A: Datasheet

Algorithm: hik_6

Developer: Hikvision Research Institute

Submission Date: 2018_10_29

Template size: 1408 bytes

Template time (2.5 percentile): 598 msec

Template time (median): 598 msec

Template time (97.5 percentile): 646 msec

Investigation:

Frontal mugshot ranking 72 (out of 259) -- FNIR(1600000, 0, 1) = 0.0046 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 47 (out of 221) -- FNIR(1600000, 0, 1) = 0.0165 vs. lowest 0.0062 from sensetime_005

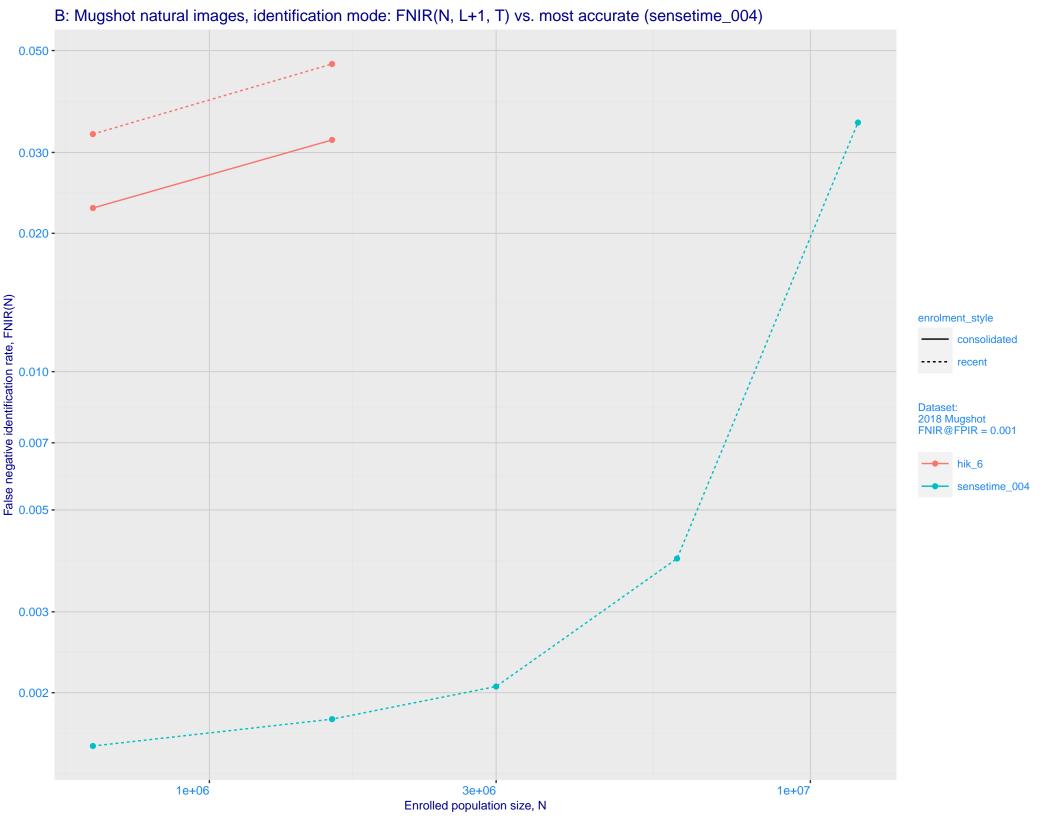
Mugshot profile ranking 51 (out of 190) -- FNIR(1600000, 0, 1) = 0.5353 vs. lowest 0.0591 from sensetime_005

Identification:

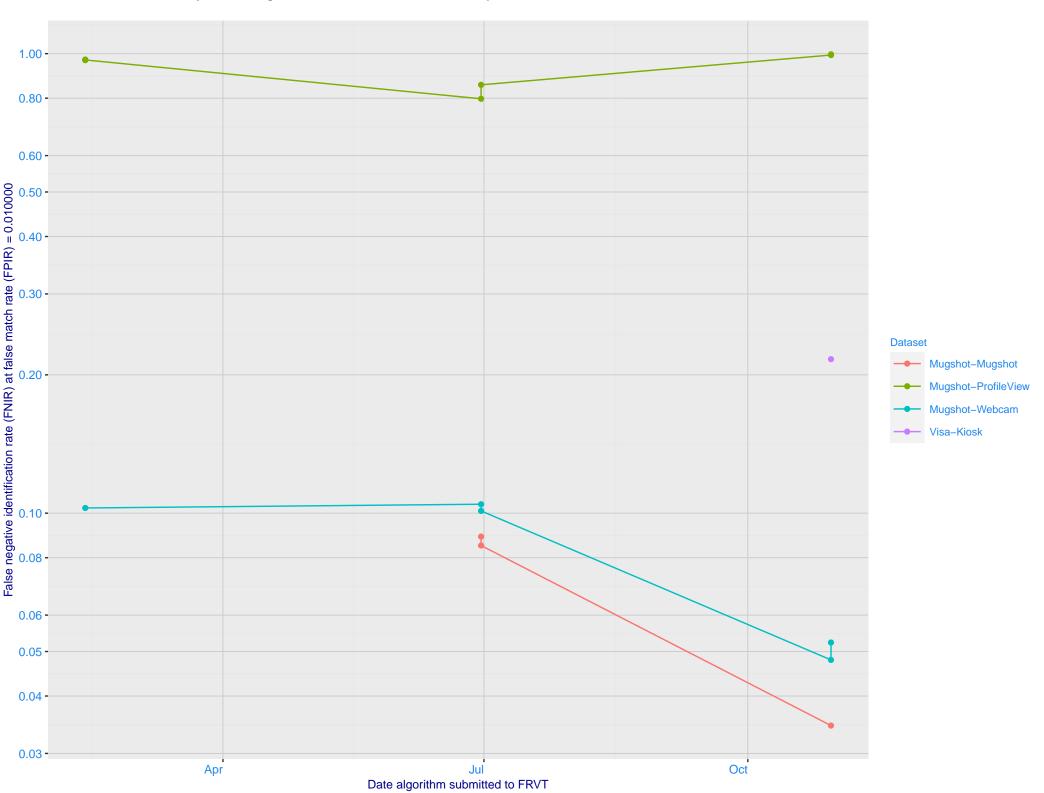
Frontal mugshot ranking 71 (out of 259) -- FNIR(1600000, T, L+1) = 0.0467, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

Mugshot webcam ranking 43 (out of 219) -- FNIR(1600000, T, L+1) = 0.0857, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

Mugshot profile ranking 170 (out of 189) -- FNIR(1600000, T, L+1) = 0.9999, FPIR=0.001000 vs. lowest 0.1733 from sensetime_005

