A: Datasheet

Algorithm: hik_4

Developer: Hikvision Research Institute

Submission Date: 2018_06_30

Template size: 1152 bytes

Template time (2.5 percentile): 491 msec

Template time (median): 494 msec

Template time (97.5 percentile): 655 msec

Investigation:

Frontal mugshot ranking 130 (out of 259) -- FNIR(1600000, 0, 1) = 0.0113 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 99 (out of 221) -- FNIR(1600000, 0, 1) = 0.0272 vs. lowest 0.0062 from sensetime_005

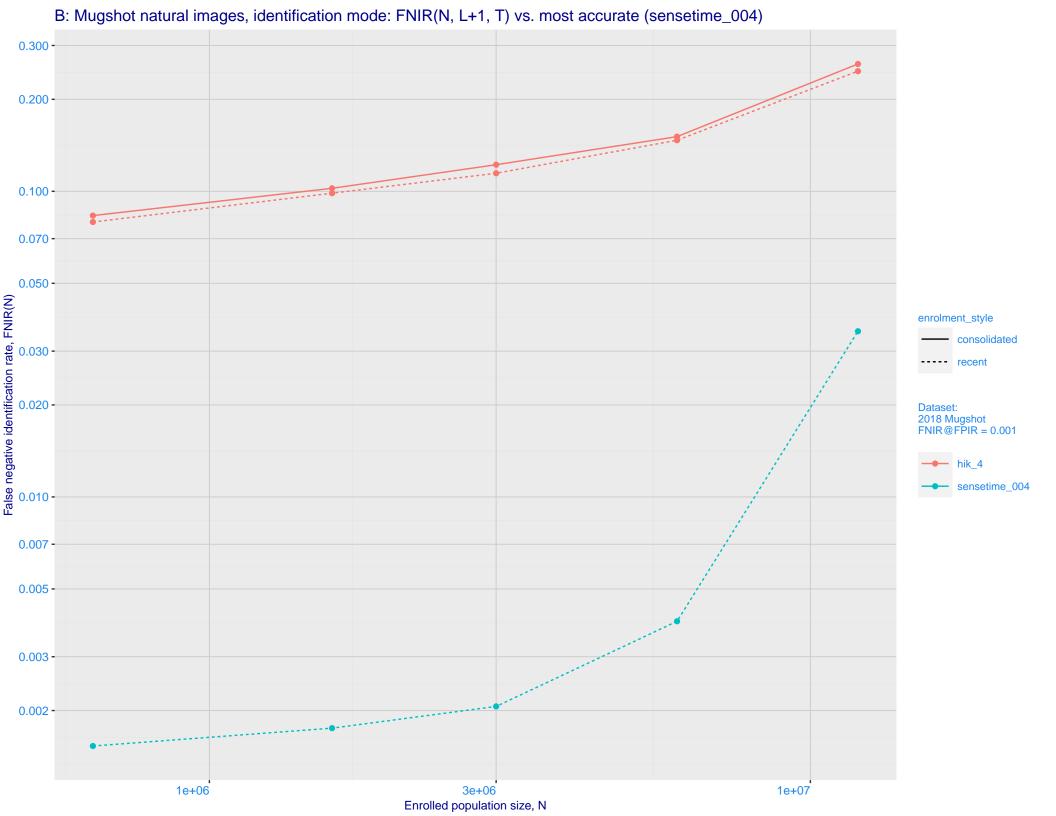
Mugshot profile ranking 76 (out of 190) -- FNIR(1600000, 0, 1) = 0.7433 vs. lowest 0.0591 from sensetime_005

Identification:

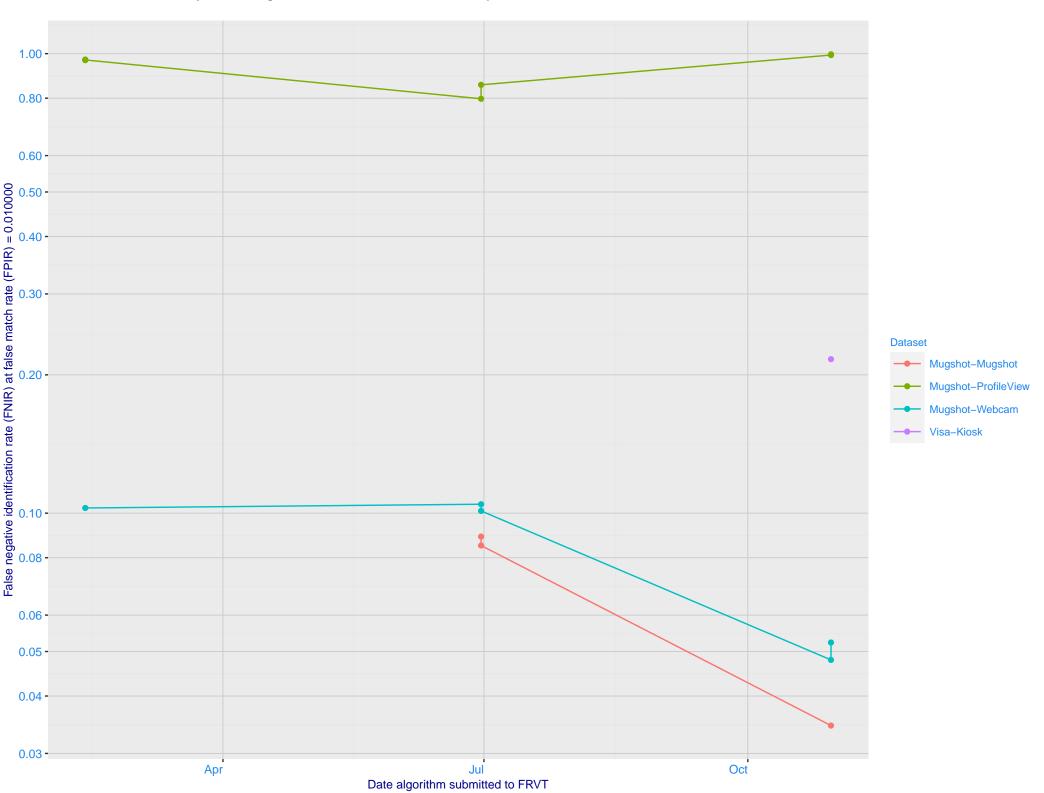
Frontal mugshot ranking 125 (out of 259) -- FNIR(1600000, T, L+1) = 0.0986, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

Mugshot webcam ranking 99 (out of 219) -- FNIR(1600000, T, L+1) = 0.1523, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

Mugshot profile ranking 47 (out of 189) -- FNIR(1600000, T, L+1) = 0.9763, FPIR=0.001000 vs. lowest 0.1733 from sensetime_005



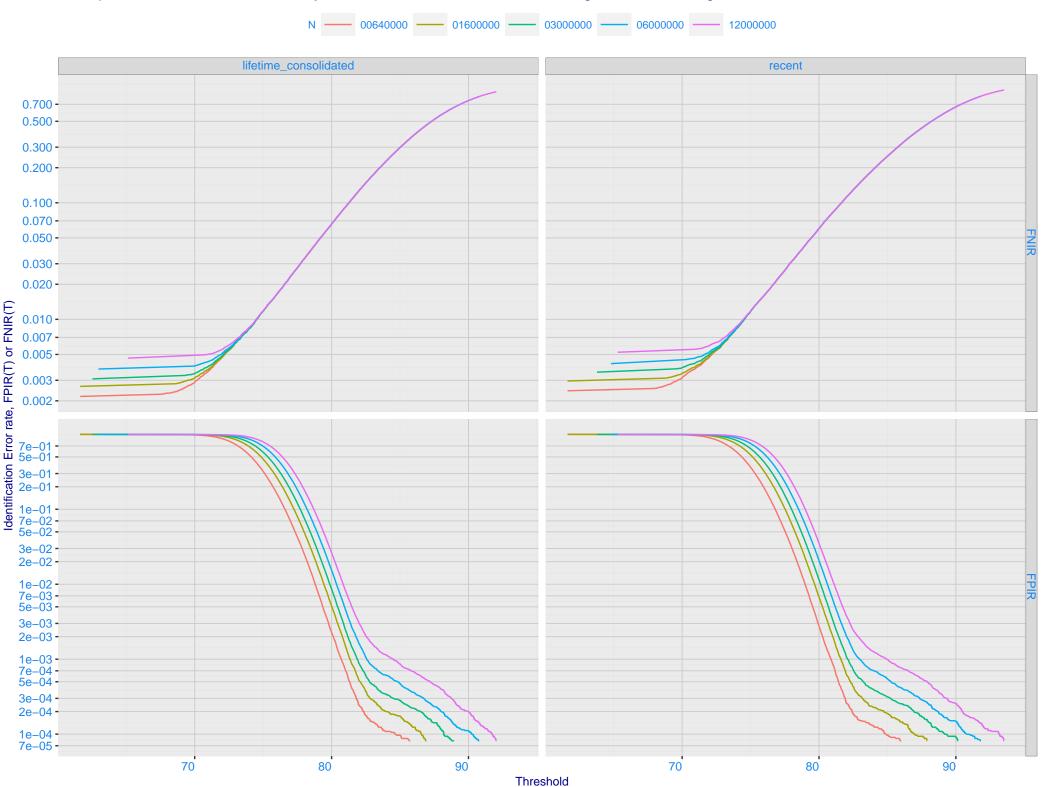
C: Evolution of accuracy for HIK algorithms on three datasets 2018 - present



