## A: Datasheet

Algorithm: innovatrics\_005

Developer: Innovatrics

Submission Date: 2019\_09\_30

Template size: 538 bytes

Template time (2.5 percentile): 821 msec

Template time (median): 828 msec

Template time (97.5 percentile): 928 msec

Investigation:

Frontal mugshot ranking 38 (out of 259) -- FNIR(1600000, 0, 1) = 0.0024 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 34 (out of 221) -- FNIR(1600000, 0, 1) = 0.0141 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 35 (out of 190) -- FNIR(1600000, 0, 1) = 0.4074 vs. lowest 0.0591 from sensetime\_005

Immigration visa-border ranking 28 (out of 142) -- FNIR(1600000, 0, 1) = 0.0047 vs. lowest 0.0014 from visionlabs\_009

Immigration visa-kiosk ranking 31 (out of 139) -- FNIR(1600000, 0, 1) = 0.1087 vs. lowest 0.0694 from cib\_000

Identification:

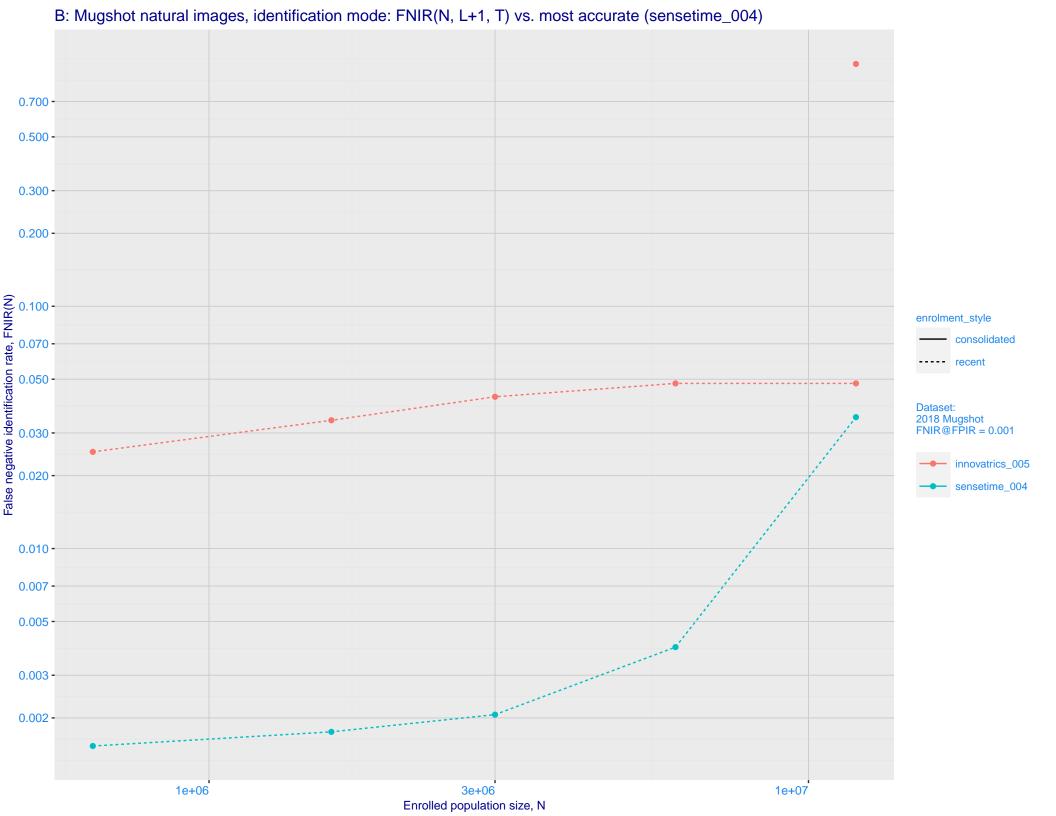
Frontal mugshot ranking 51 (out of 259) -- FNIR(1600000, T, L+1) = 0.0338, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Mugshot webcam ranking 46 (out of 219) -- FNIR(1600000, T, L+1) = 0.0888, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

