## A: Datasheet

Algorithm: hik\_2

Developer: Hikvision Research Institute

Submission Date: 2018\_02\_12

Template size: 1808 bytes

Template time (2.5 percentile): 813 msec

Template time (median): 819 msec

Template time (97.5 percentile): 854 msec

Investigation:

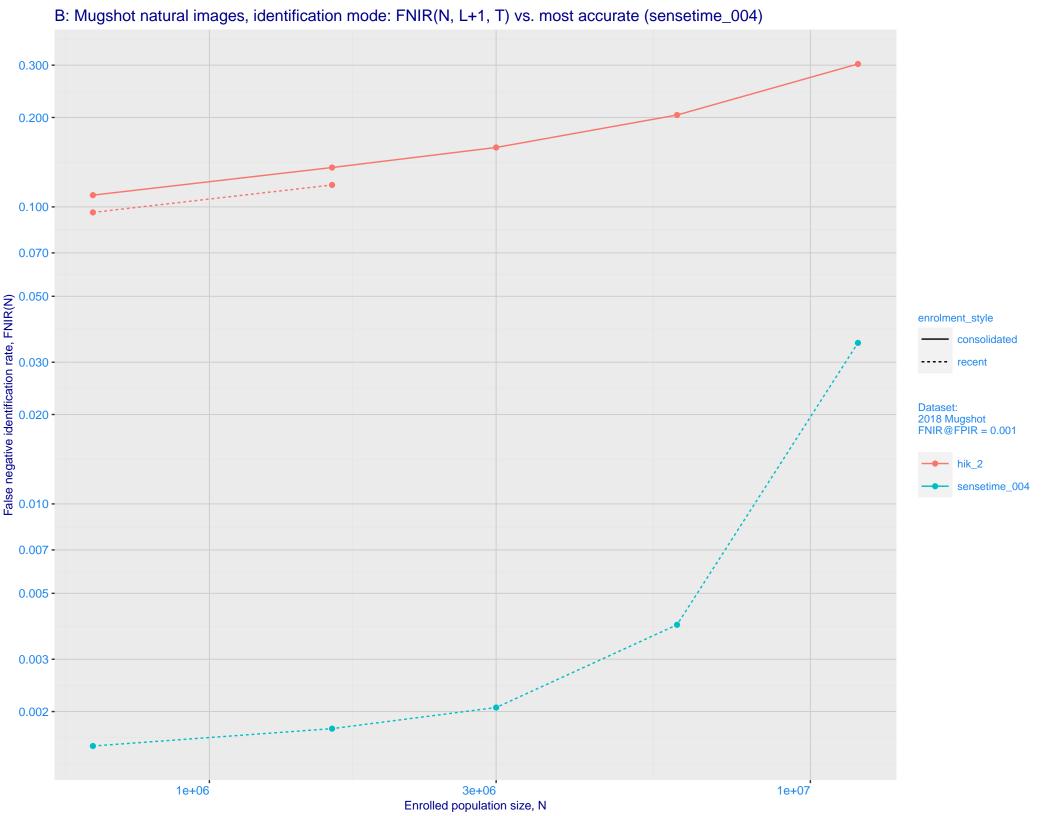
Frontal mugshot ranking 143 (out of 259) -- FNIR(1600000, 0, 1) = 0.0147 vs. lowest 0.0009 from sensetime\_005

Mugshot profile ranking 103 (out of 190) -- FNIR(1600000, 0, 1) = 0.8571 vs. lowest 0.0591 from sensetime\_005

