## A: Datasheet

Algorithm: kedacom\_001

Developer: Kedacom International Pte

Submission Date: 2019\_09\_16

Template size: 292 bytes

Template time (2.5 percentile): 504 msec

Template time (median): 507 msec

Template time (97.5 percentile): 808 msec

Investigation:

Frontal mugshot ranking 107 (out of 265) -- FNIR(1600000, 0, 1) = 0.0077 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 120 (out of 227) -- FNIR(1600000, 0, 1) = 0.0356 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 171 (out of 196) -- FNIR(1600000, 0, 1) = 0.9722 vs. lowest 0.0591 from sensetime\_005

Immigration visa-border ranking 86 (out of 148) -- FNIR(1600000, 0, 1) = 0.0342 vs. lowest 0.0013 from visionlabs\_010

Immigration visa-kiosk ranking 86 (out of 145) -- FNIR(1600000, 0, 1) = 0.2366 vs. lowest 0.0568 from hr\_000

Identification:

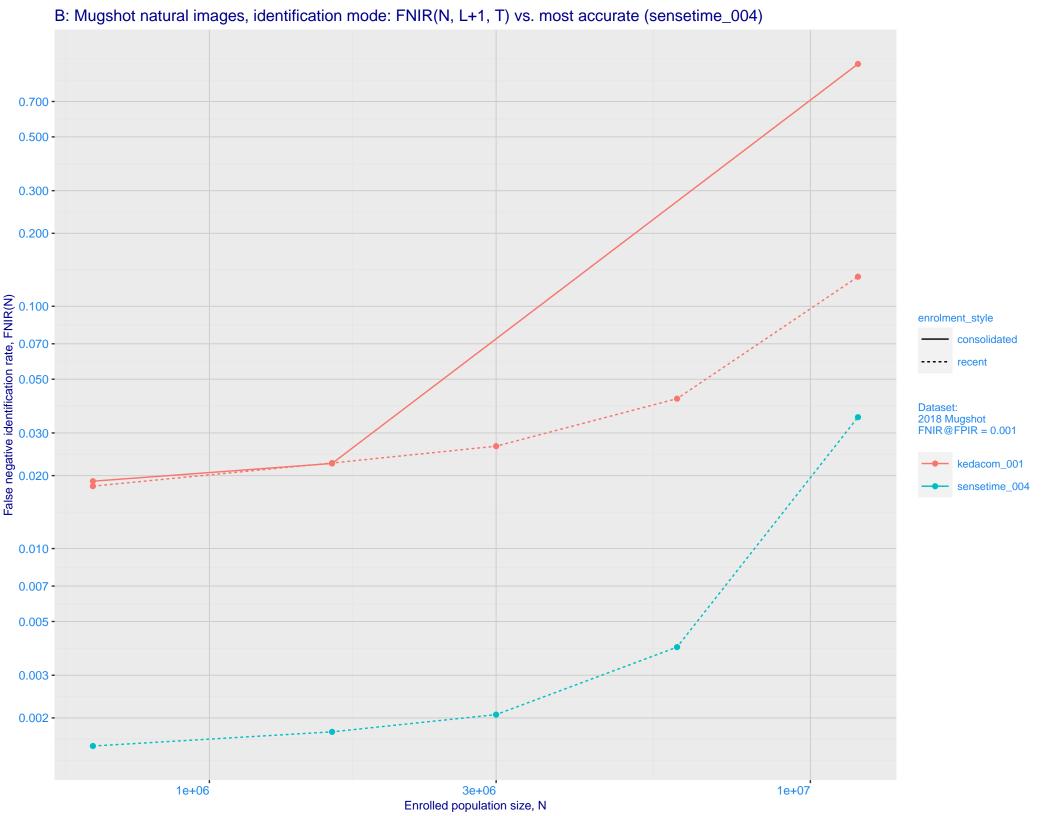
Frontal mugshot ranking 41 (out of 265) -- FNIR(1600000, T, L+1) = 0.0225, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Mugshot webcam ranking 41 (out of 225) -- FNIR(1600000, T, L+1) = 0.0722, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