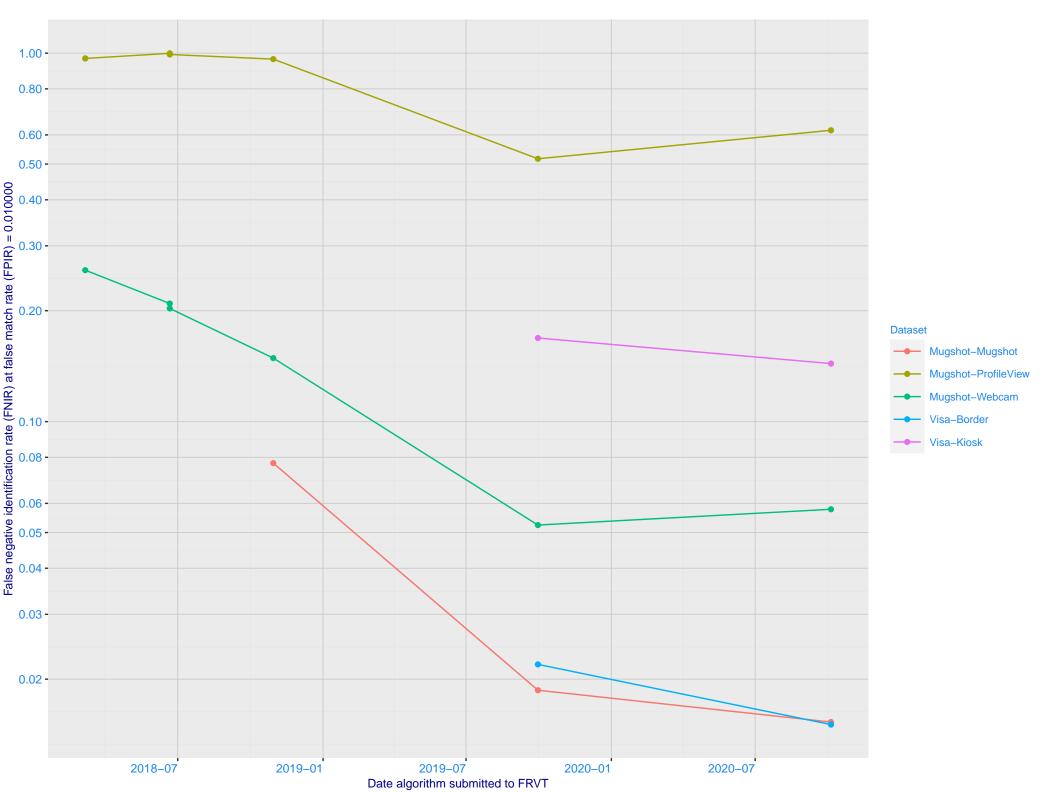
Mugshot profile ranking 23 (out of 189) -- FNIR(1600000, T, L+1) = 0.8465, FPIR=0.001000 vs. lowest 0.1733 from sensetime\_005

Immigration visa-border ranking 36 (out of 139) -- FNIR(1600000, T, L+1) = 0.0465, FPIR=0.001000 vs. lowest 0.0059 from sensetime\_004

Immigration visa-kiosk ranking 26 (out of 134) -- FNIR(1600000, T, L+1) = 0.2520, FPIR=0.001000 vs. lowest 0.1048 from sensetime\_005