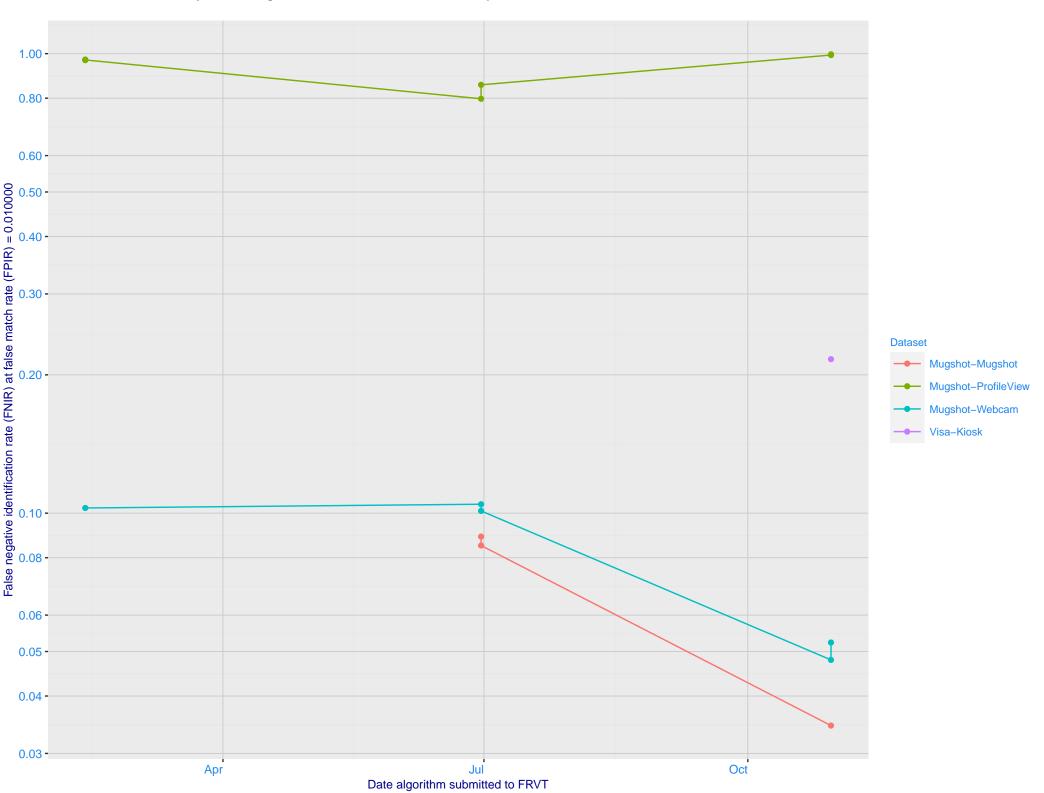
Identification:

Frontal mugshot ranking 141 (out of 259) -- FNIR(1600000, T, L+1) = 0.1185, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Mugshot profile ranking 80 (out of 189) — FNIR(1600000, T, L+1) = 0.9918, FPIR=0.001000 vs. lowest 0.1733 from sensetime\_005



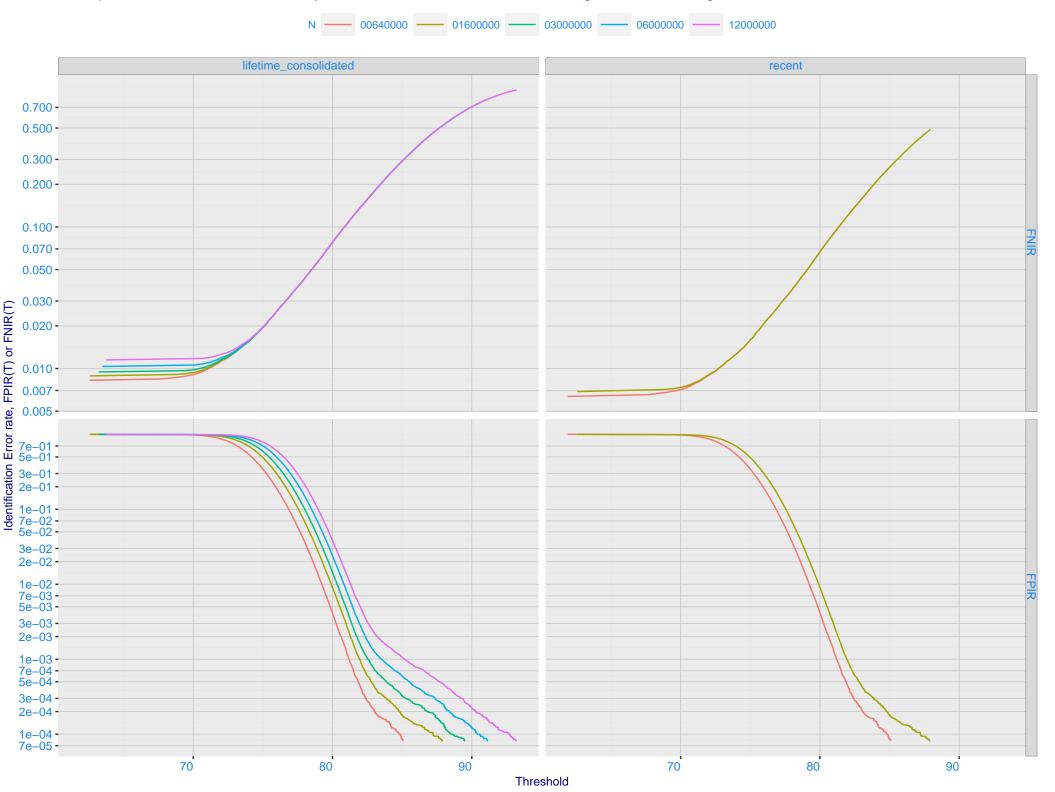
C: Evolution of accuracy for HIK algorithms on three datasets 2018 - present



