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 222 (out of 265) -- FNIR(1600000, 0, 1) = 0.1259 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 195 (out of 227) -- FNIR(1600000, 0, 1) = 0.2174 vs. lowest 0.0062 from sensetime_005

Immigration visa-border ranking 121 (out of 148) -- FNIR(1600000, 0, 1) = 0.2957 vs. lowest 0.0013 from visionlabs_010

Immigration visa-kiosk ranking 125 (out of 145) -- FNIR(1600000, 0, 1) = 0.5602 vs. lowest 0.0568 from hr_000

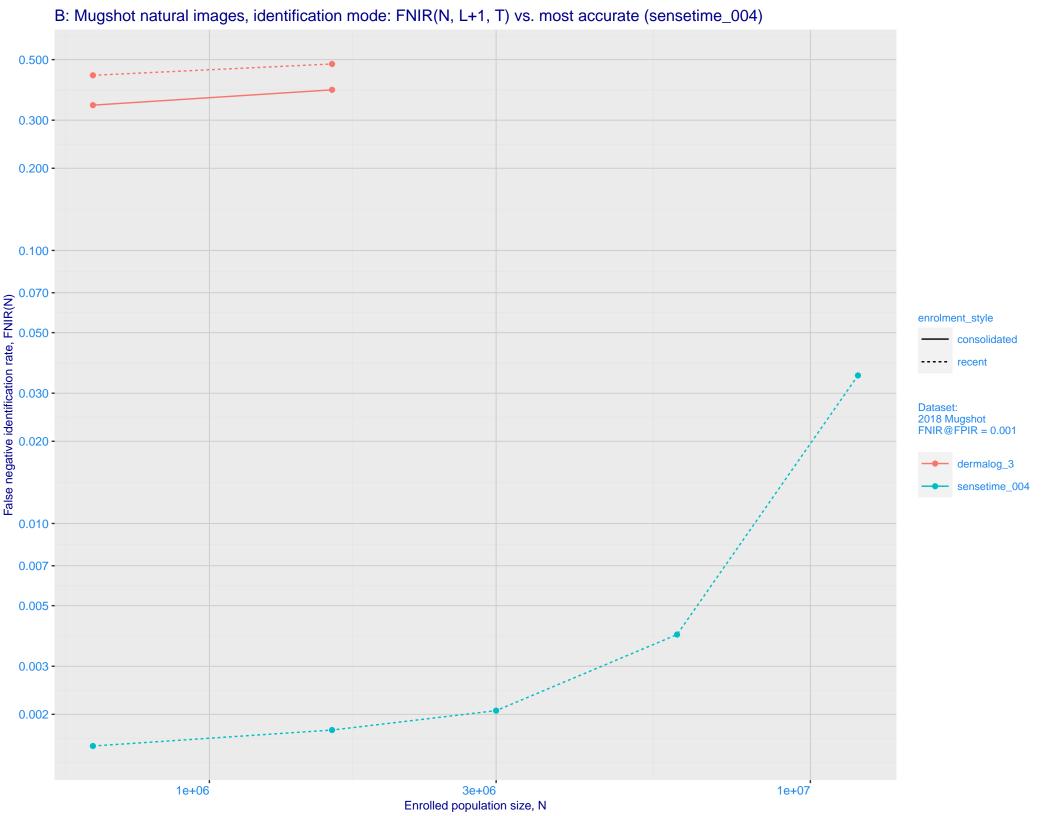
Identification:

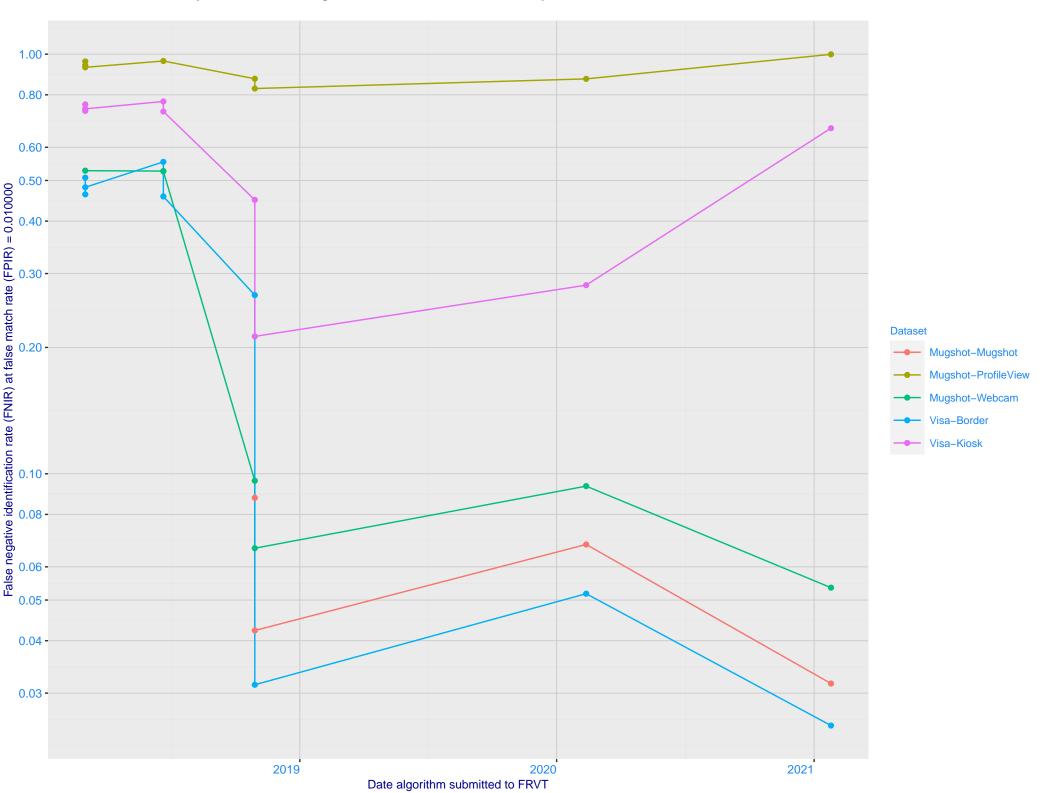
Frontal mugshot ranking 217 (out of 265) -- FNIR(1600000, T, L+1) = 0.4819, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

Mugshot webcam ranking 193 (out of 225) -- FNIR(1600000, T, L+1) = 0.6547, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

Immigration visa-border ranking 114 (out of 146) -- FNIR(1600000, T, L+1) = 0.6772, FPIR=0.001000 vs. lowest 0.0049 from hr_000

Immigration visa-kiosk ranking 97 (out of 141) -- FNIR(1600000, T, L+1) = 0.8700, FPIR=0.001000 vs. lowest 0.0996 from hr_000