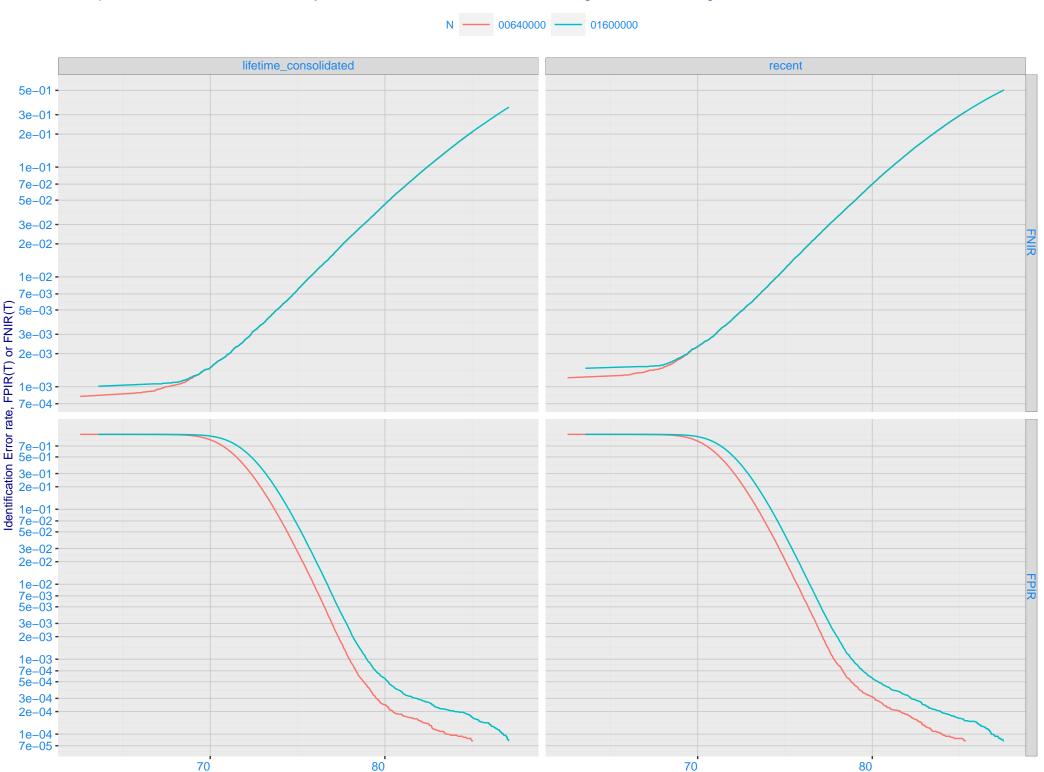


C: Evolution of accuracy for HIK algorithms on three datasets 2018 - present



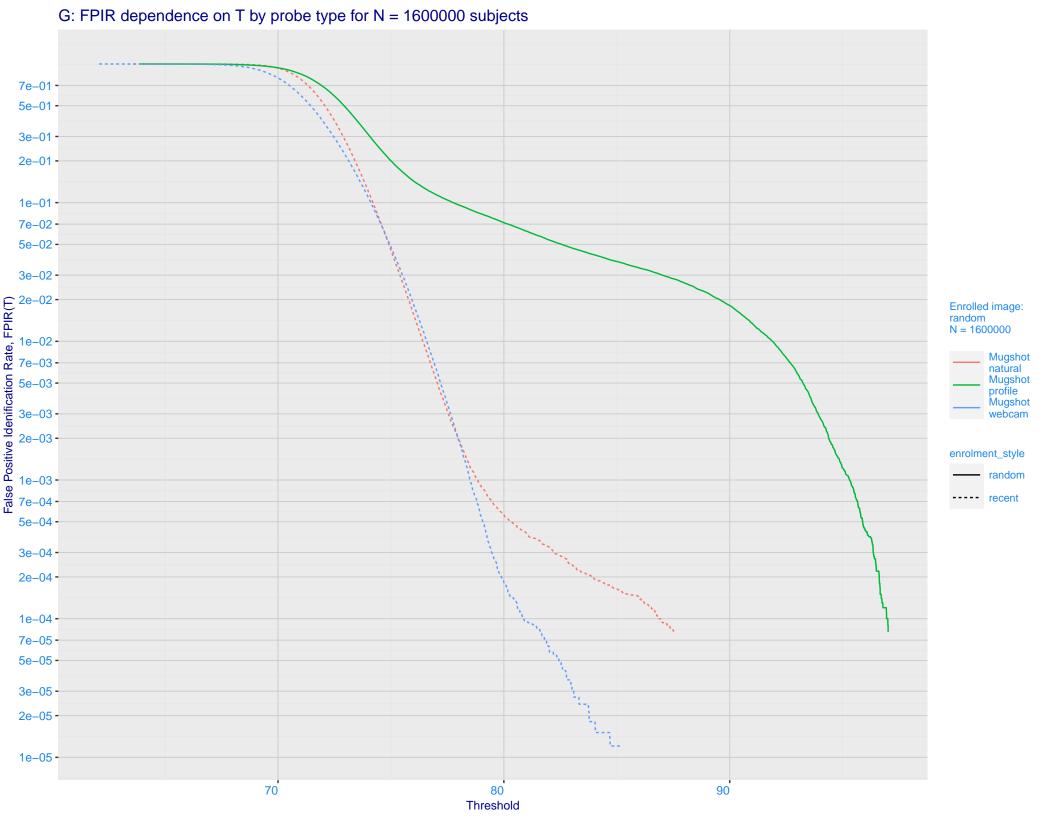
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration Immigration** Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.002 - 0.000 - 0.500 - 0.500 - 0.200 - 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 -