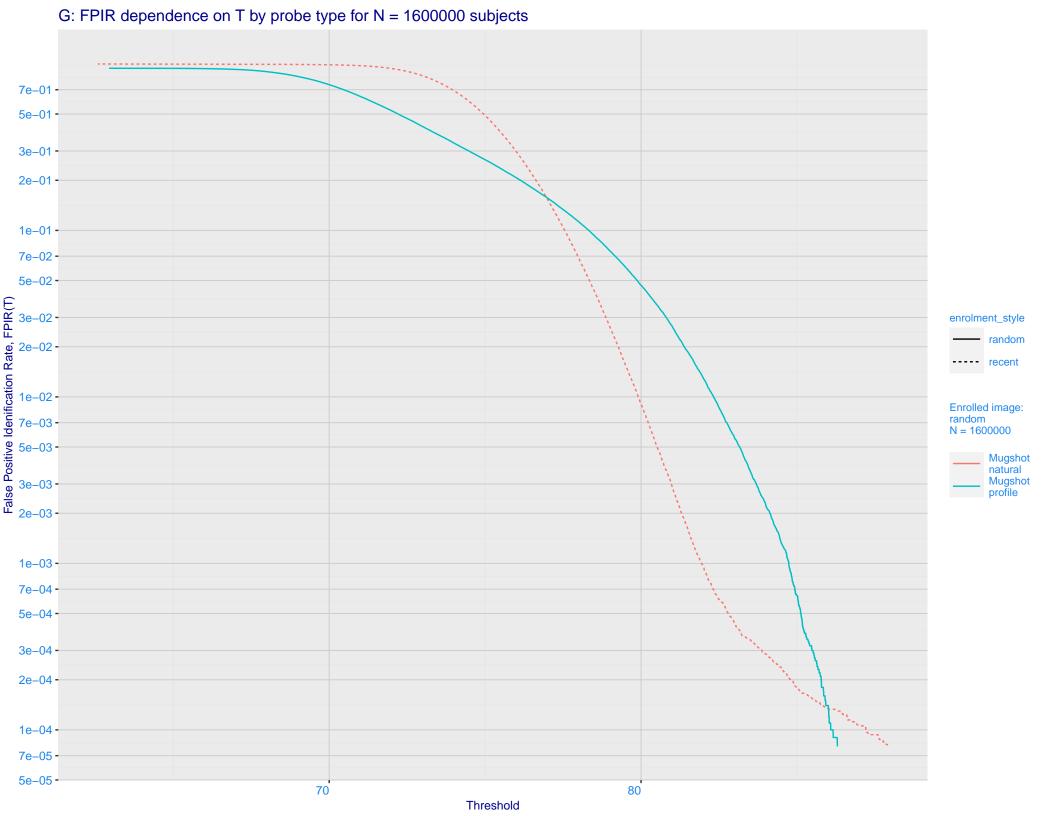
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.0001 - 0.700 - 0.500 - 0.200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

