## A: Datasheet

Algorithm: anke\_0

Developer: Anke Investments

Submission Date: 2018\_10\_30

Template size: 2072 bytes

Template time (2.5 percentile): 367 msec

Template time (median): 430 msec

Template time (97.5 percentile): 508 msec

Investigation:

Frontal mugshot ranking 140 (out of 259) -- FNIR(1600000, 0, 1) = 0.0132 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 118 (out of 221) -- FNIR(1600000, 0, 1) = 0.0378 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 119 (out of 190) — FNIR(1600000, 0, 1) = 0.9309 vs. lowest 0.0591 from sensetime\_005

Immigration visa-border ranking 139 (out of 142) -- FNIR(1600000, 0, 1) = 1.0000 vs. lowest 0.0014 from visionlabs\_009

Immigration visa-kiosk ranking 137 (out of 139) -- FNIR(1600000, 0, 1) = 1.0000 vs. lowest 0.0694 from cib\_000

Identification:

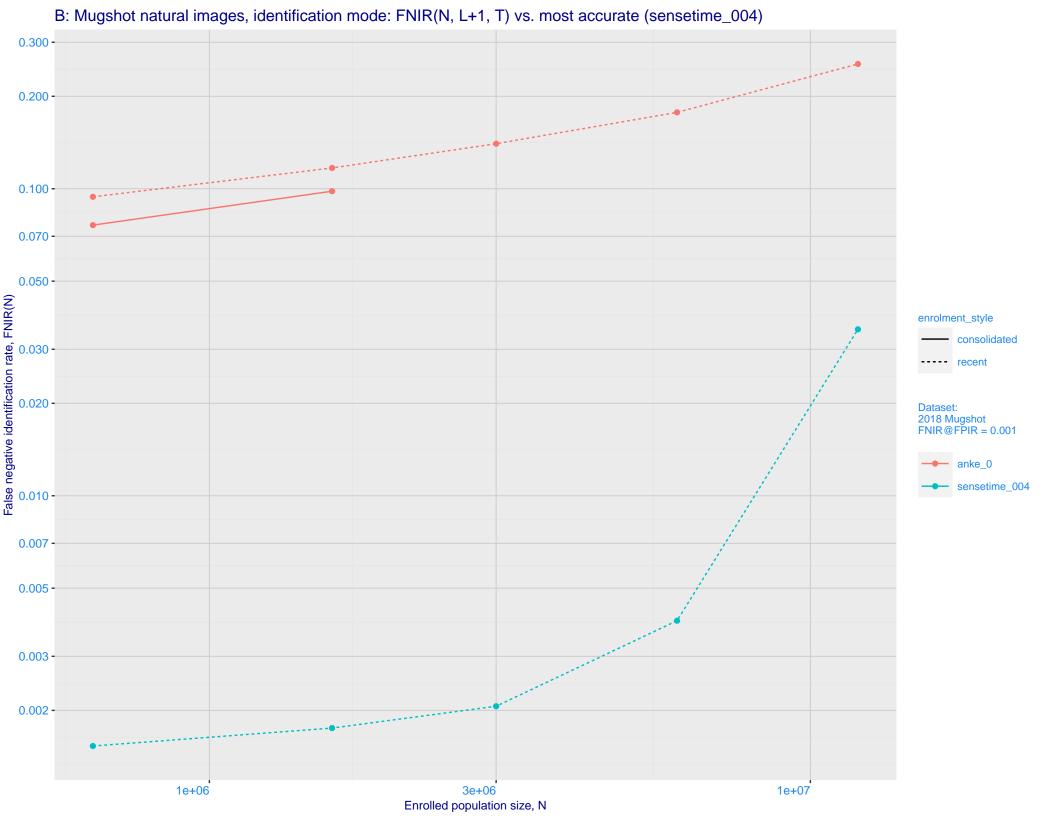
Frontal mugshot ranking 136 (out of 259) -- FNIR(1600000, T, L+1) = 0.1169, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Mugshot webcam ranking 126 (out of 219) -- FNIR(1600000, T, L+1) = 0.2195, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