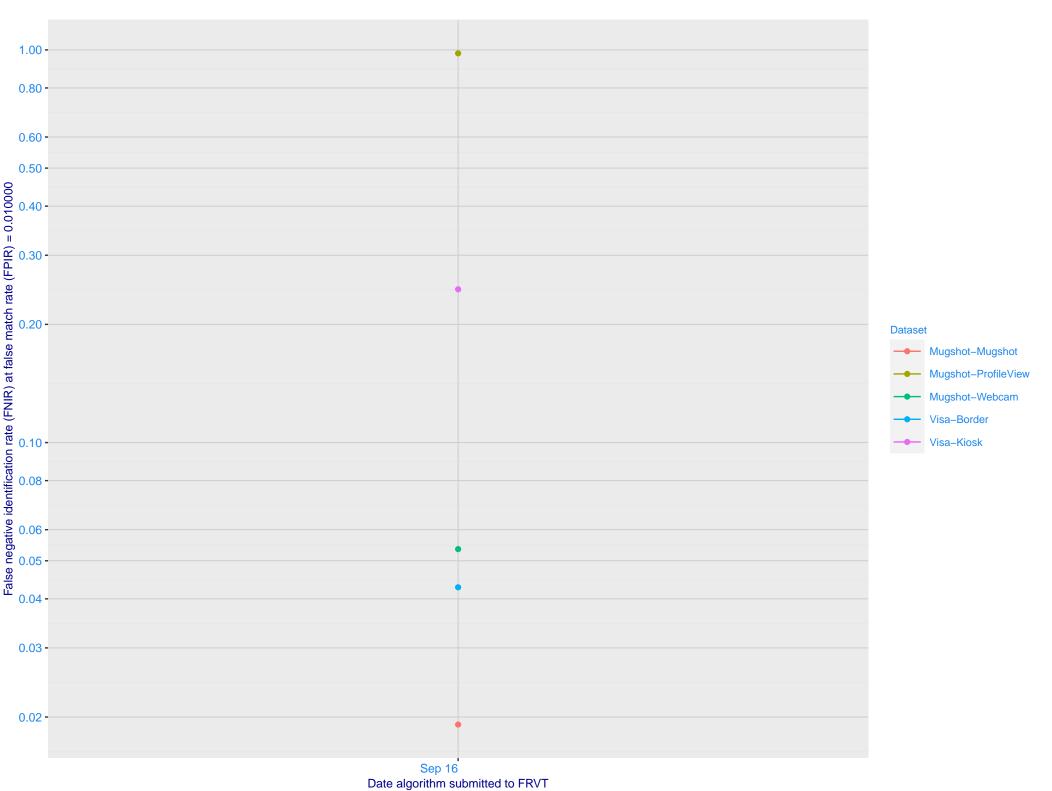
Mugshot profile ranking 72 (out of 195) -- FNIR(1600000, T, L+1) = 0.9860, FPIR=0.001000 vs. lowest 0.1331 from hr\_000

Immigration visa-border ranking 46 (out of 146) -- FNIR(1600000, T, L+1) = 0.0552, FPIR=0.001000 vs. lowest 0.0049 from hr\_000

Immigration visa-kiosk ranking 40 (out of 141) — FNIR(1600000, T, L+1) = 0.3062, FPIR=0.001000 vs. lowest 0.0996 from hr\_000



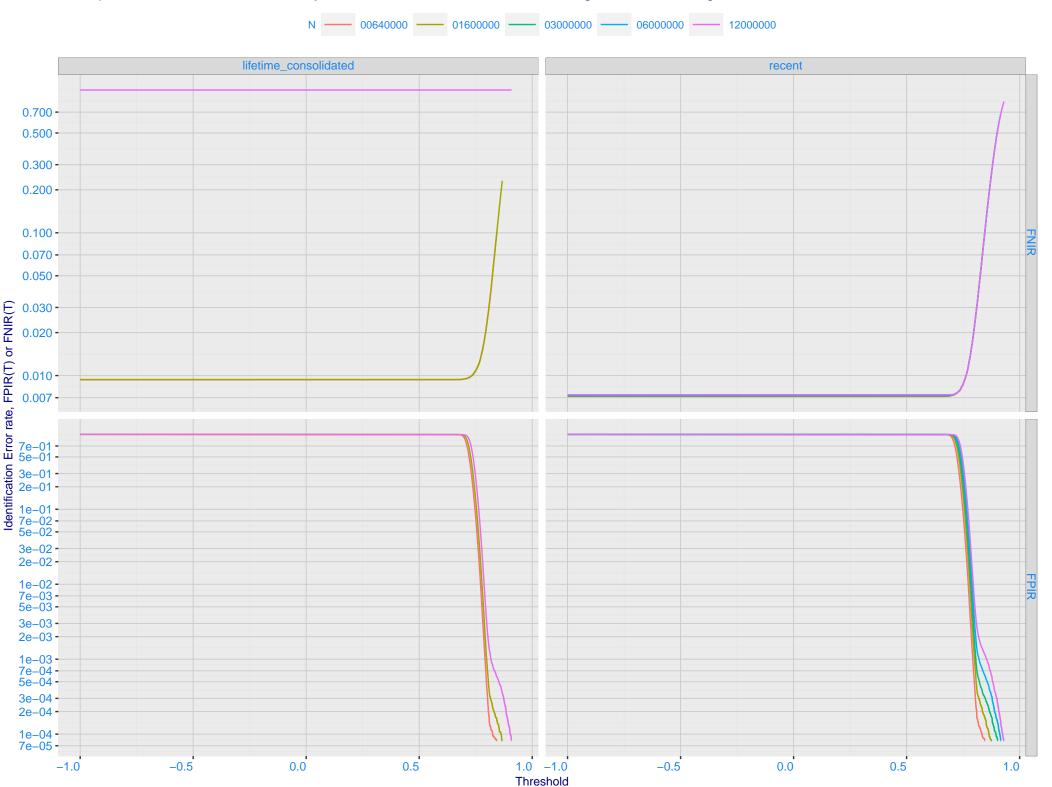
## C: Evolution of accuracy for KEDACOM algorithms on three datasets 2018 – present