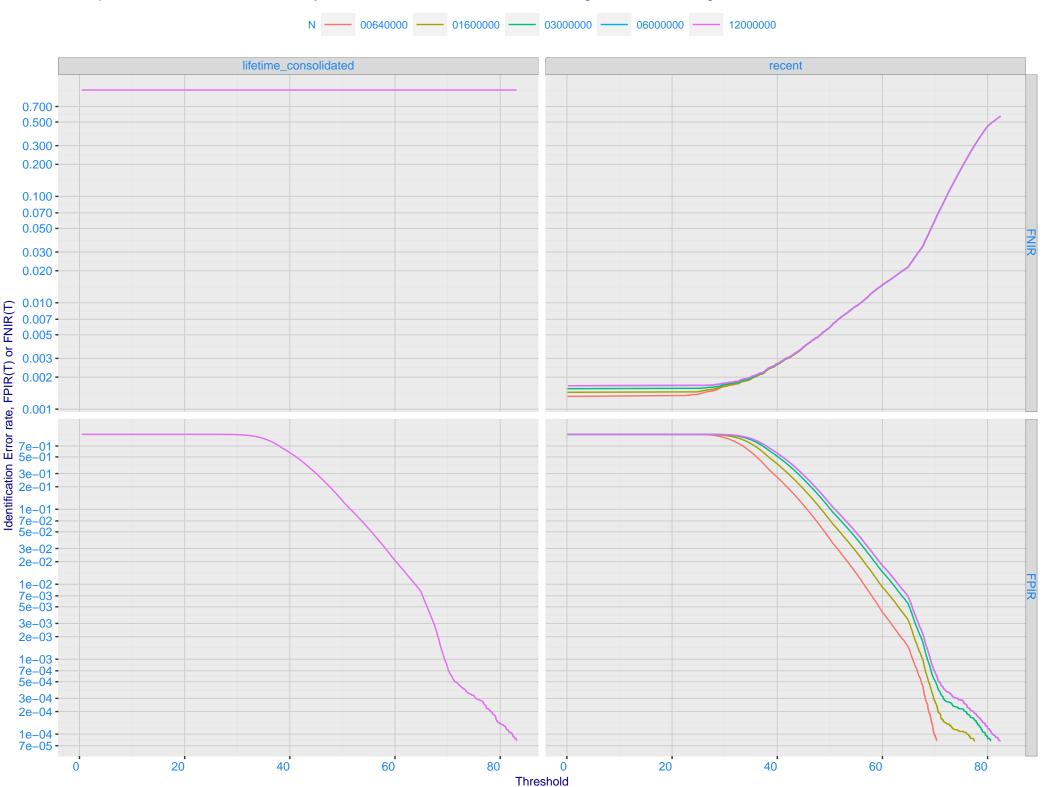


C: Evolution of accuracy for INNOVATRICS algorithms on three datasets 2018 – present