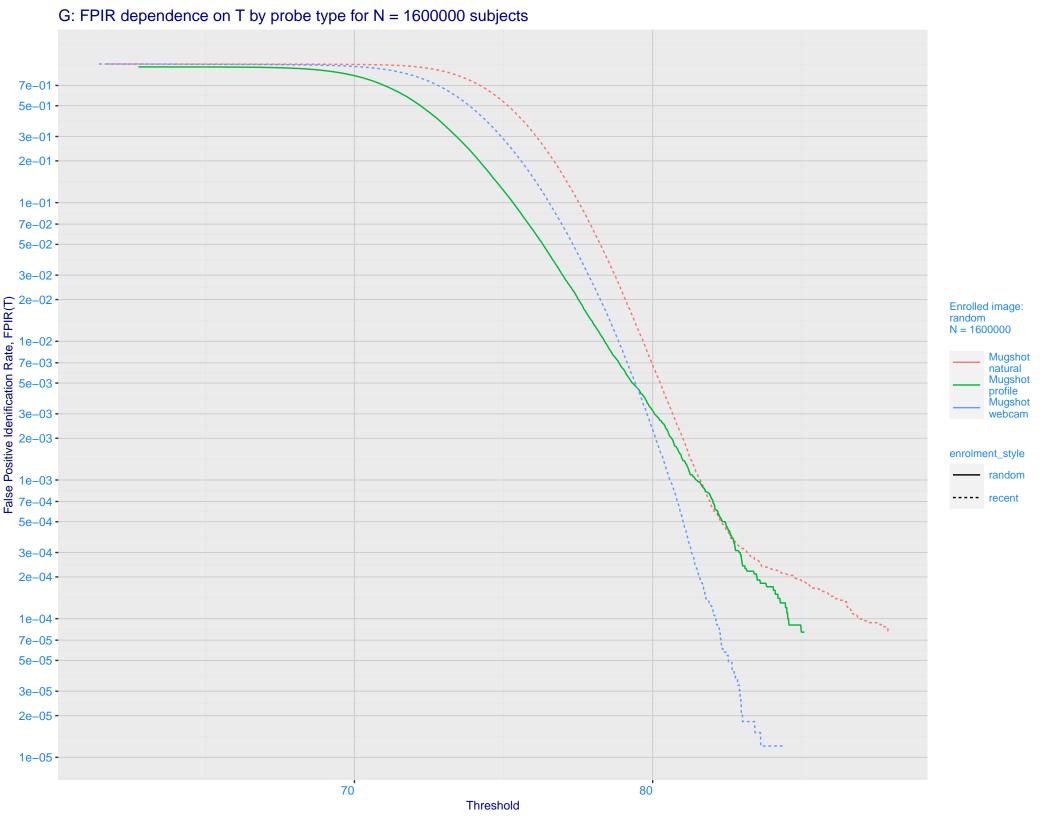
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.0001 - 0.700 - 0.500 - 0.200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