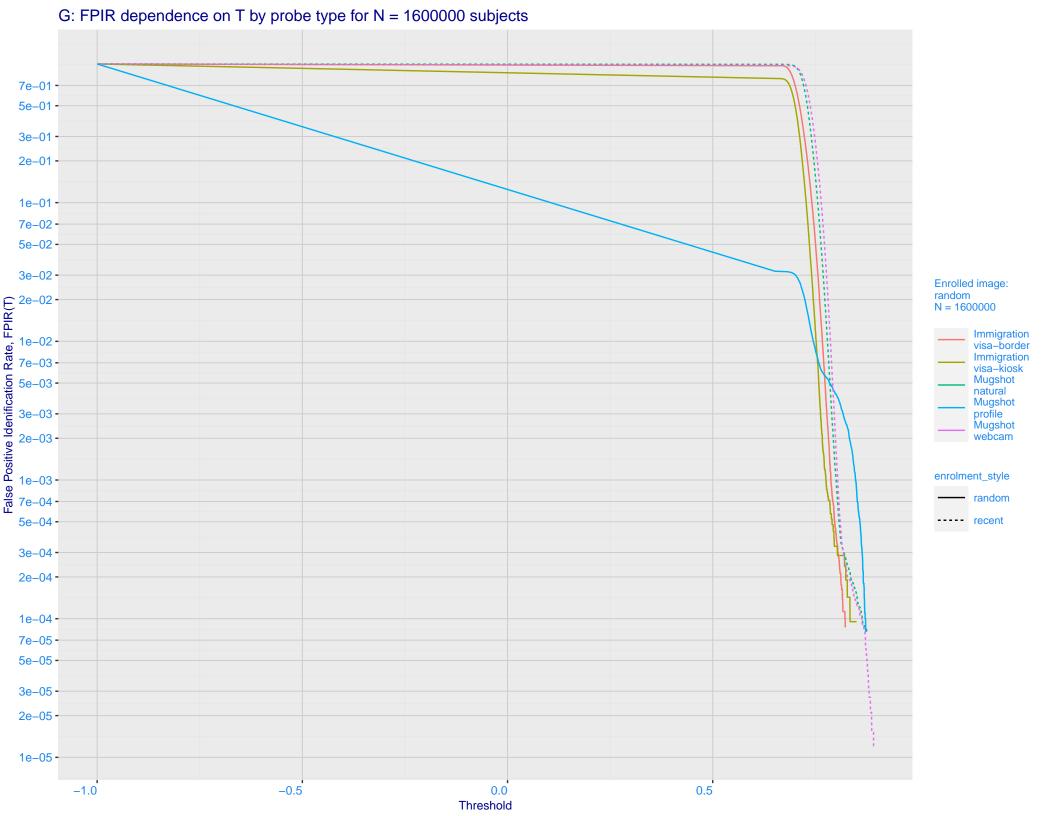
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration Immigration** Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.0001 - 0.700 - 0.500 - 0.200 - 0.100 - 0 enrolment\_style consolidated-ONE-MATE random-ONE-MATE recent-ONE-MATE unconsolidated-ALL-MATES unconsolidated-ANY-MATE 0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -0.002 -0.001 -