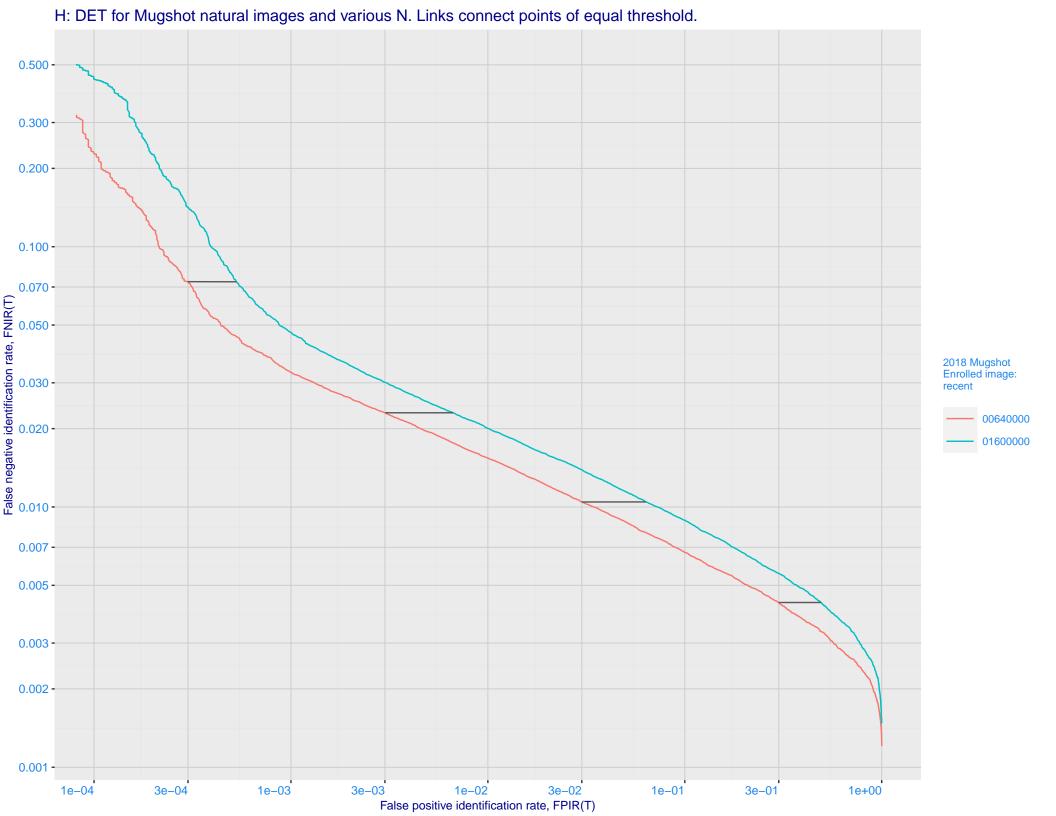
E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images



