Mugshot 0.007 webcam 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 Log Model ---- Power Law Model 200 -100 -70 -50 -7e+05 8e+05 1e+06 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