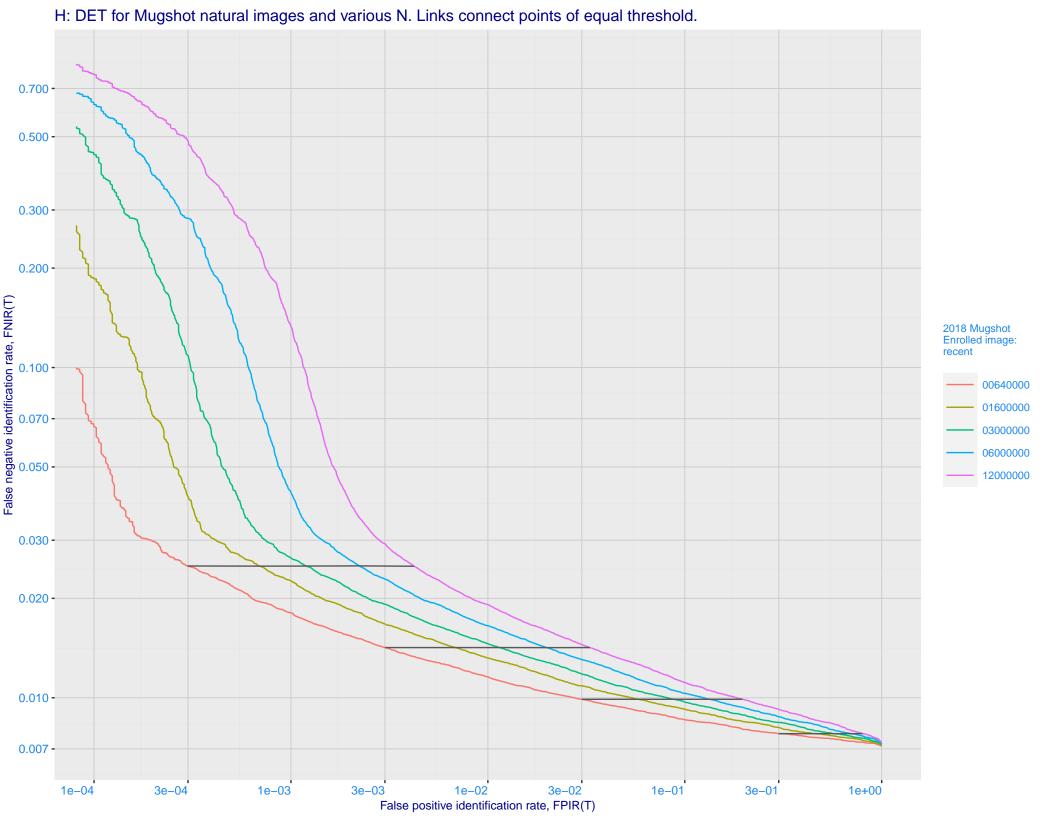
False positive identification rate, FPIR(T)