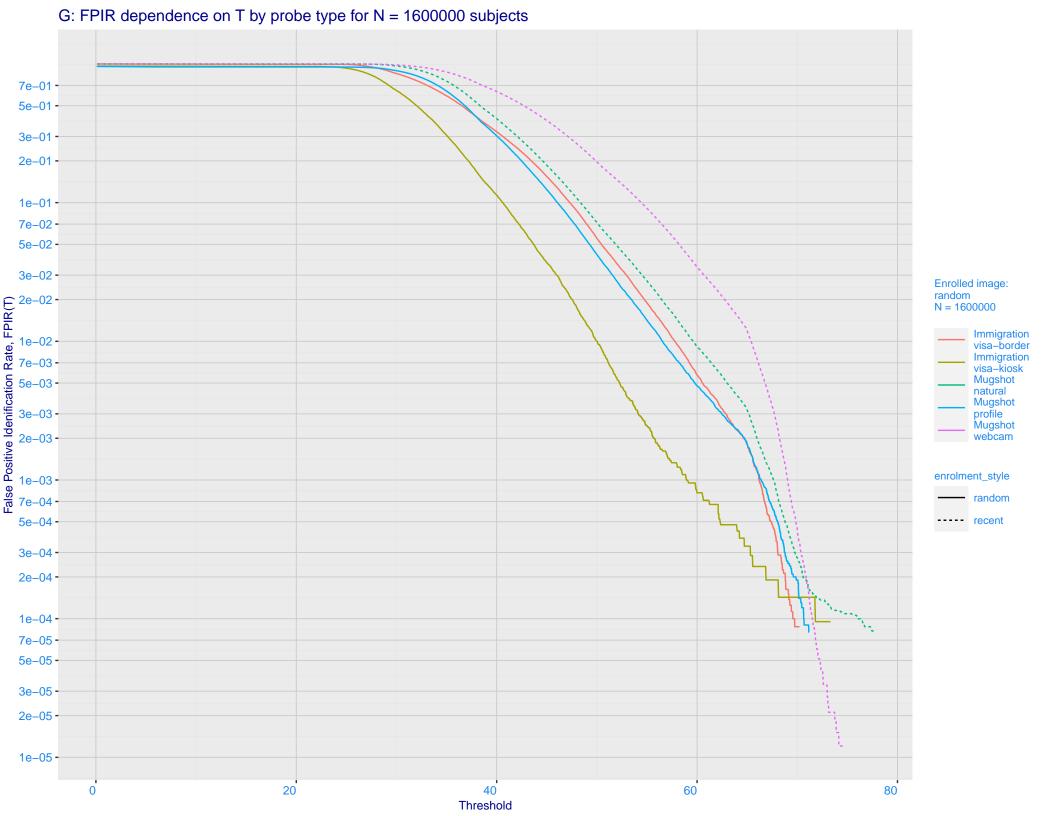


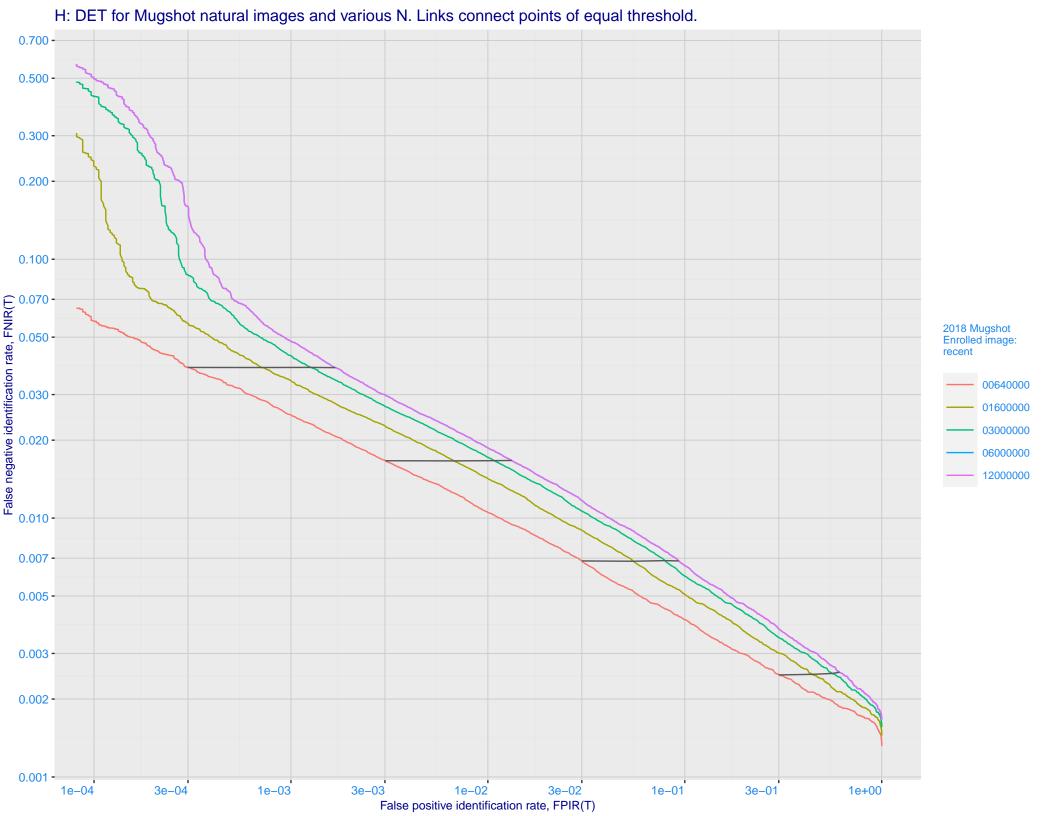
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration Immigration** Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.0001 - 0.700 - 0.500 - 0.200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

