A: Datasheet

Algorithm: hr_000

Developer: Hengrui Al Technology

Submission Date: 2021_02_10

Template size: 2048 bytes

Template time (2.5 percentile): 904 msec

Template time (median): 905 msec

Template time (97.5 percentile): 939 msec

Investigation:

Frontal mugshot ranking 13 (out of 265) -- FNIR(1600000, 0, 1) = 0.0015 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 17 (out of 227) -- FNIR(1600000, 0, 1) = 0.0099 vs. lowest 0.0062 from sensetime_005

Mugshot profile ranking 2 (out of 196) — FNIR(1600000, 0, 1) = 0.0635 vs. lowest 0.0591 from sensetime_005

Immigration visa-border ranking 3 (out of 148) — FNIR(1600000, 0, 1) = 0.0019 vs. lowest 0.0013 from visionlabs_010

Immigration visa-kiosk ranking 1 (out of 145) — FNIR(1600000, 0, 1) = 0.0568

Identification:

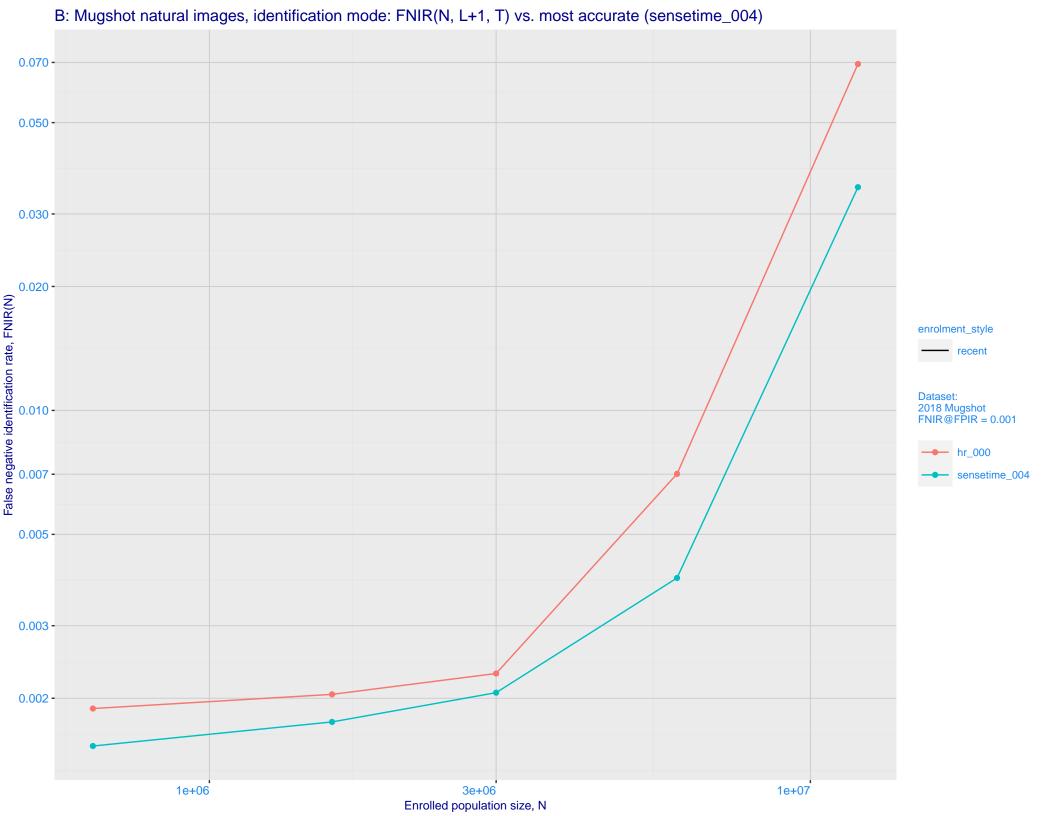
Frontal mugshot ranking 3 (out of 265) -- FNIR(1600000, T, L+1) = 0.0020, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

Mugshot webcam ranking 3 (out of 225) -- FNIR(1600000, T, L+1) = 0.0134, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

