## A: Datasheet

Algorithm: imagus\_3

Developer: Imagus Technology Pty Ltd

Submission Date: 2018\_06\_21

Template size: 512 bytes

Template time (2.5 percentile): 44 msec

Template time (median): 50 msec

Template time (97.5 percentile): 64 msec

Investigation:

Frontal mugshot ranking 253 (out of 265) -- FNIR(1600000, 0, 1) = 0.3559 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 213 (out of 227) -- FNIR(1600000, 0, 1) = 0.5133 vs. lowest 0.0062 from sensetime\_005

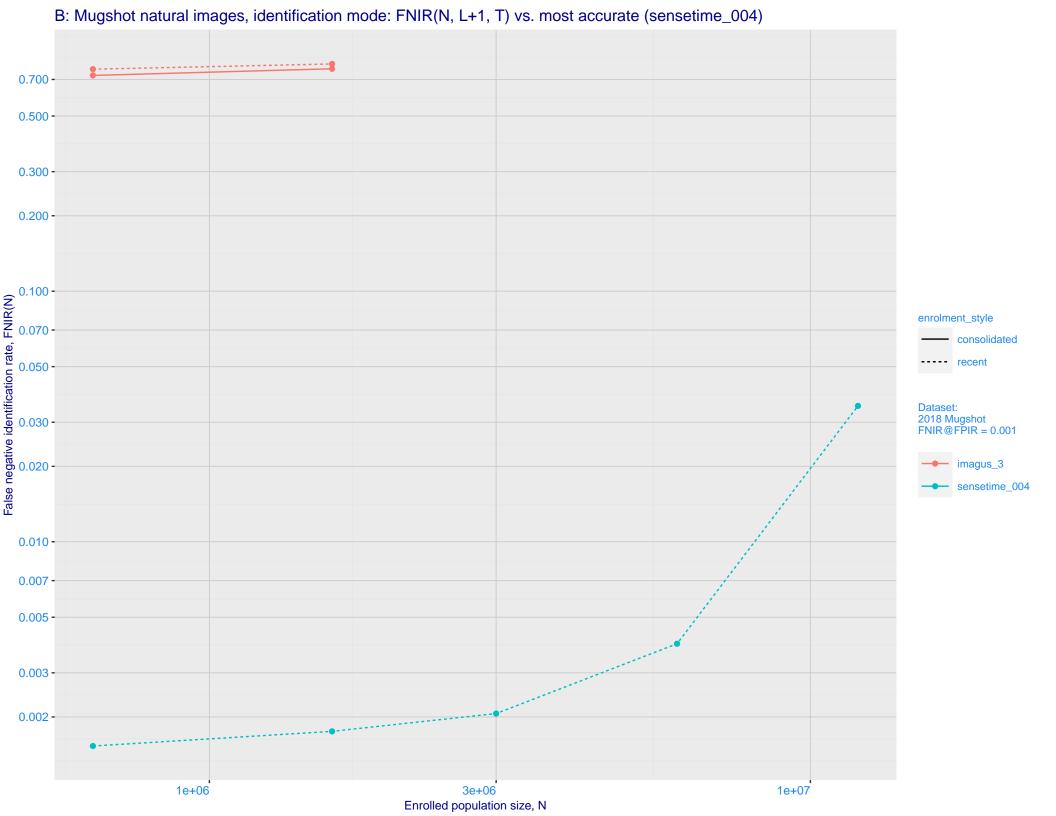
Mugshot profile ranking 190 (out of 196) -- FNIR(1600000, 0, 1) = 0.9929 vs. lowest 0.0591 from sensetime\_005

Identification:

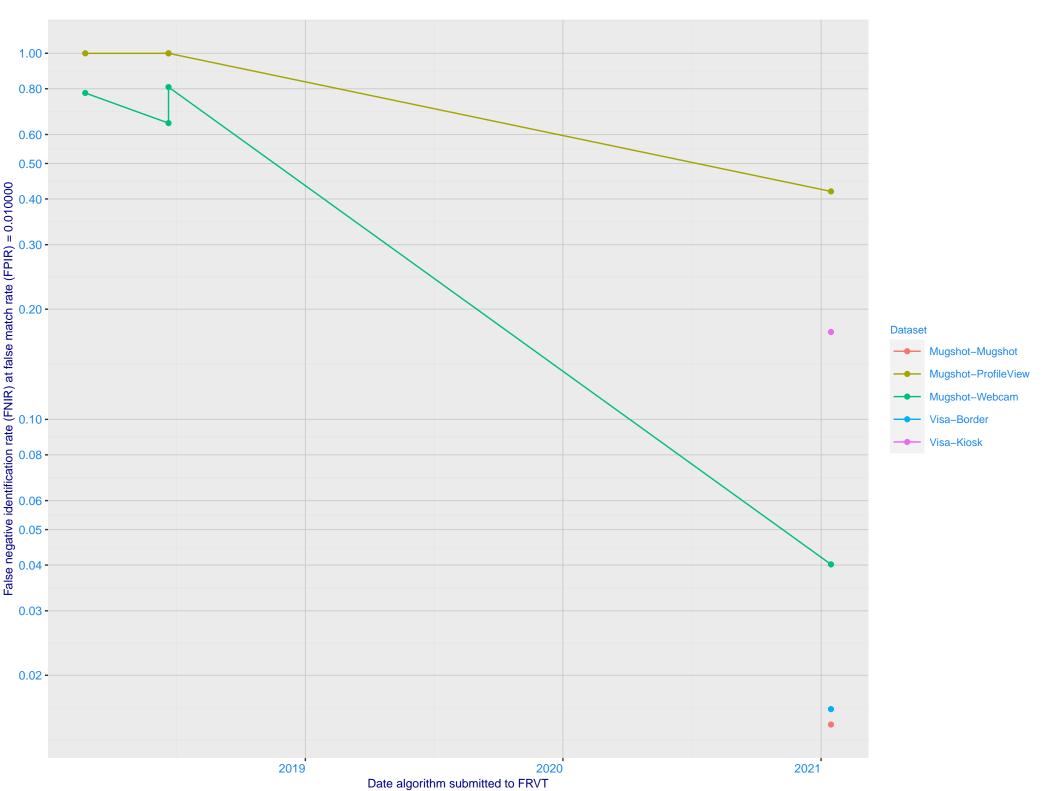
Frontal mugshot ranking 242 (out of 265) -- FNIR(1600000, T, L+1) = 0.8069, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Mugshot webcam ranking 206 (out of 225) -- FNIR(1600000, T, L+1) = 0.9091, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

Mugshot profile ranking 164 (out of 195) -- FNIR(1600000, T, L+1) = 0.9999, FPIR=0.001000 vs. lowest 0.1331 from hr\_000



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

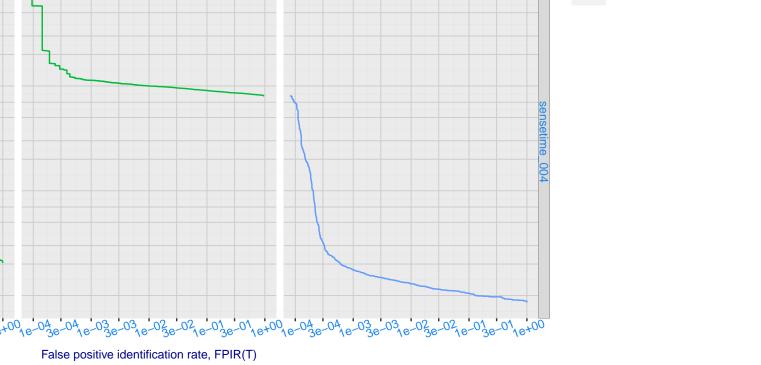


D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration** Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 - 0.005 - 0.005 - 0.002 - 0.001 - 0.001 - 0.700 - 0.500 - 0.200 enrolment\_style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