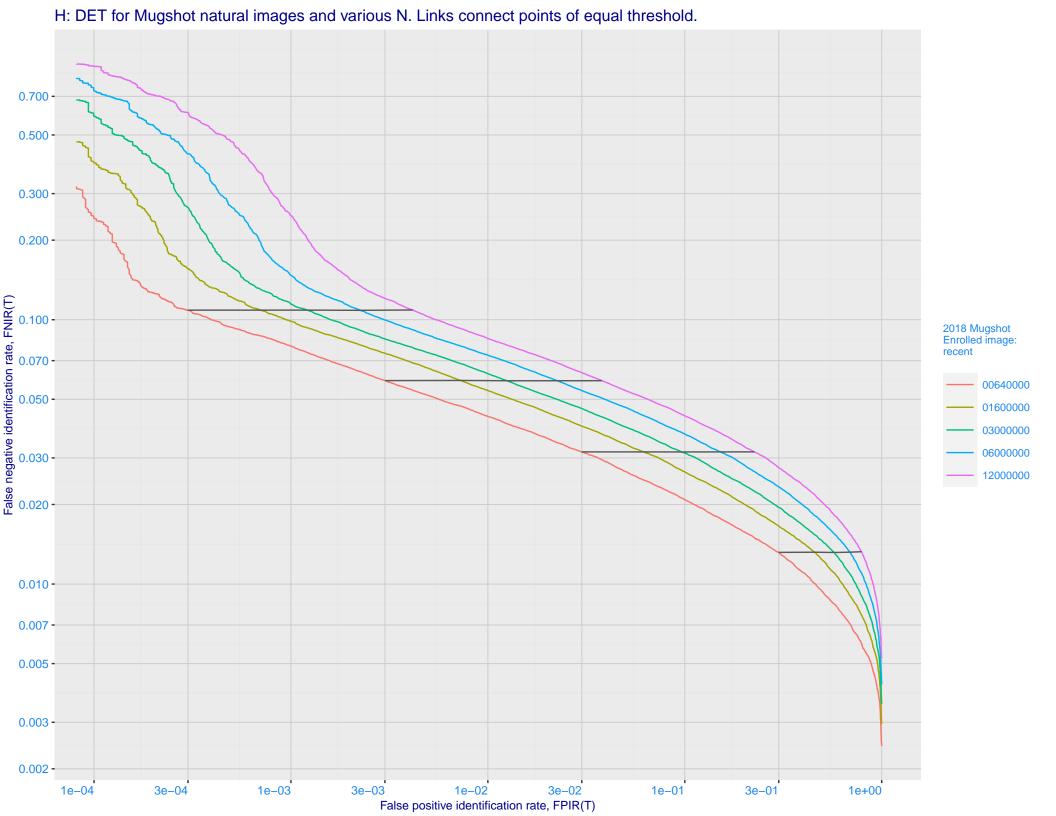
False positive identification rate, FPIR(T)