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

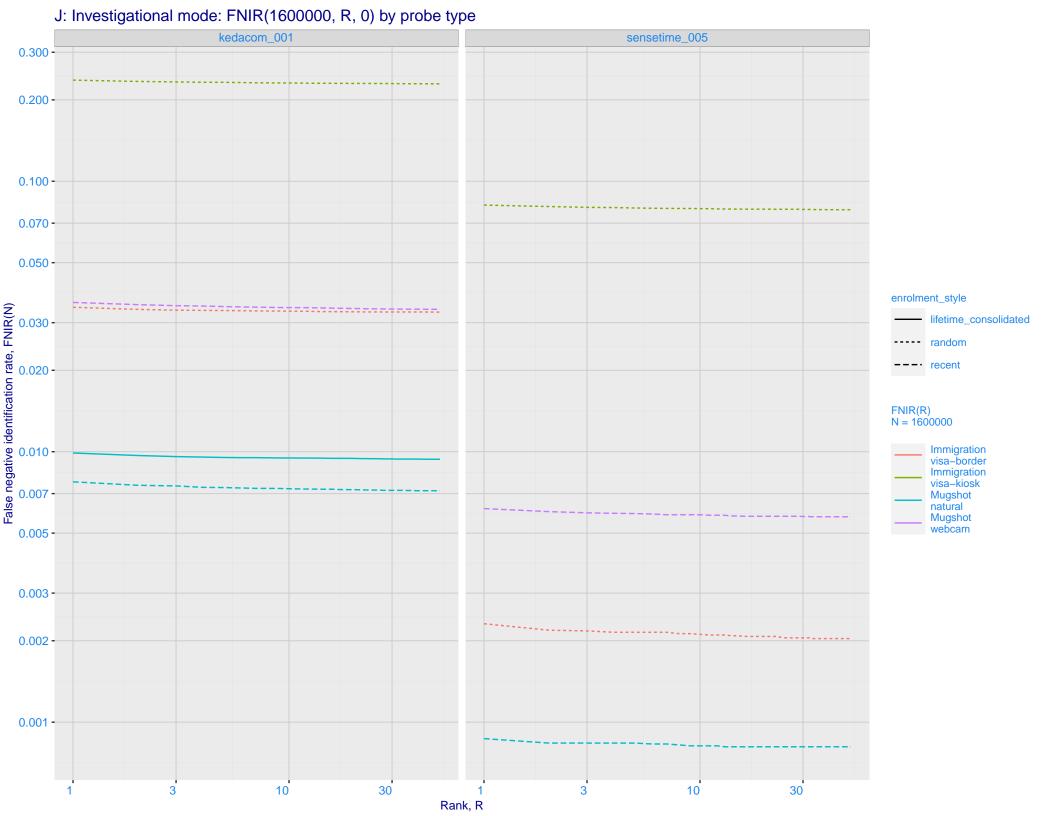


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 -5e-02 -3e-02 -3e-02 -1e-02 -**Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam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

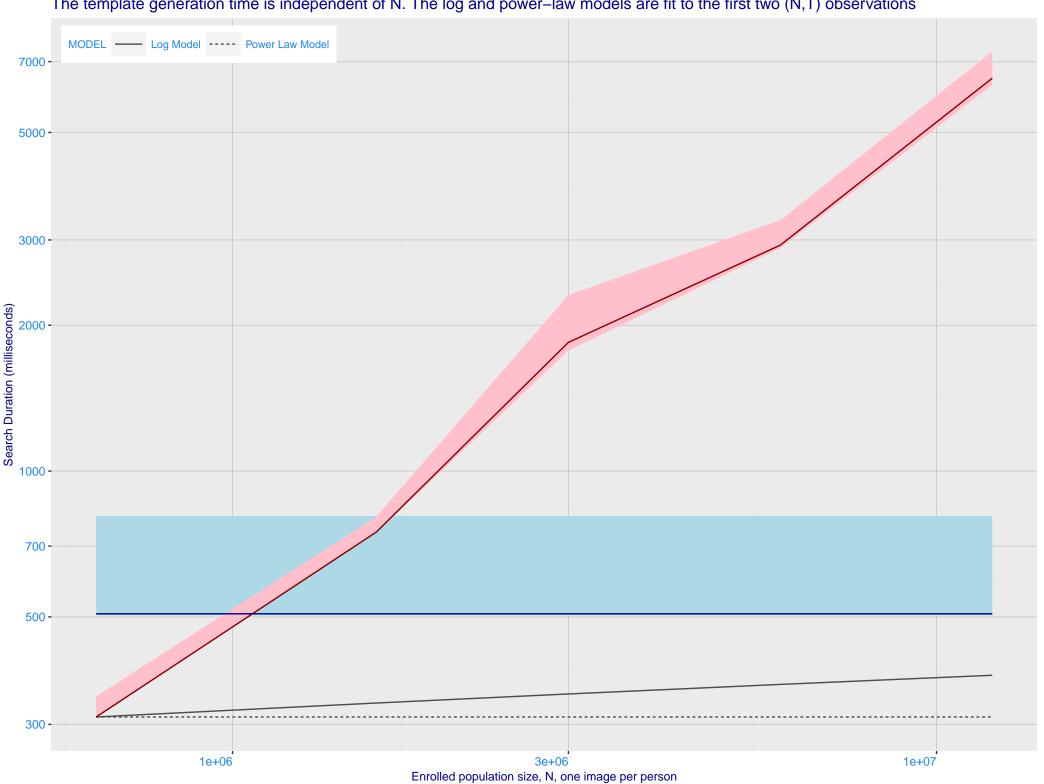




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.700 -0.500 -0.300 -• 0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 - 0.003 - 0.002 - 0.001 - 0.001 - 0.000 - 0.300 - 0.200 enrolment\_style consolidated ---- random --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 kedacom\_001 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



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