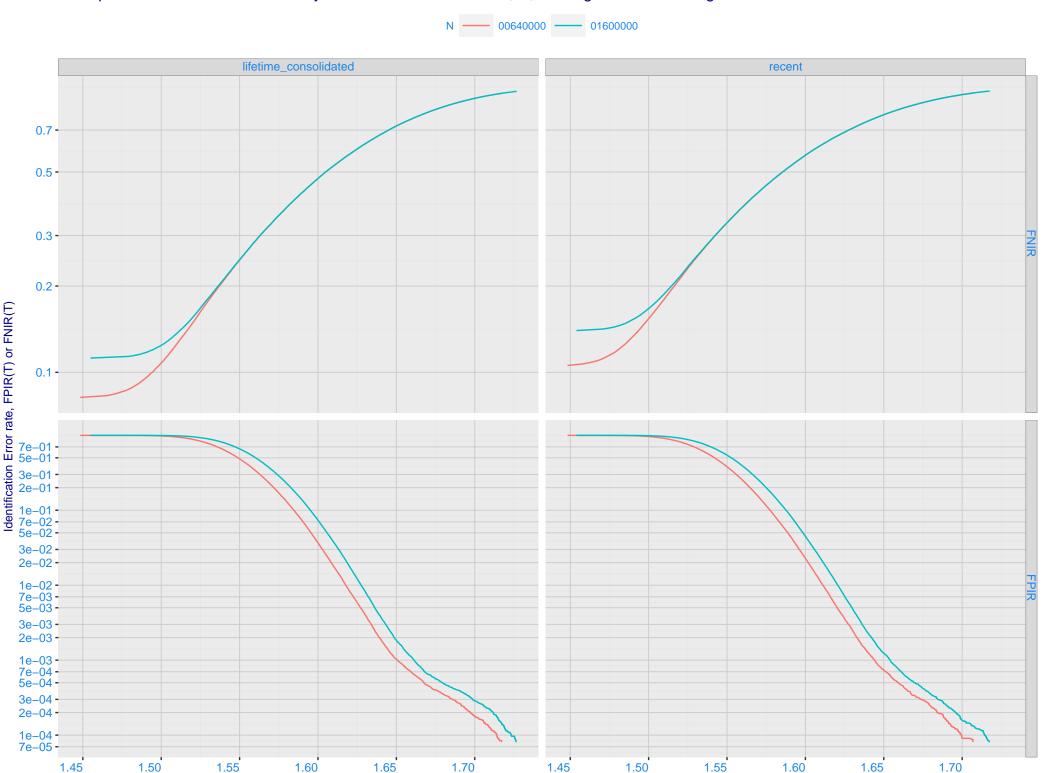
0.020 -

0.010 - 0.007 - 0.005 - 0.003 - 0.002 -

0.001 -

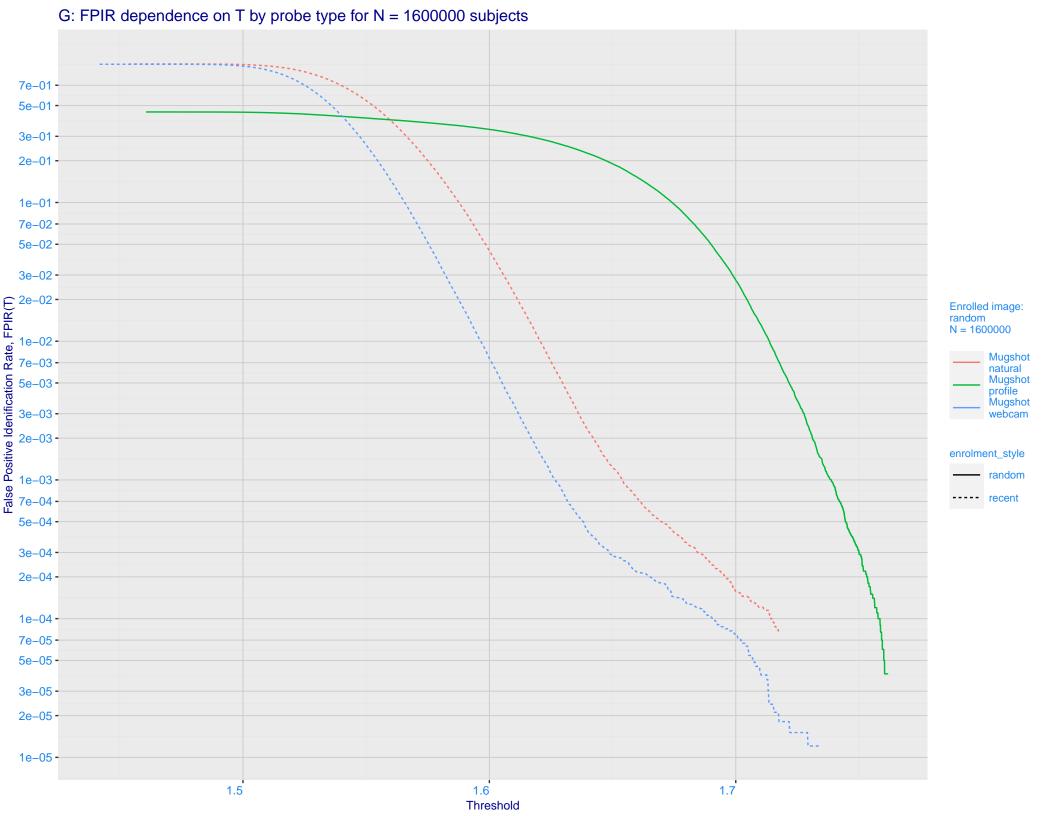