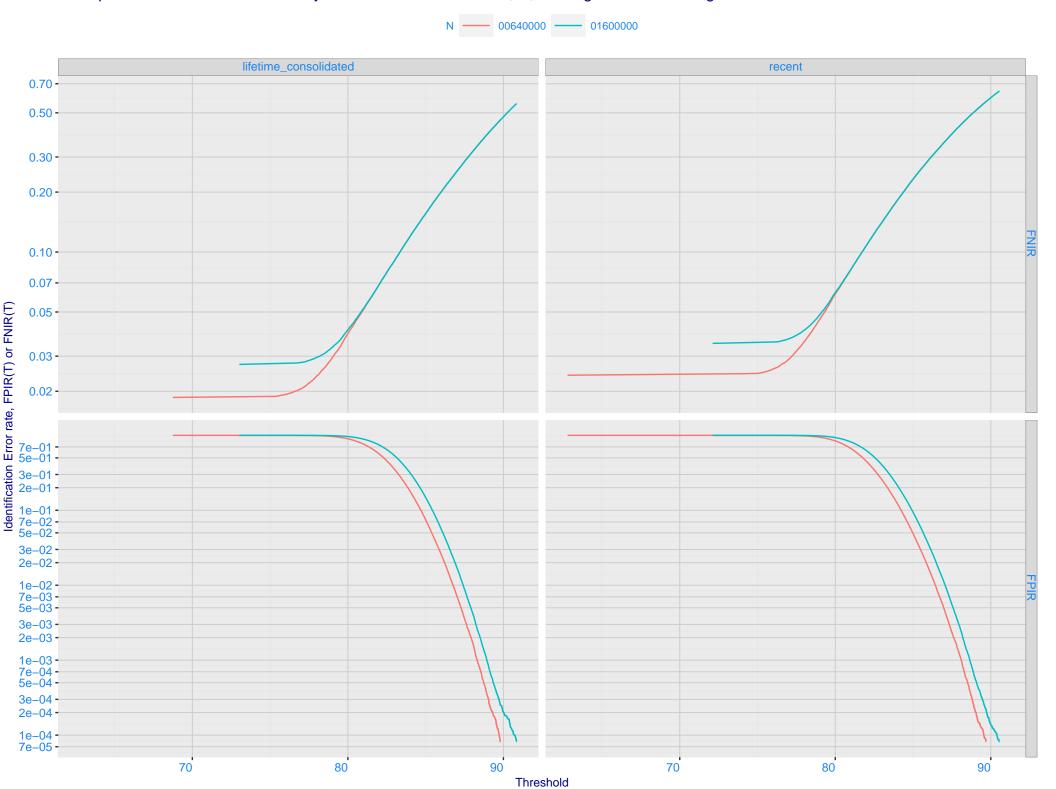




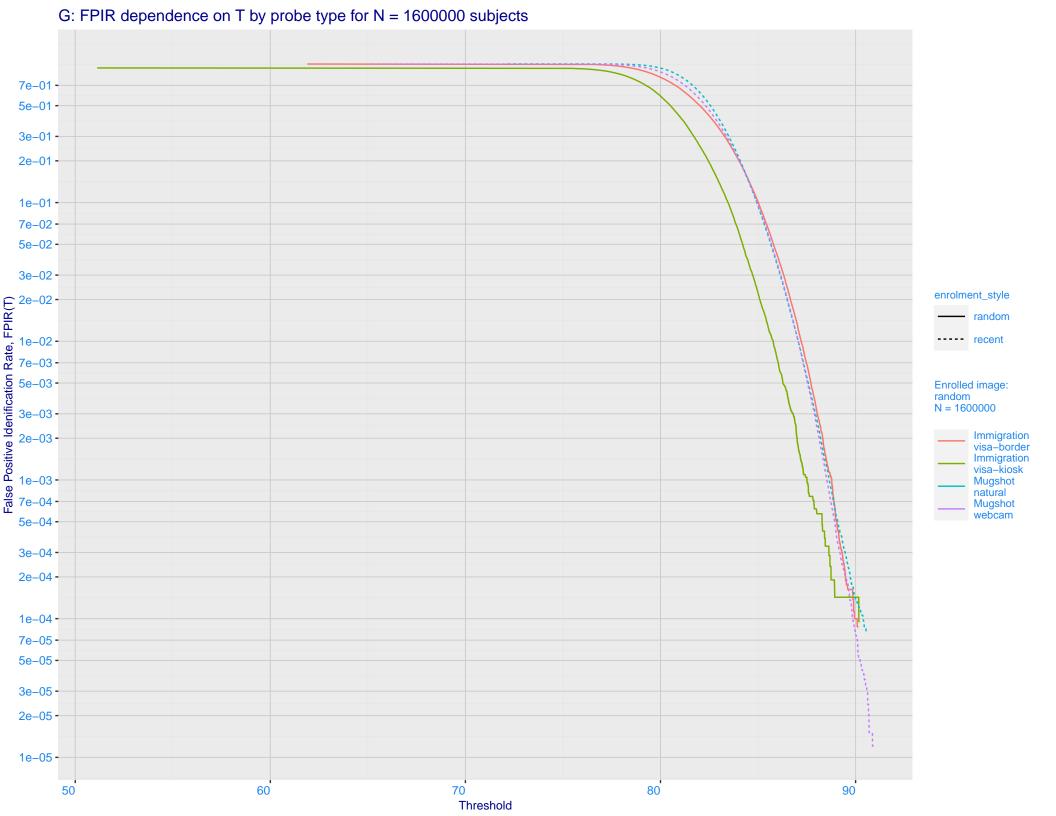
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration** Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 - 0.005 - 0.005 - 0.002 - 0.001 - 0.001 - 0.700 - 0.500 - 0.200 enrolment_style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

