A: Datasheet

Algorithm: anke_1

Developer: Anke Investments

Submission Date: 2018_10_30

Template size: 2072 bytes

Template time (2.5 percentile): 370 msec

Template time (median): 431 msec

Template time (97.5 percentile): 507 msec

Investigation:

Frontal mugshot ranking 147 (out of 265) -- FNIR(1600000, 0, 1) = 0.0132 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 124 (out of 227) -- FNIR(1600000, 0, 1) = 0.0378 vs. lowest 0.0062 from sensetime_005

Mugshot profile ranking 138 (out of 196) -- FNIR(1600000, 0, 1) = 0.9461 vs. lowest 0.0591 from sensetime_005

Immigration visa-border ranking 145 (out of 148) -- FNIR(1600000, 0, 1) = 1.0000 vs. lowest 0.0013 from visionlabs_010

Immigration visa-kiosk ranking 143 (out of 145) — FNIR(1600000, 0, 1) = 1.0000 vs. lowest 0.0568 from hr_000

Identification:

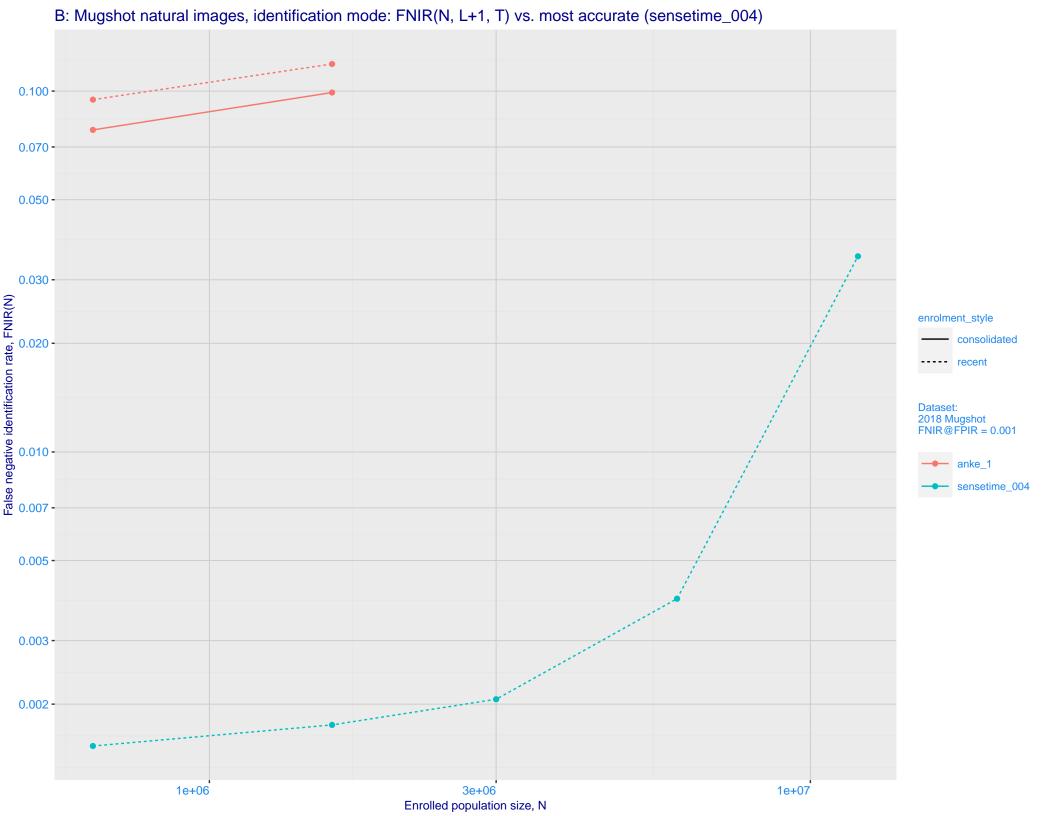
Frontal mugshot ranking 148 (out of 265) -- FNIR(1600000, T, L+1) = 0.1189, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