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

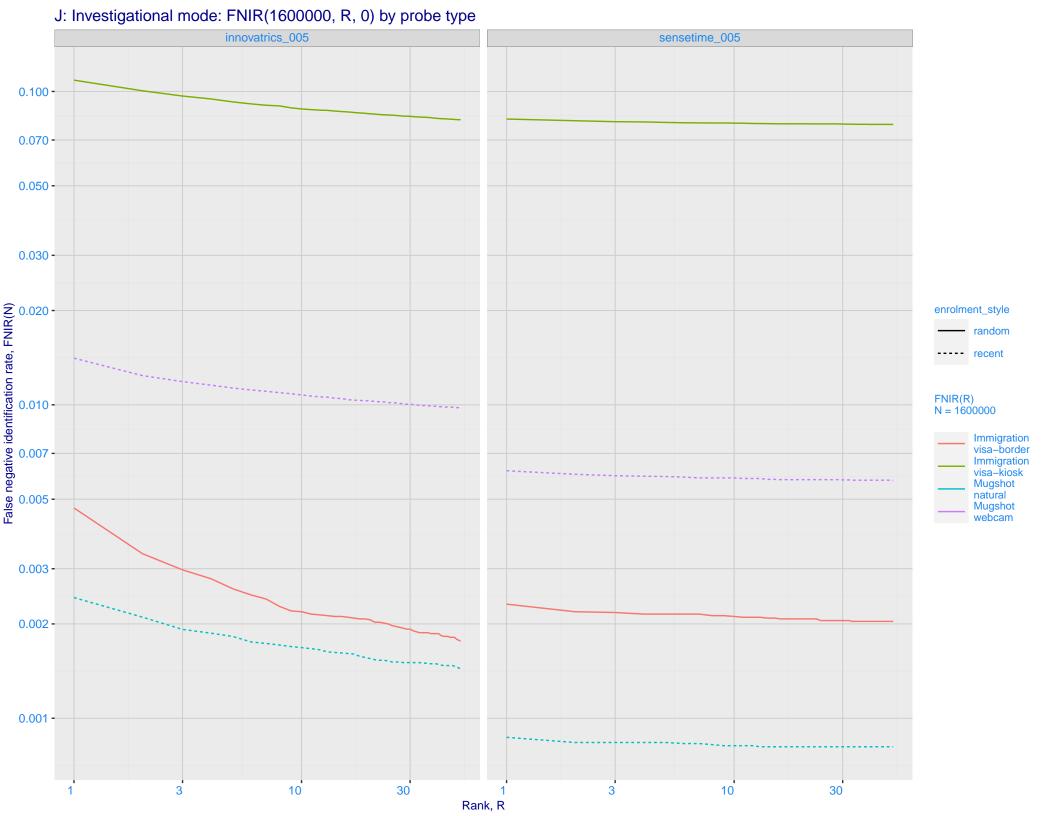


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 -5e-02 -3e-02 -3e-02 -1e-02 -**Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam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

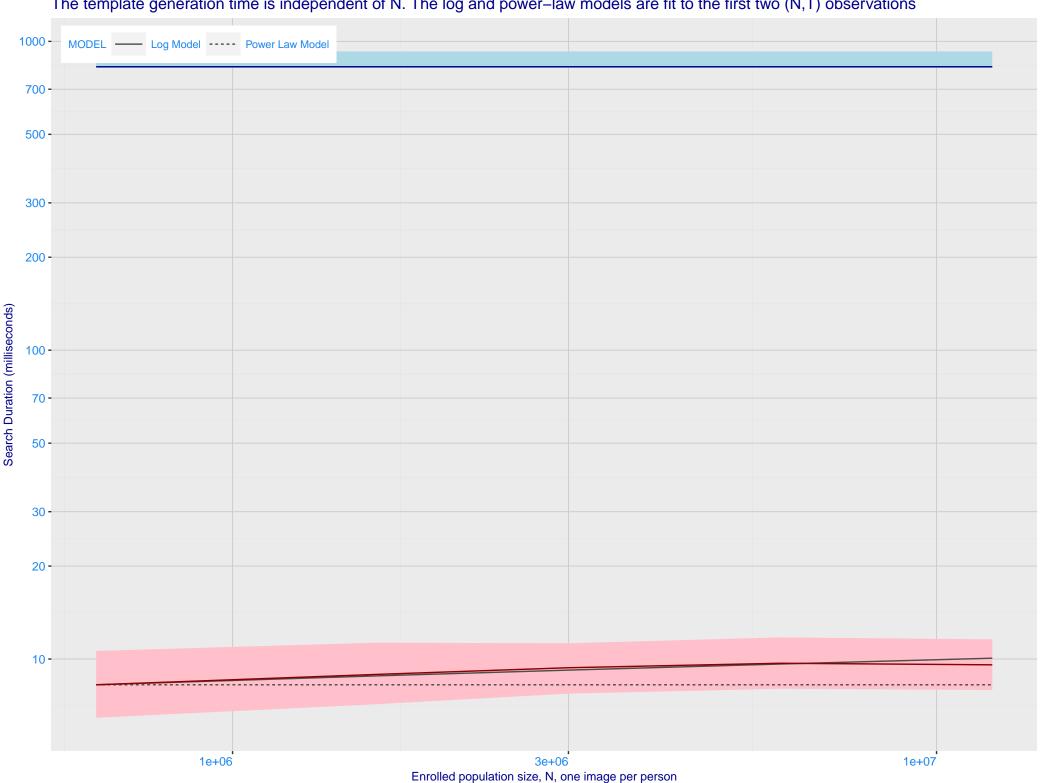




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 - 0.003 - 0.002 - 0.001 - 0.001 - 0.000 - 0.300 - 0.200 FNIR@Rank = 1 innovatrics\_005 sensetime\_005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