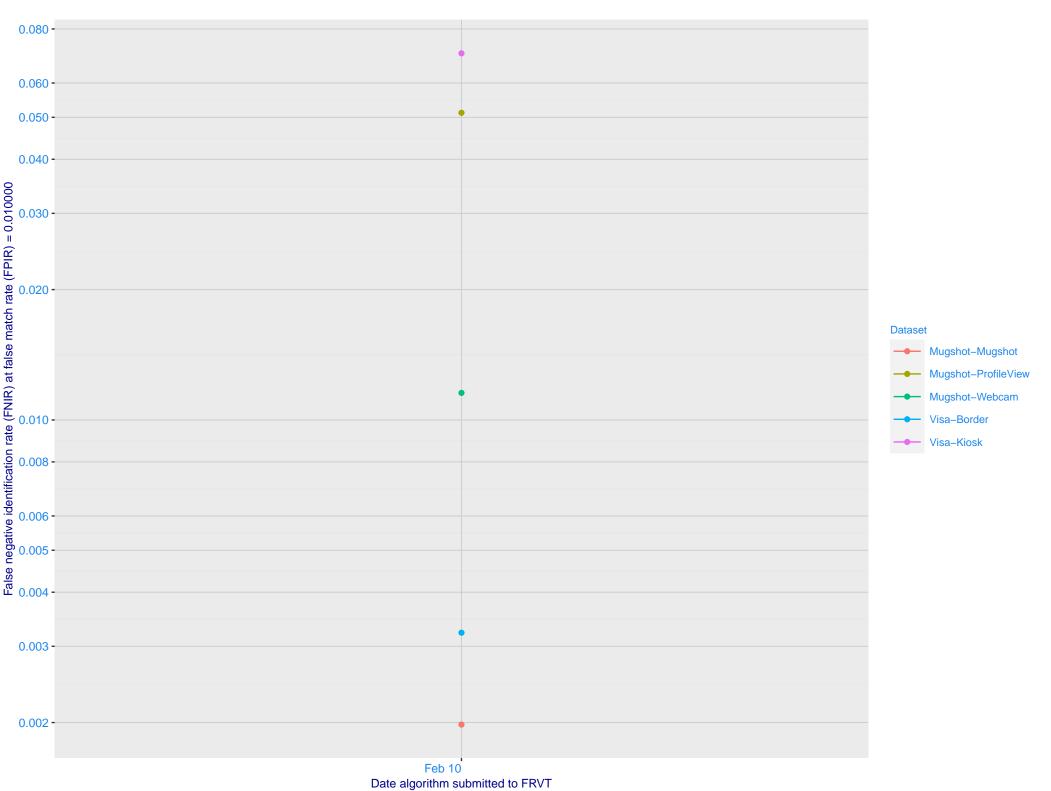
Mugshot profile ranking 1 (out of 195) -- FNIR(1600000, T, L+1) = 0.1331, FPIR=0.001000

Immigration visa-border ranking 1 (out of 146) -- FNIR(1600000, T, L+1) = 0.0049, FPIR=0.001000

Immigration visa-kiosk ranking 1 (out of 141) -- FNIR(1600000, T, L+1) = 0.0996, FPIR=0.001000



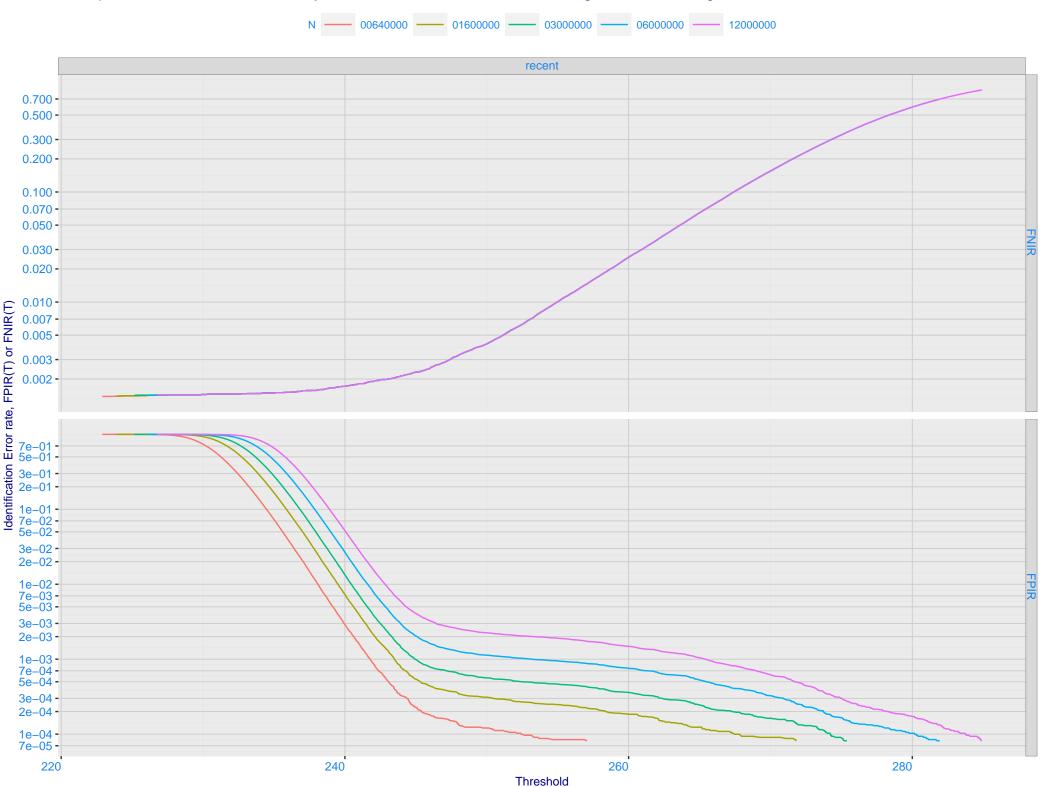
C: Evolution of accuracy for HR algorithms on three datasets 2018 – present