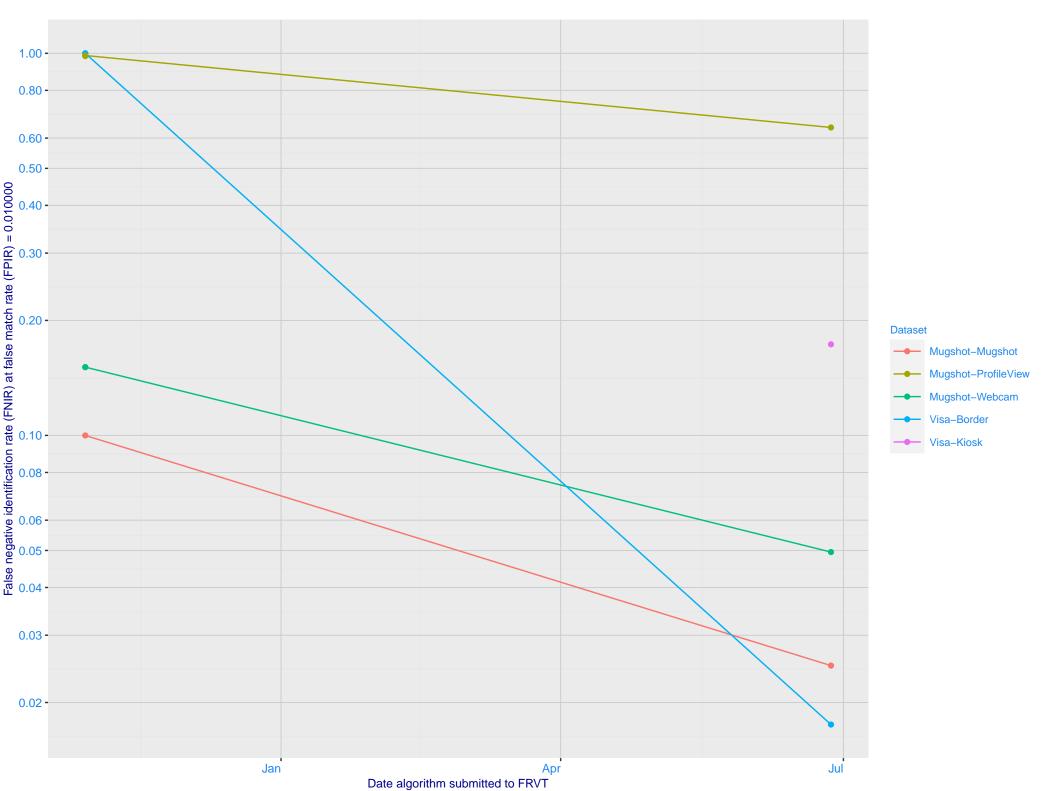
Mugshot profile ranking 86 (out of 189) -- FNIR(1600000, T, L+1) = 0.9937, FPIR=0.001000 vs. lowest 0.1733 from sensetime\_005

Immigration visa-border ranking 134 (out of 139) -- FNIR(1600000, T, L+1) = 1.0000, FPIR=0.001000 vs. lowest 0.0059 from sensetime\_004

Immigration visa-kiosk ranking 130 (out of 134) -- FNIR(1600000, T, L+1) = 1.0000, FPIR=0.001000 vs. lowest 0.1048 from sensetime\_005



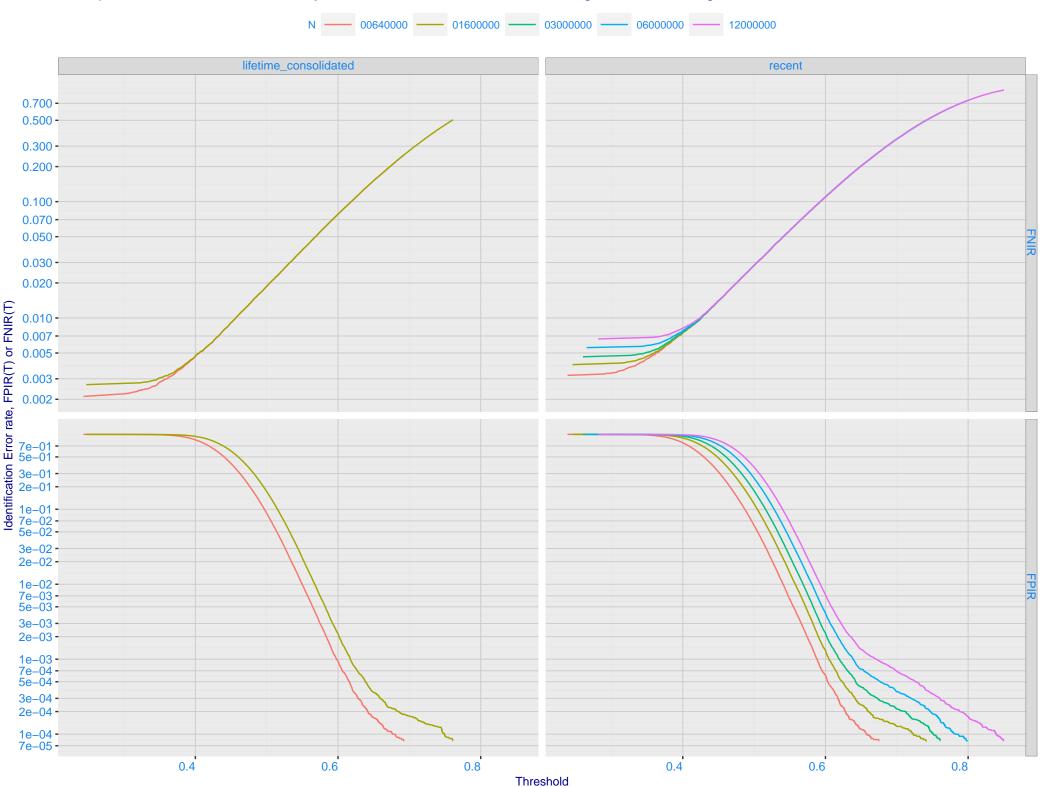
C: Evolution of accuracy for ANKE algorithms on three datasets 2018 – present