Mugshot webcam ranking 132 (out of 225) -- FNIR(1600000, T, L+1) = 0.2195, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

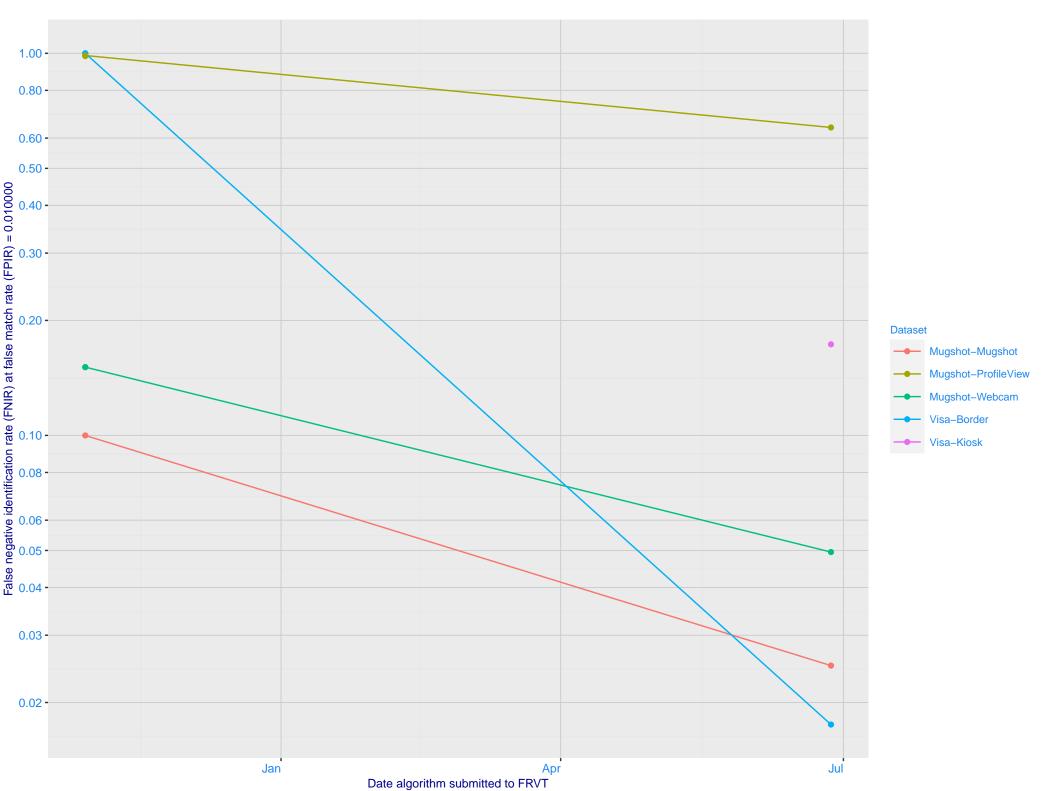
Mugshot profile ranking 94 (out of 195) -- FNIR(1600000, T, L+1) = 0.9943, FPIR=0.001000 vs. lowest 0.1331 from hr_000

Immigration visa-border ranking 141 (out of 146) -- FNIR(1600000, T, L+1) = 1.0000, FPIR=0.001000 vs. lowest 0.0049 from hr_000

Immigration visa-kiosk ranking 136 (out of 141) -- FNIR(1600000, T, L+1) = 1.0000, FPIR=0.001000 vs. lowest 0.0996 from hr_000