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

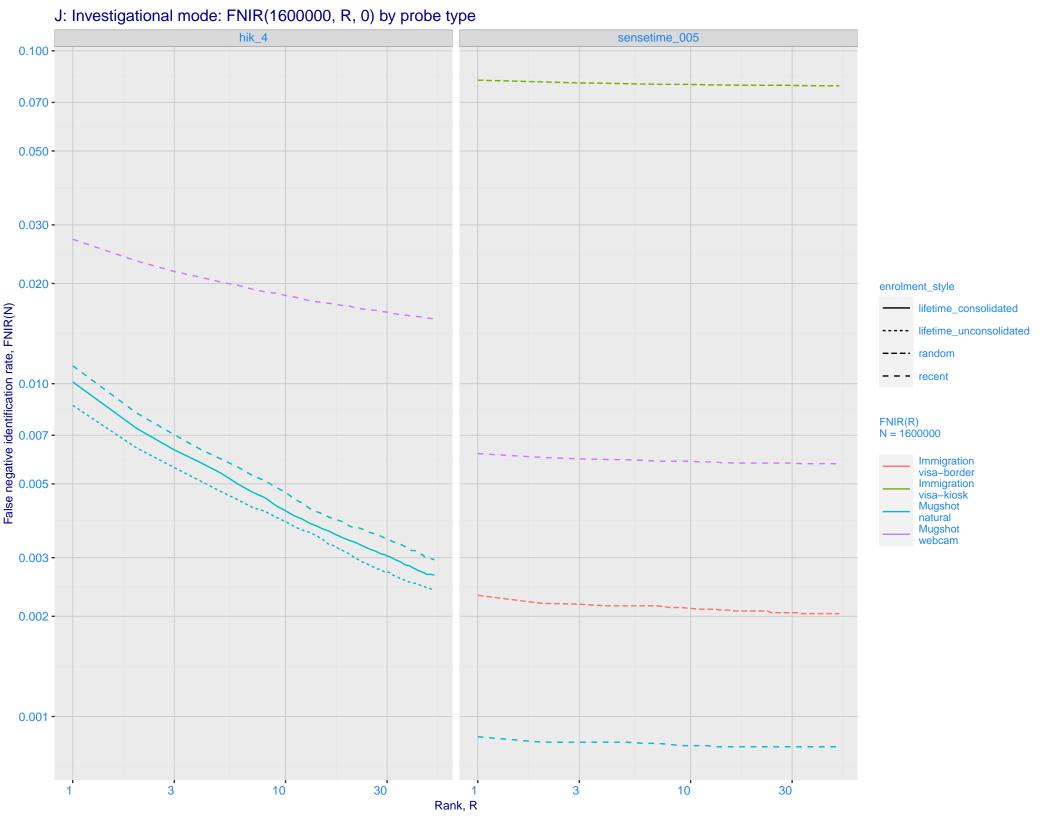


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 -5e-02 -3e-02 -3e-02 -1e-02 -**Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam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

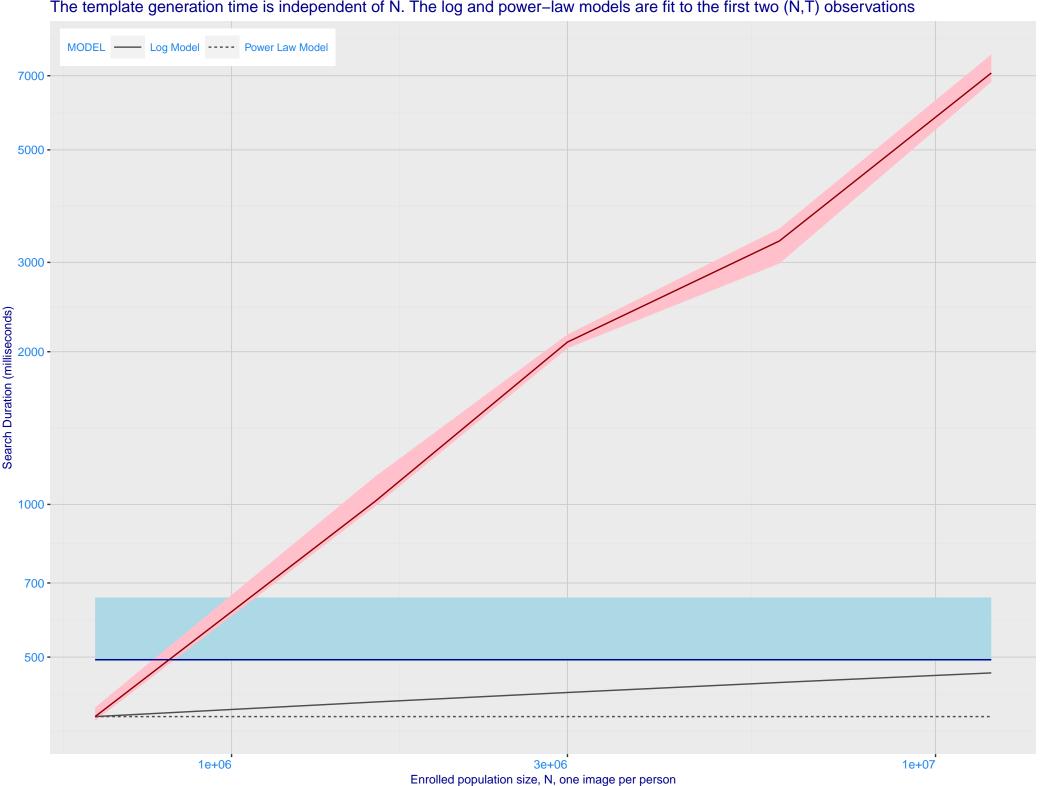




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_005) Immigration **Immigration** visa-border visa-kiosk 0.100 0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -Palse negative identification rate, FNIR(N) 0.002 - 0.001 - 0.000 - 0.050 - 0.050 - 0.030 - 0. FNIR@Rank = 1 -- hik_4 sensetime_005 Mugshot Mugshot webcam enrolment_style natural consolidated ---- random -- recent - - unconsolidated 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