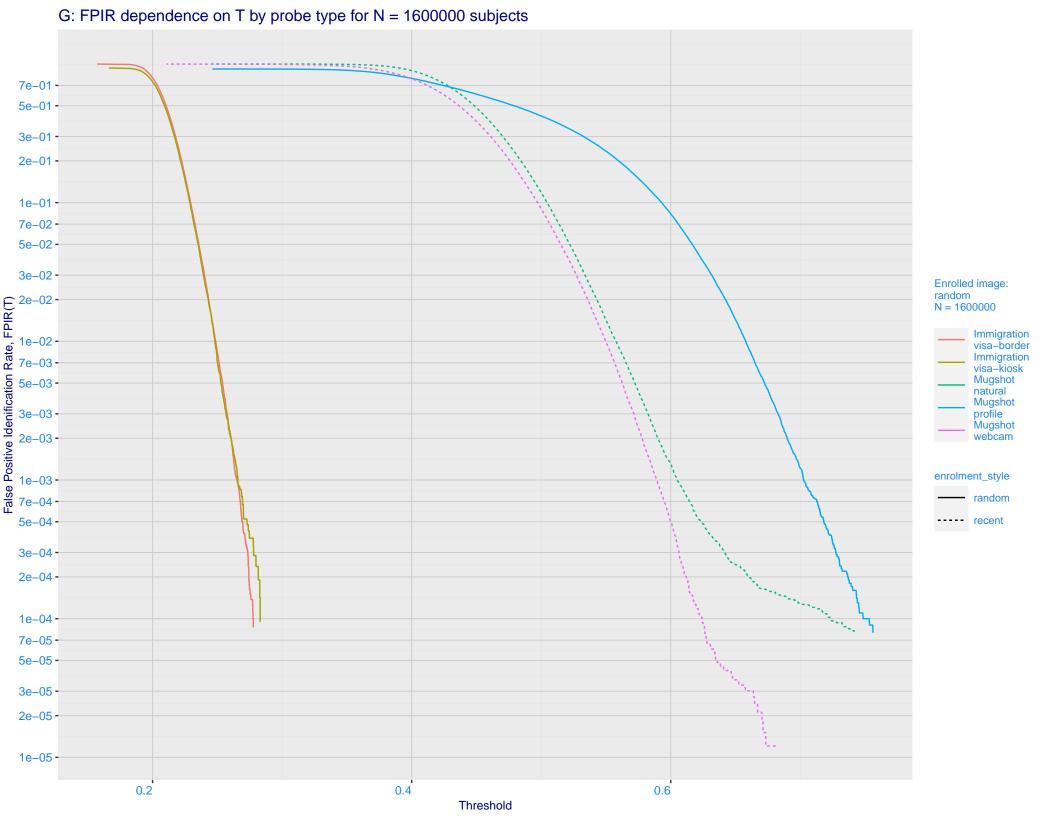
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration** Mugshot **Immigration** visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 - 0.005 - 0.005 - 0.002 - 0.001 - 0.001 - 0.700 - 0.500 - 0.200 enrolment\_style 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 -