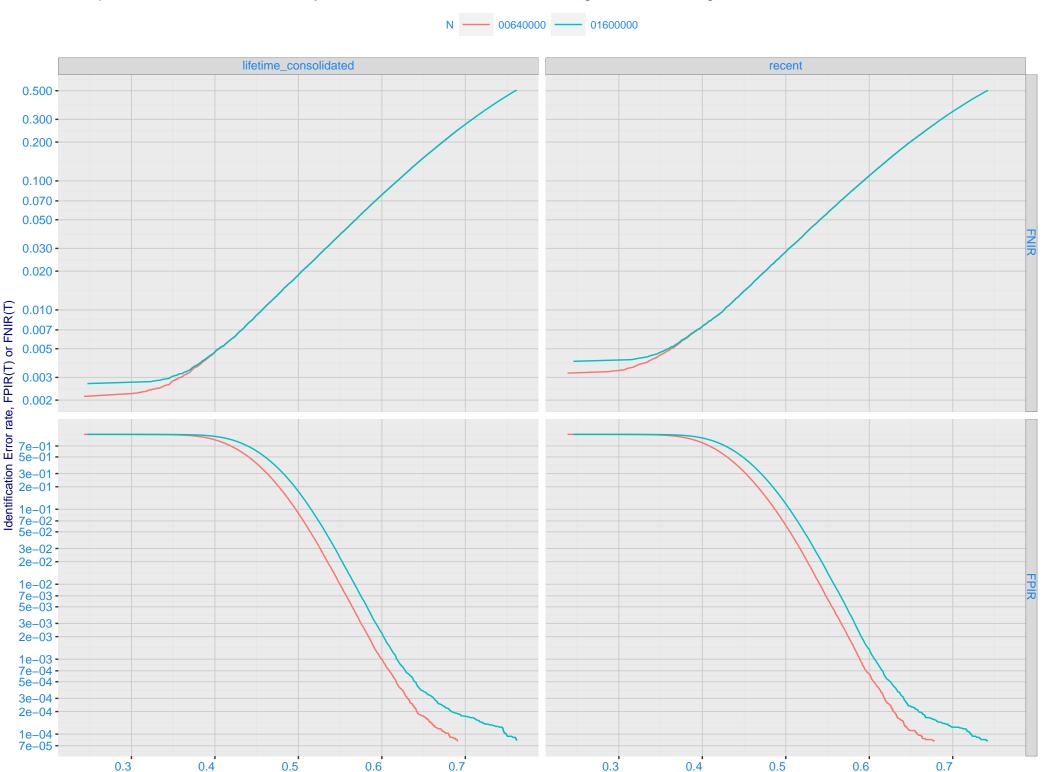
C: Evolution of accuracy for ANKE algorithms on three datasets 2018 – present



D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration** Mugshot **Immigration** 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 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 -