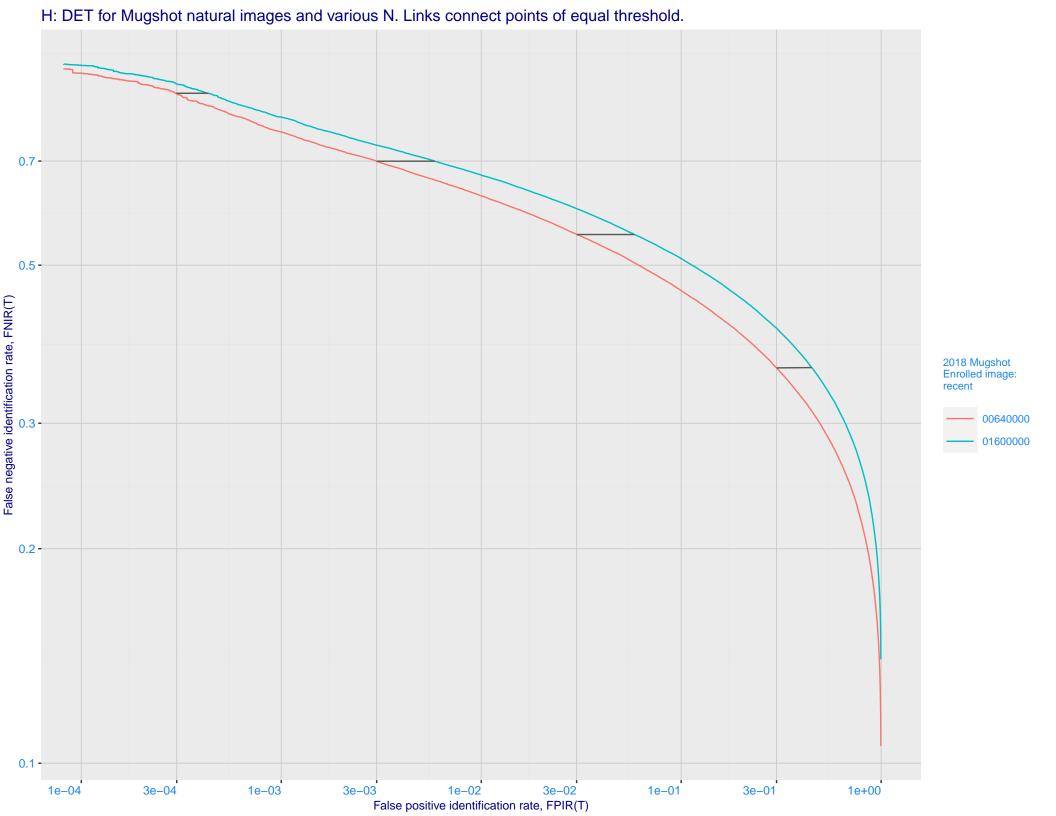
E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images