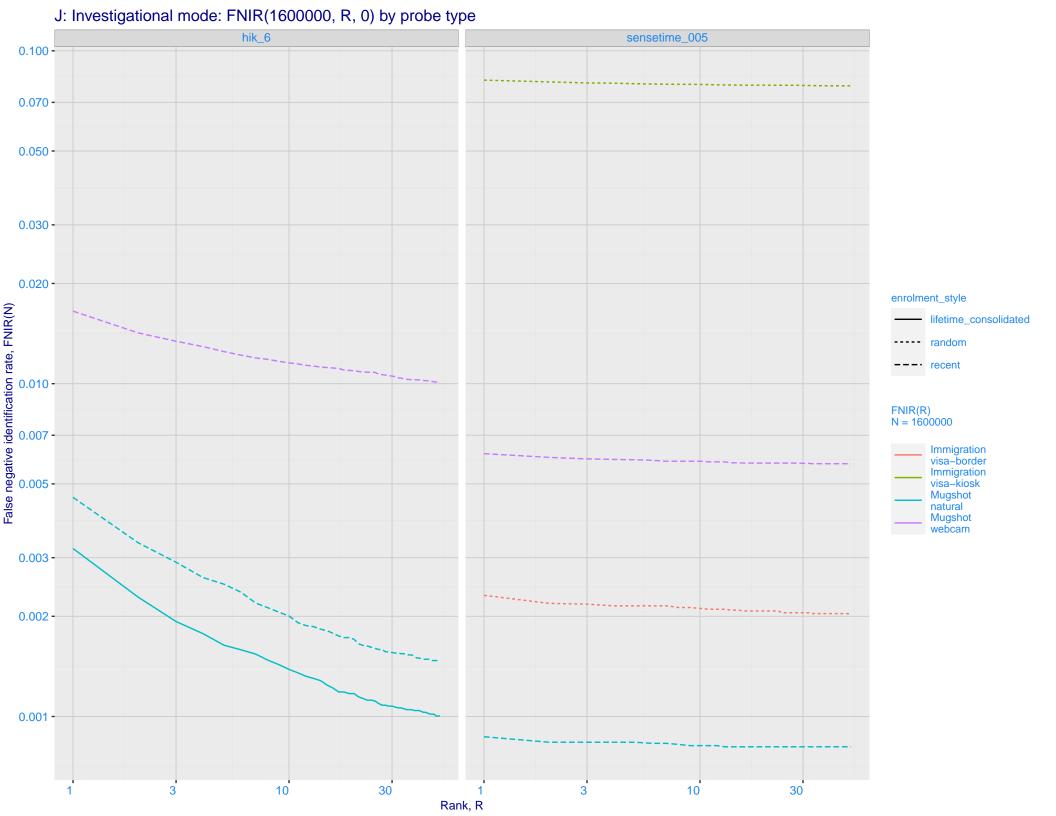
Threshold

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)

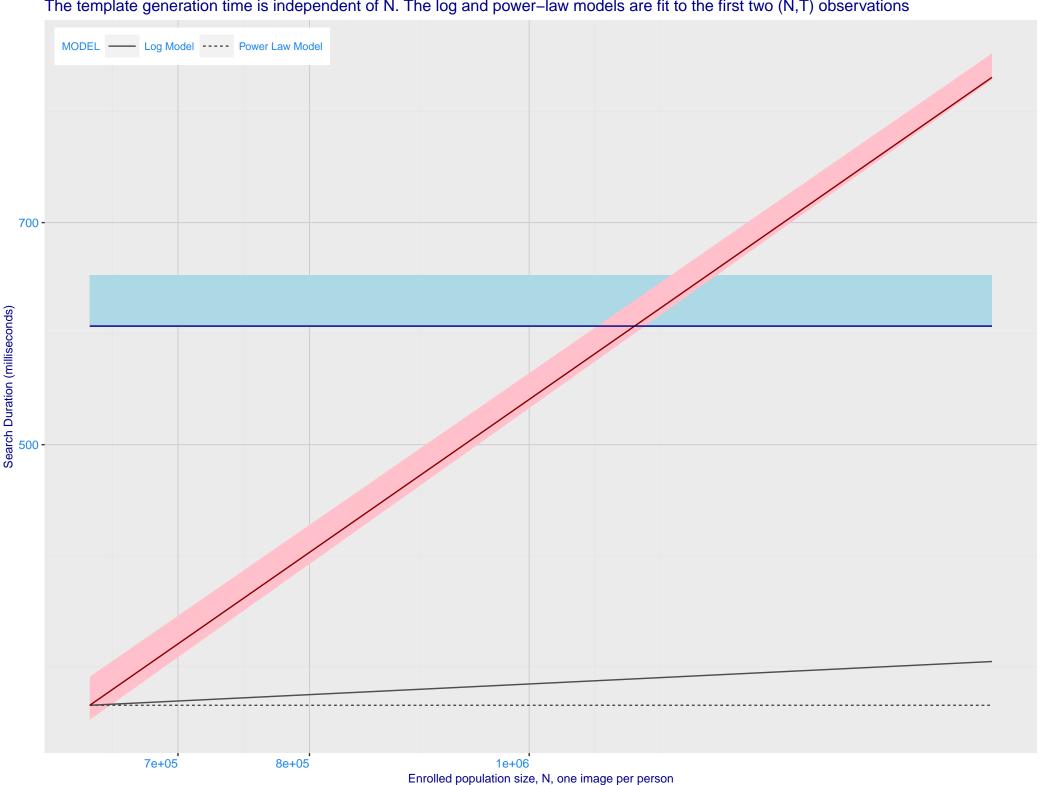




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_005) Immigration **Immigration** visa-border visa-kiosk 0.100 0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -Ealse negative identification rate, FNIR(N) 0.002 - 0.001 - 0.000 - 0.050 - 0.030 - 0. enrolment_style consolidated ---- random --- recent Mugshot webcam Mugshot natural FNIR@Rank = 1 -- hik_6 sensetime_005 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 - Log Model ---- Power Law Model



M: Identification FNIR(N, T, L+1) and Investigational FNIR(N, 0, R) under ageing