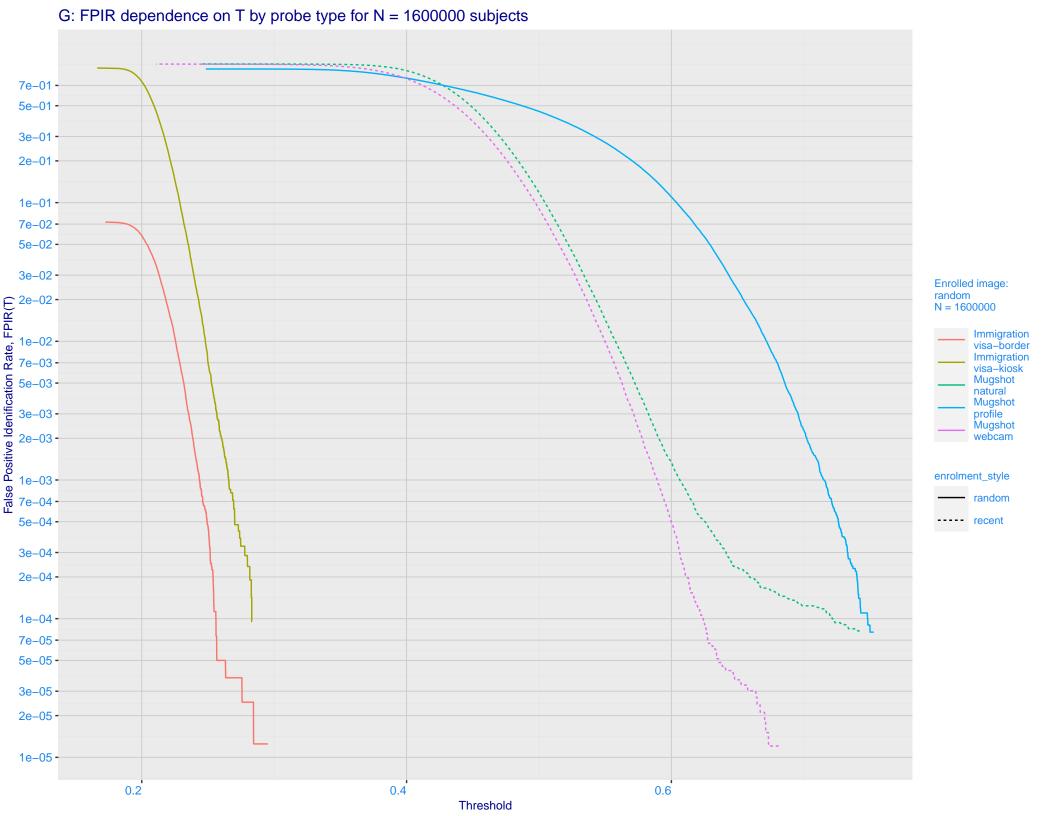
False positive identification rate, FPIR(T)

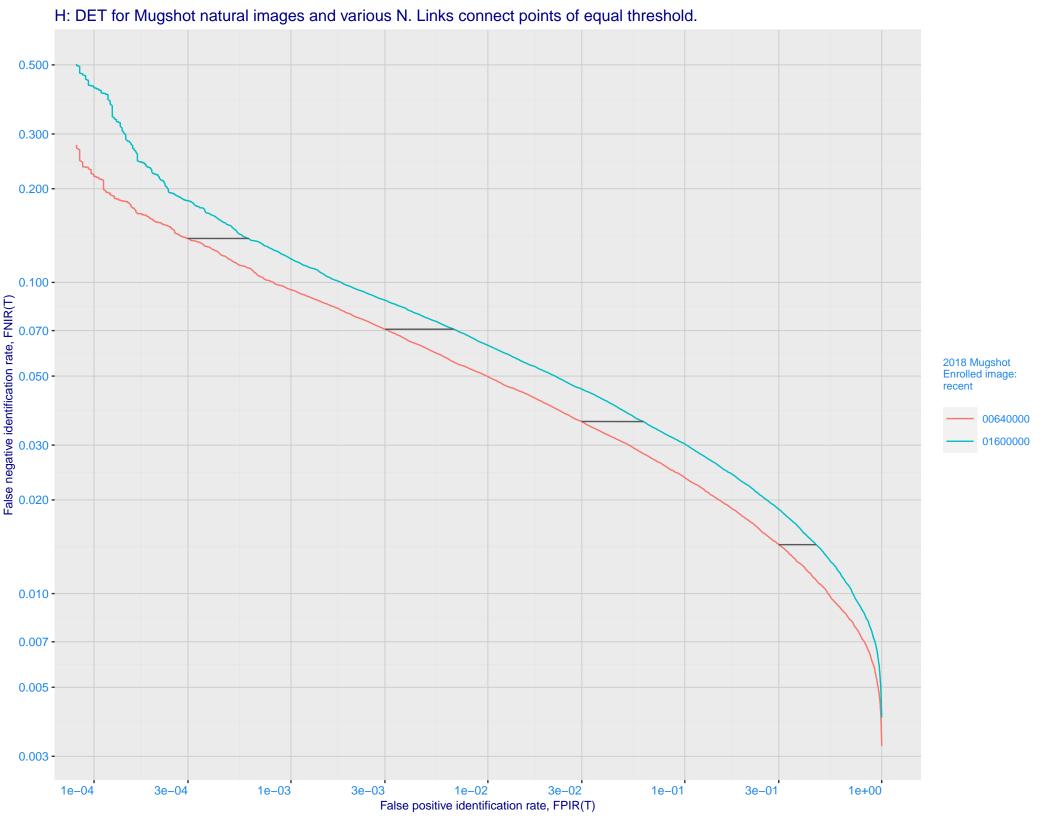
E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images