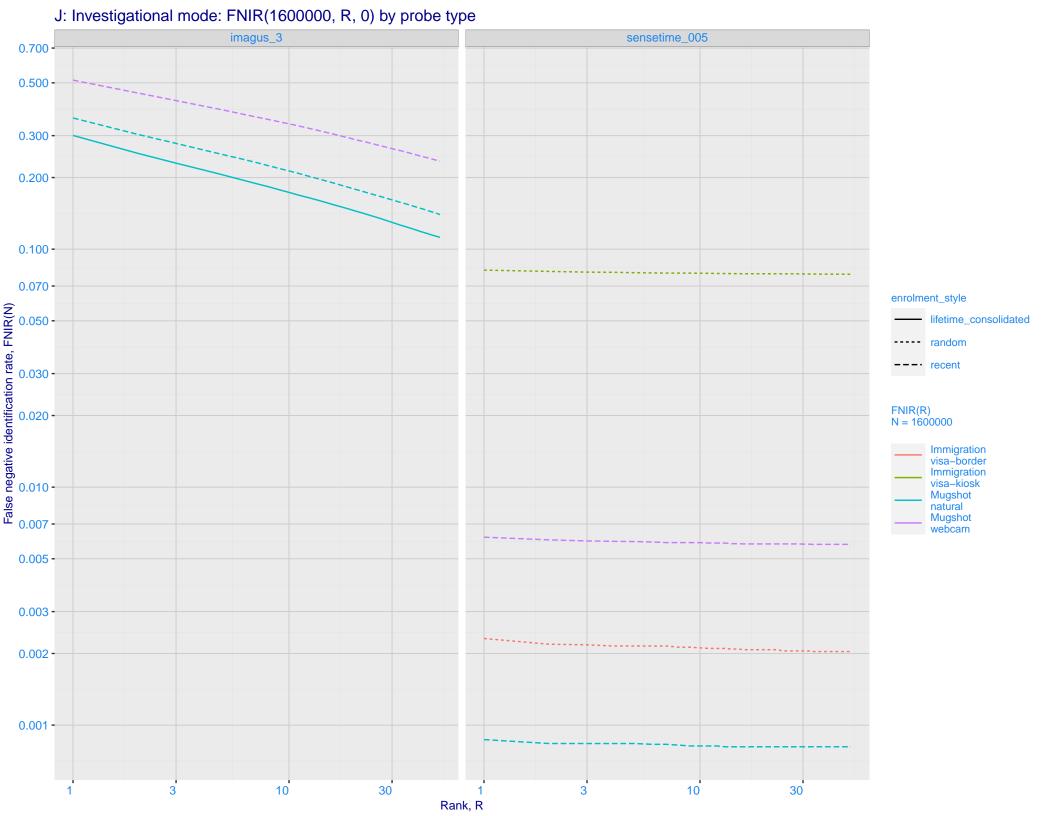
Threshold

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 - 3e-02 - 3e-02 - 2e-02 - 1e-02 **Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam 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 -3e-05 -2e-05 -1e-02 1e-05 3e-05 1e-04 3e-04 1e-03 3e-03 3e-02 1e-01 3e-01 False Positive Idenification Rate, FPIR(T)

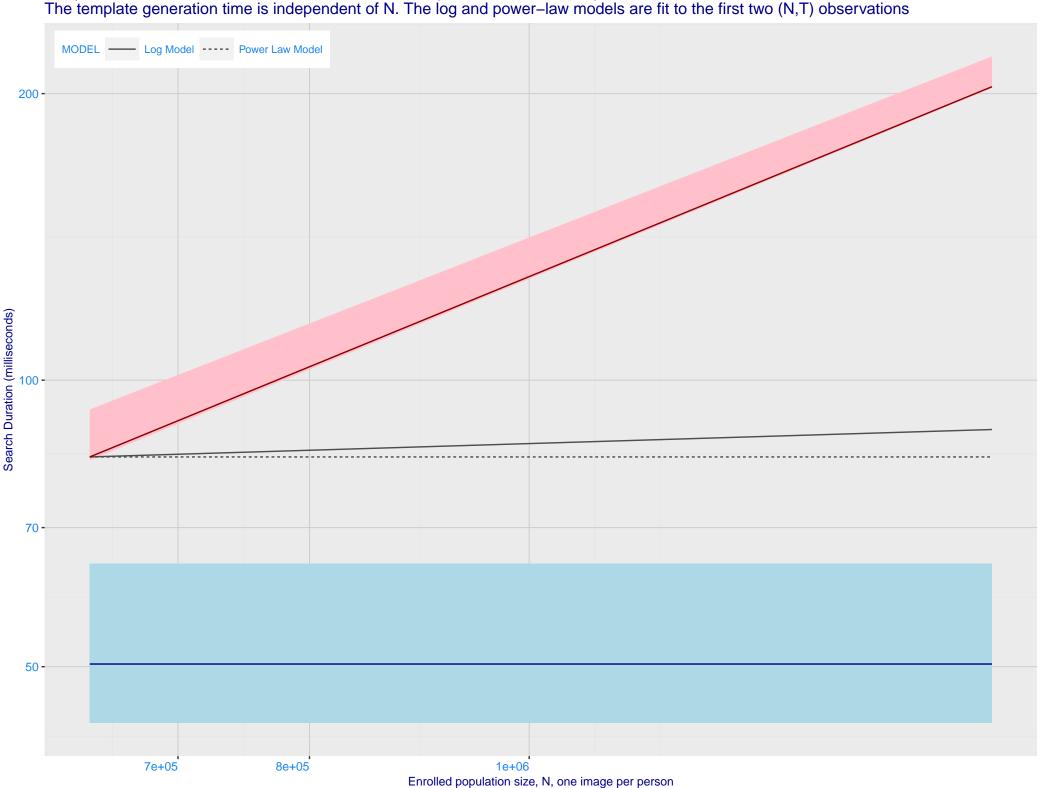




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.700 0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -Ealse negative identification rate, FNIR(N) 0.003 - 0.001 - 0.500 - 0.500 - 0.200 - 0. enrolment\_style consolidated ---- random --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 imagus\_3 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