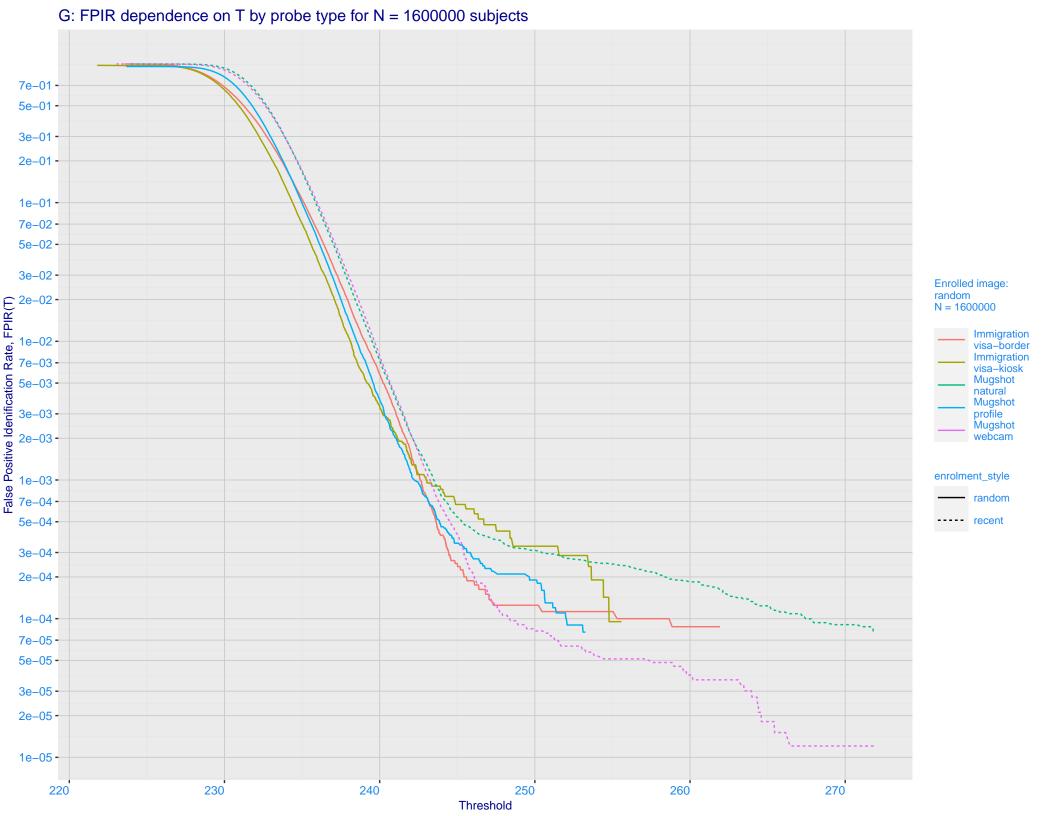
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.0001 - 0.700 - 0.500 - 0.200 - 0.100 - 0 enrolment_style random-ONE-MATE recent-ONE-MATE 0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -0.002 -0.001 -