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)

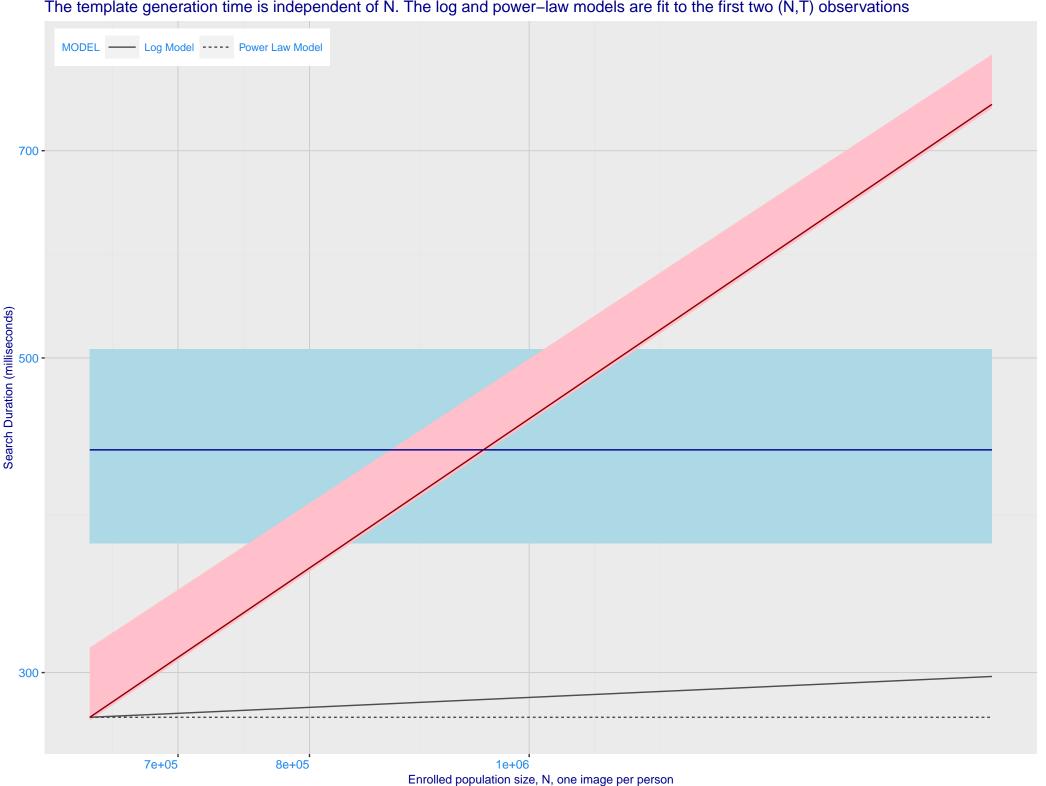




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_005) Immigration **Immigration** visa-border visa-kiosk 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 - 0.003 - 0.002 - 0.001 - 0.001 - 0.000 - 0.300 - 0.200 enrolment_style consolidated ---- random --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 anke_1 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 anke_1 sensetime_005 0.700 -0.500 -0.300 -0.200 -0.100 - 0.070 - 0.050 - 0.030 - 0.020 - 0.010 enrolment_style lifetime_consolidated ---- random --- recent FNIR(R) N = 1600000 Immigration visa-border Immigration visa-kiosk Mugshot natural Mugshot webcam 0.007 -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



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