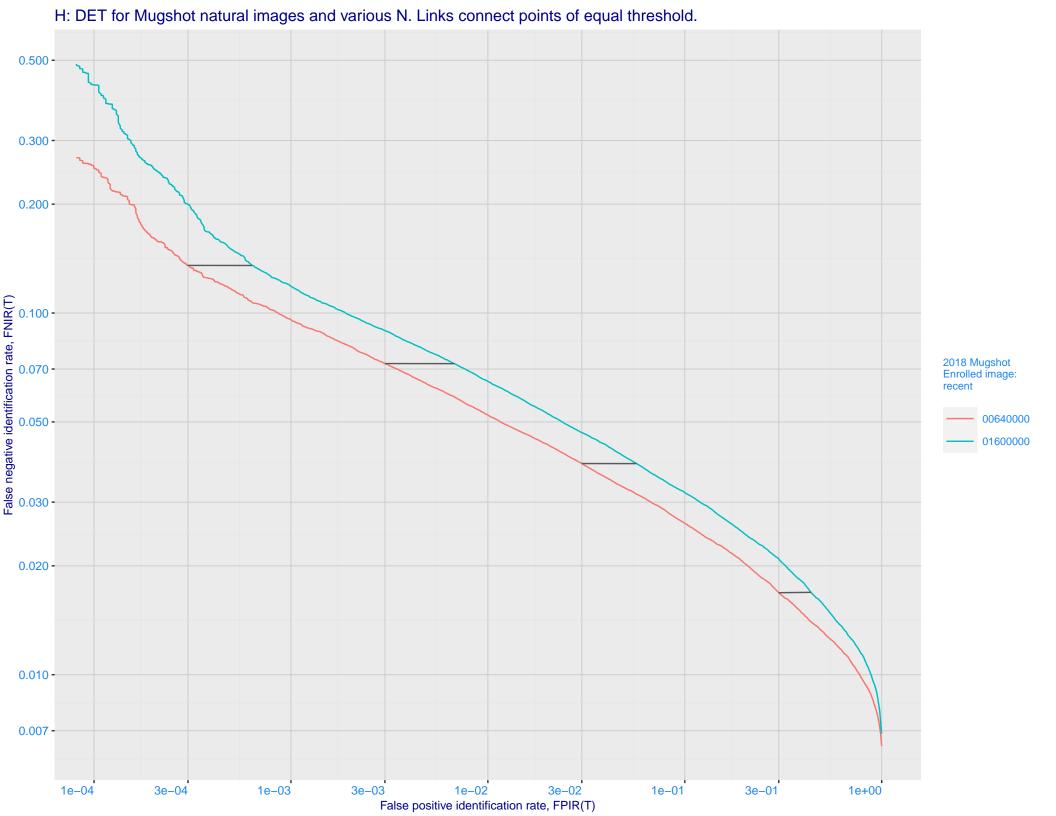
False positive identification rate, FPIR(T)