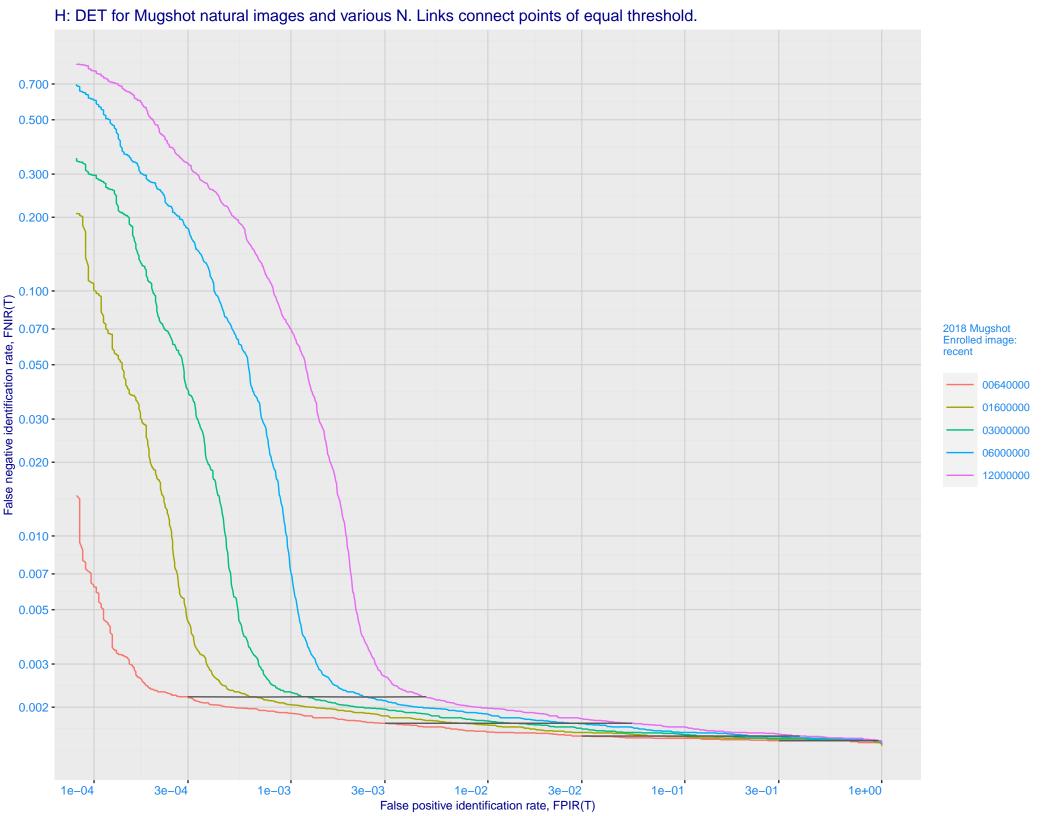
False positive identification rate, FPIR(T)