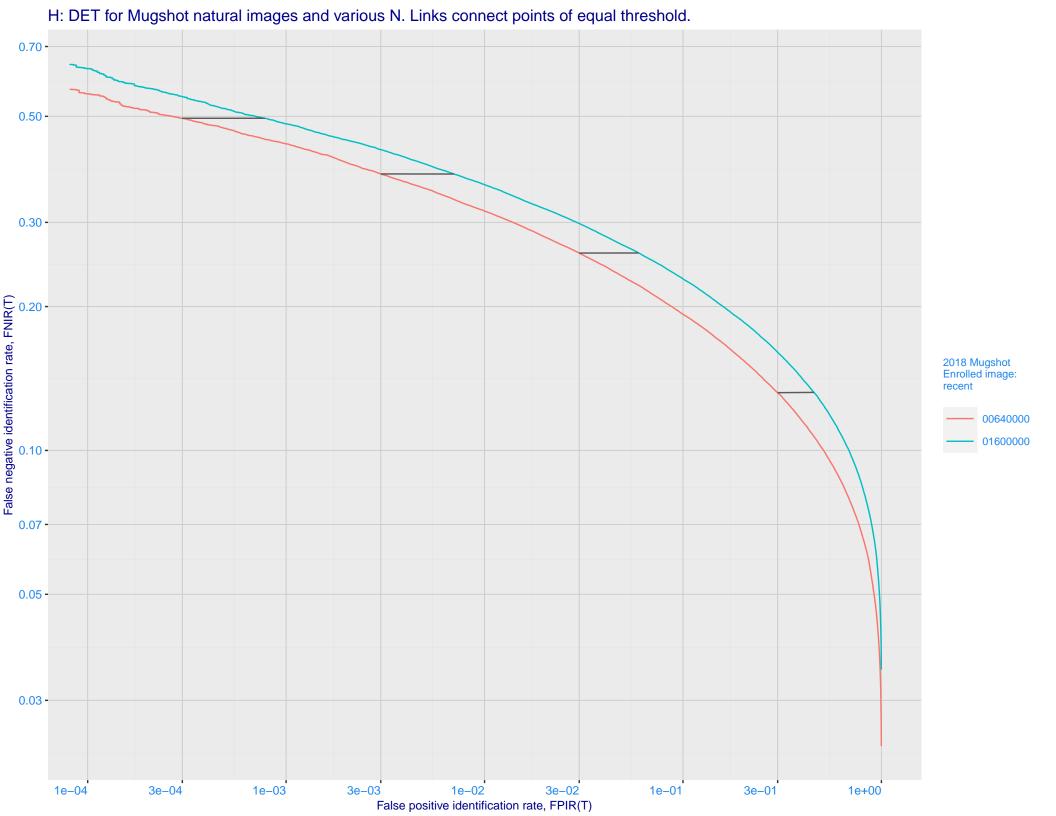
False positive identification rate, FPIR(T)

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