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

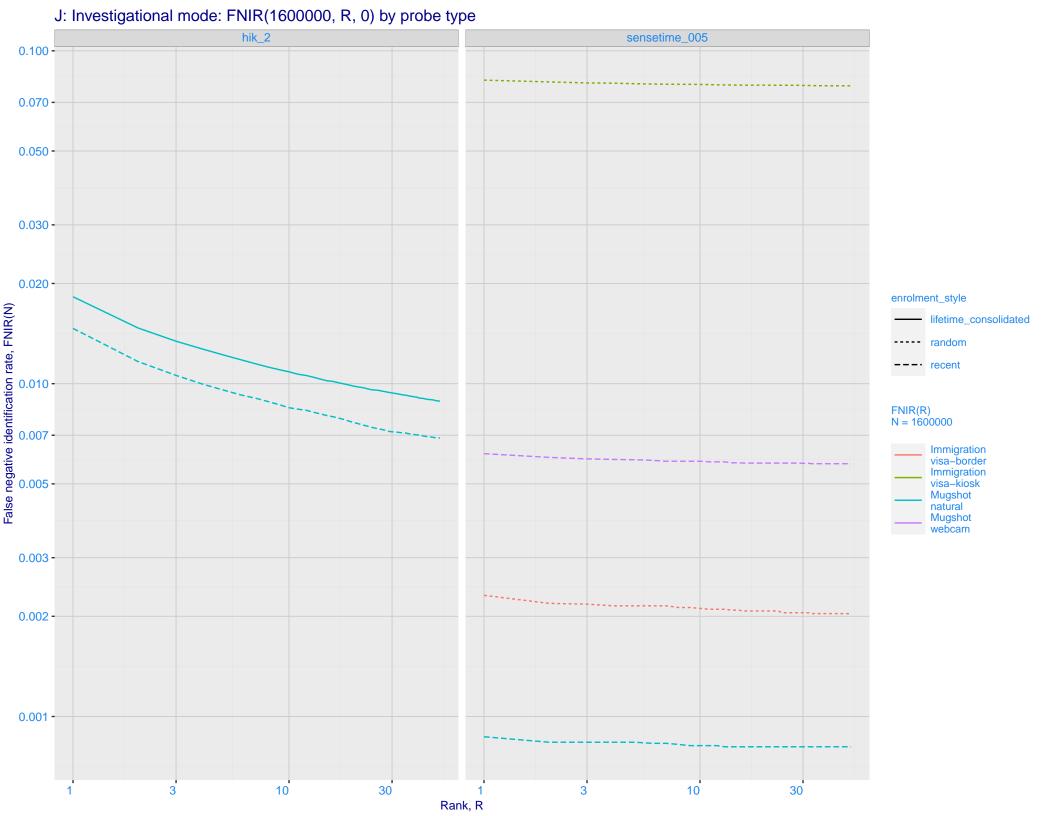


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -Selectivity, SEL(T) 1e-01 - 74, 76 - 02 - 16 Enrolled images: recent N = 1600000 Mugshot natural 2e-02 -1e-02 -7e-03 -5e-03 -3e-03 -2e-03 -1e-03 -7e-04 -5e-04 -3e-04 -2e-04 -1e-04 -7e-05 -5e-05 -1e-04 3e-04 1e-03 3e-03 1e-02 3e-02 1e-01 3e-01 False Positive Idenification Rate, FPIR(T)

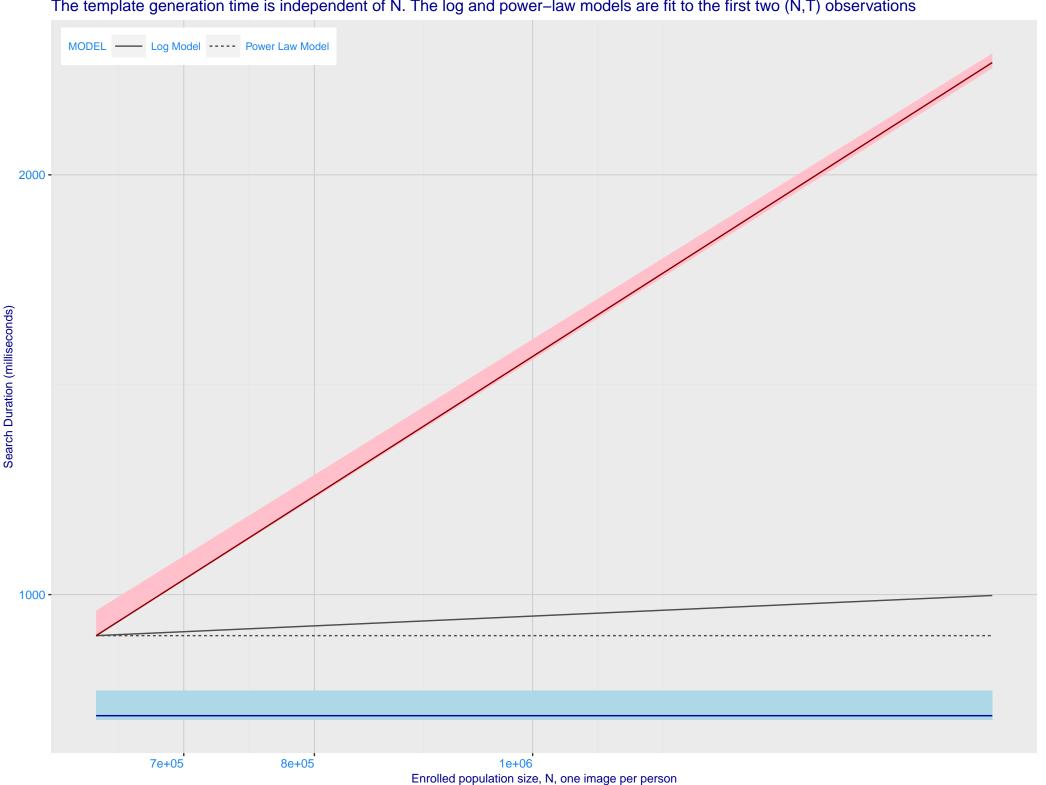




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.100 0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -Ealse negative identification rate, FNIR(N) 0.002 - 0.001 - 0.000 - 0.050 - 0.030 - 0. enrolment\_style consolidated ---- random --- recent Mugshot webcam Mugshot natural FNIR@Rank = 1 -- hik\_2 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



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