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

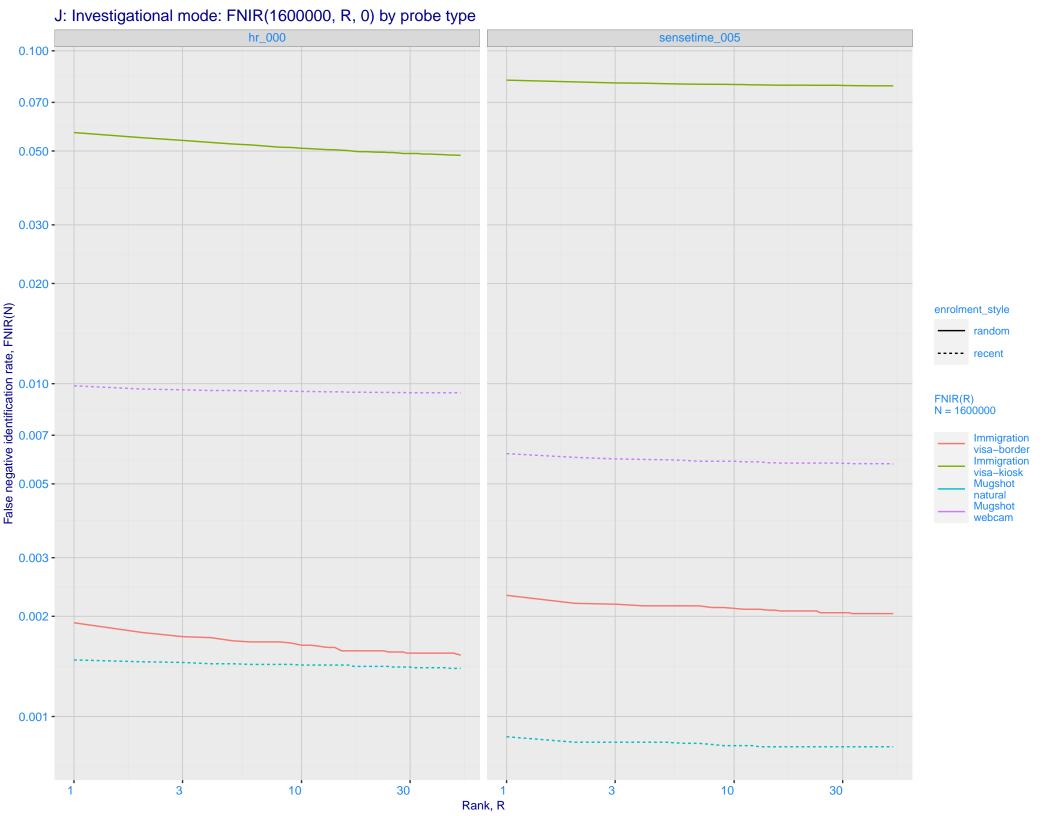


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 -5e-02 -3e-02 -3e-02 -1e-02 -**Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam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

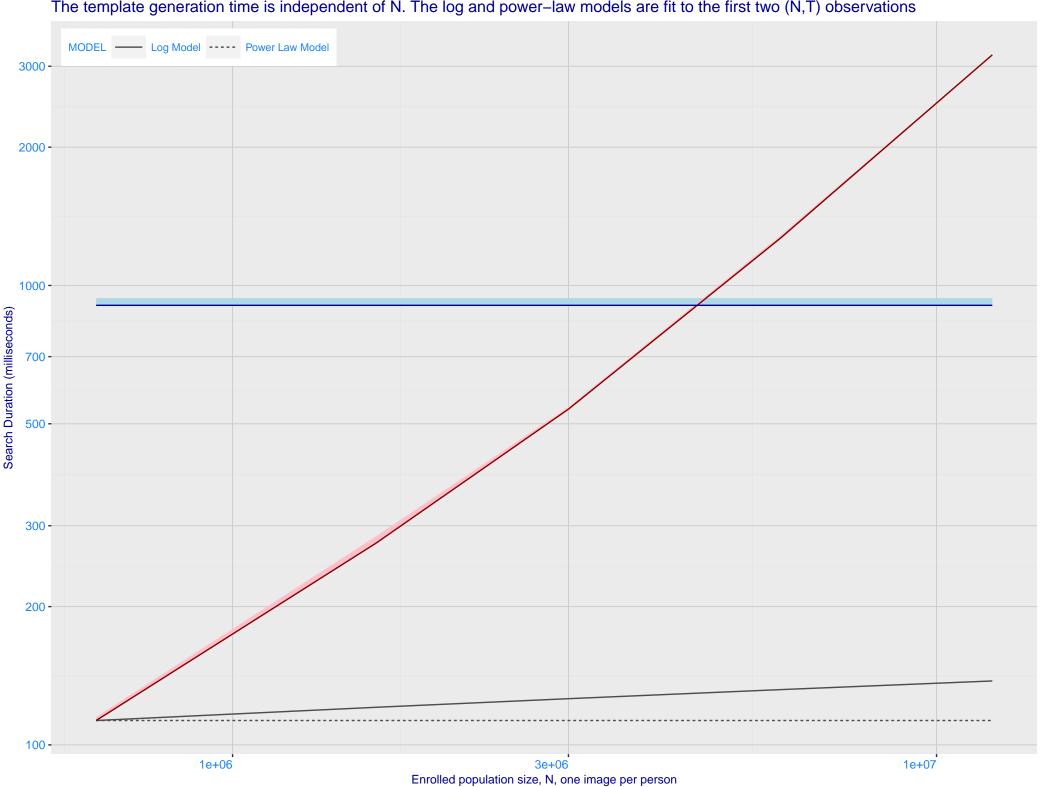




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_005) Immigration **Immigration** visa-border visa-kiosk 0.100 0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -Ealse negative identification rate, FNIR(N) 0.002 - 0.001 - 0.000 - 0.050 - 0.030 - 0. FNIR@Rank = 1 hr_000 sensetime_005 Mugshot Mugshot webcam natural enrolment_style random ---- recent 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