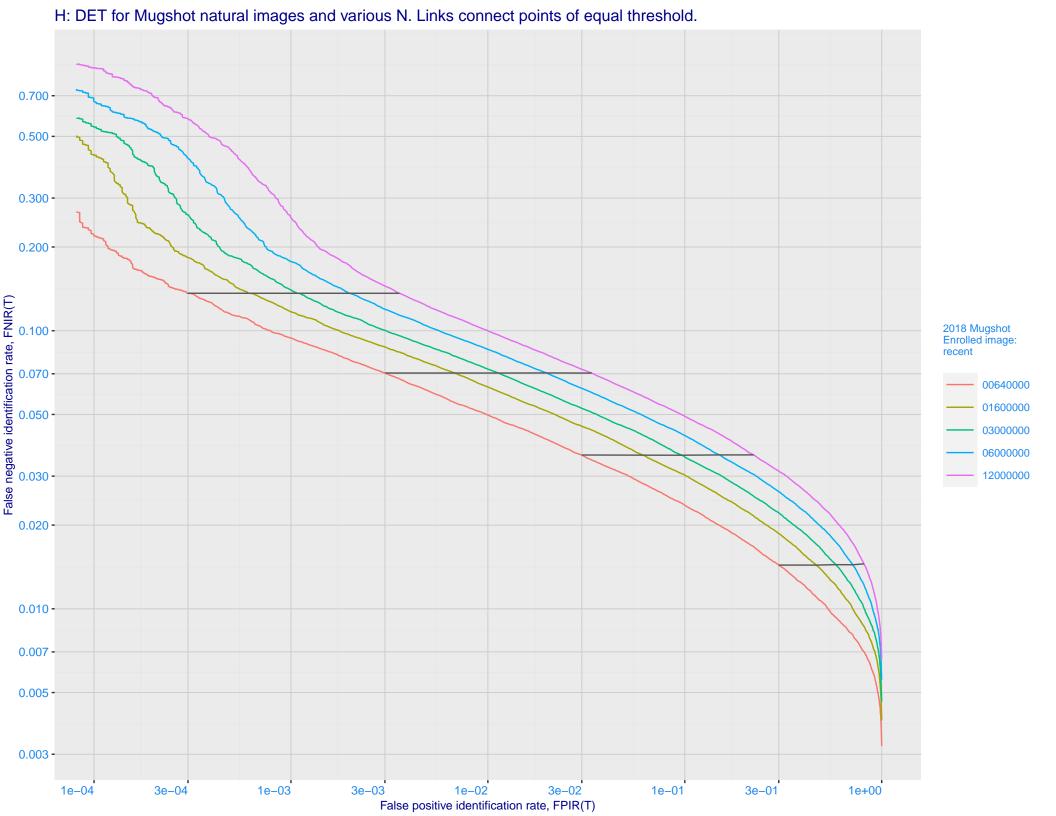
False positive identification rate, FPIR(T)

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



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)

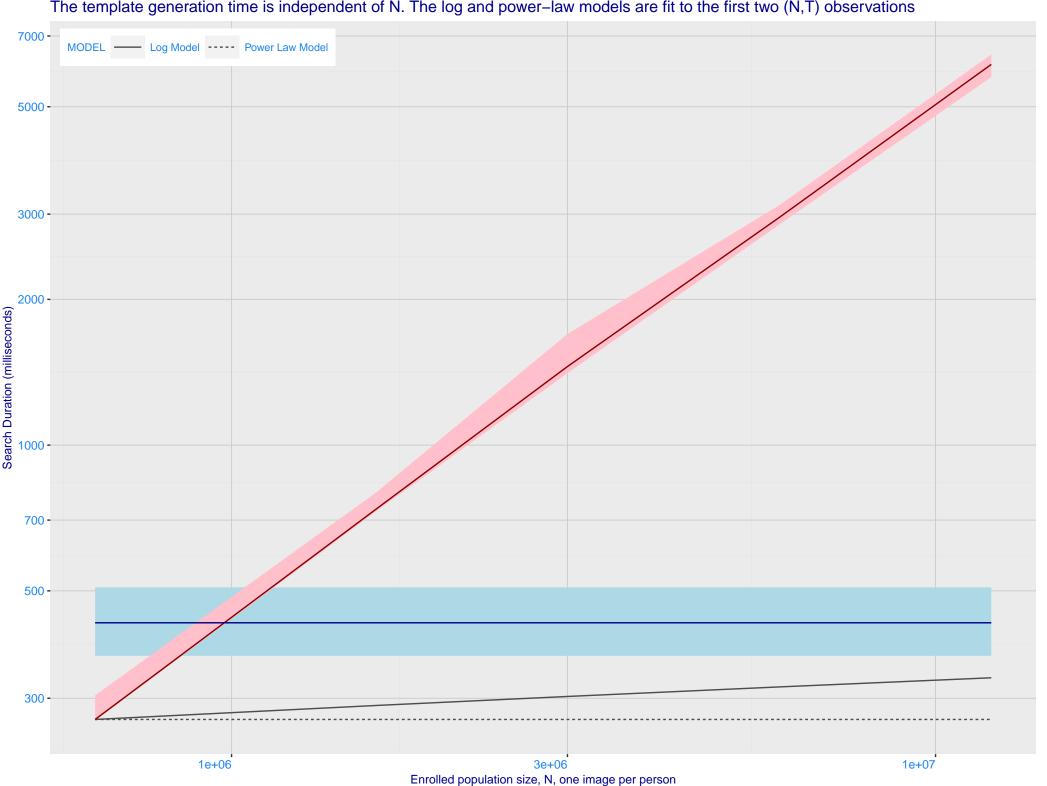




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 - 0.003 - 0.002 - 0.001 - 0.001 - 0.000 - 0.300 - 0.200 enrolment\_style consolidated ---- random --- recent Mugshot webcam Mugshot natural FNIR@Rank = 1 anke\_0 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\_0 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



