## A: Datasheet

Algorithm: innovatrics\_4

Developer: Innovatrics

Submission Date: 2018\_10\_30

Template size: 1076 bytes

Template time (2.5 percentile): 396 msec

Template time (median): 399 msec

Template time (97.5 percentile): 440 msec

Investigation:

Frontal mugshot ranking 144 (out of 265) -- FNIR(1600000, 0, 1) = 0.0123 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 135 (out of 227) -- FNIR(1600000, 0, 1) = 0.0403 vs. lowest 0.0062 from sensetime\_005

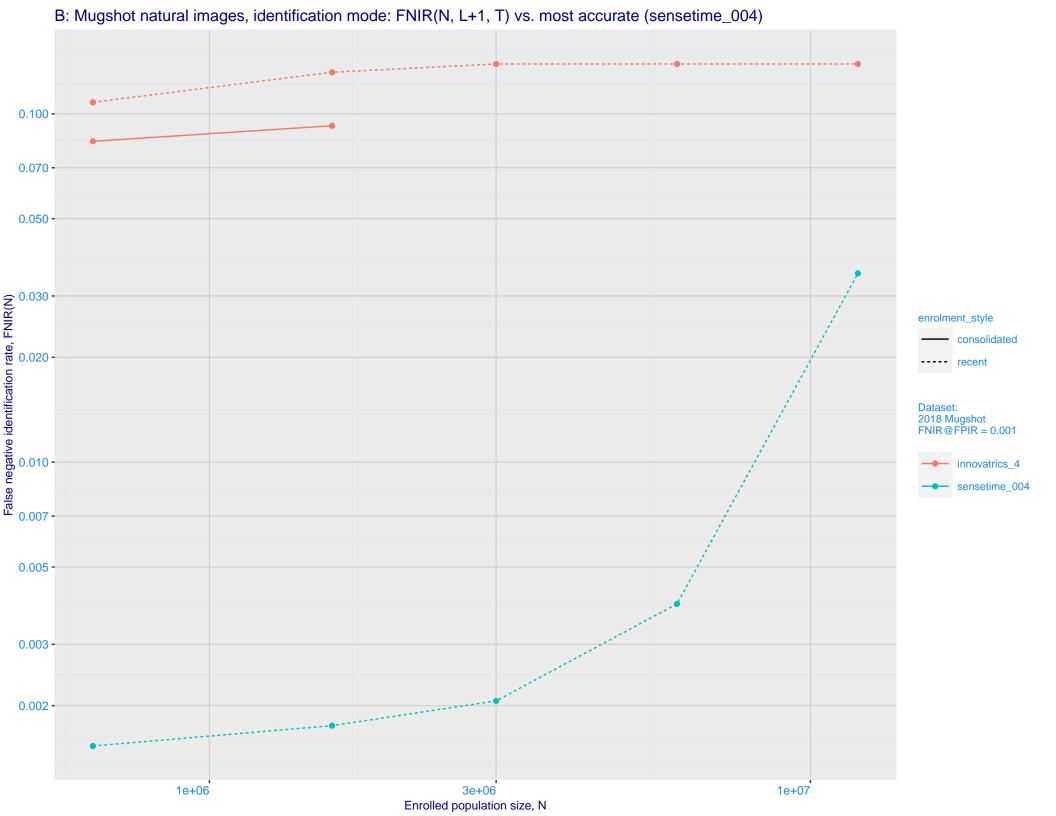
Mugshot profile ranking 150 (out of 196) -- FNIR(1600000, 0, 1) = 0.9578 vs. lowest 0.0591 from sensetime\_005

Identification:

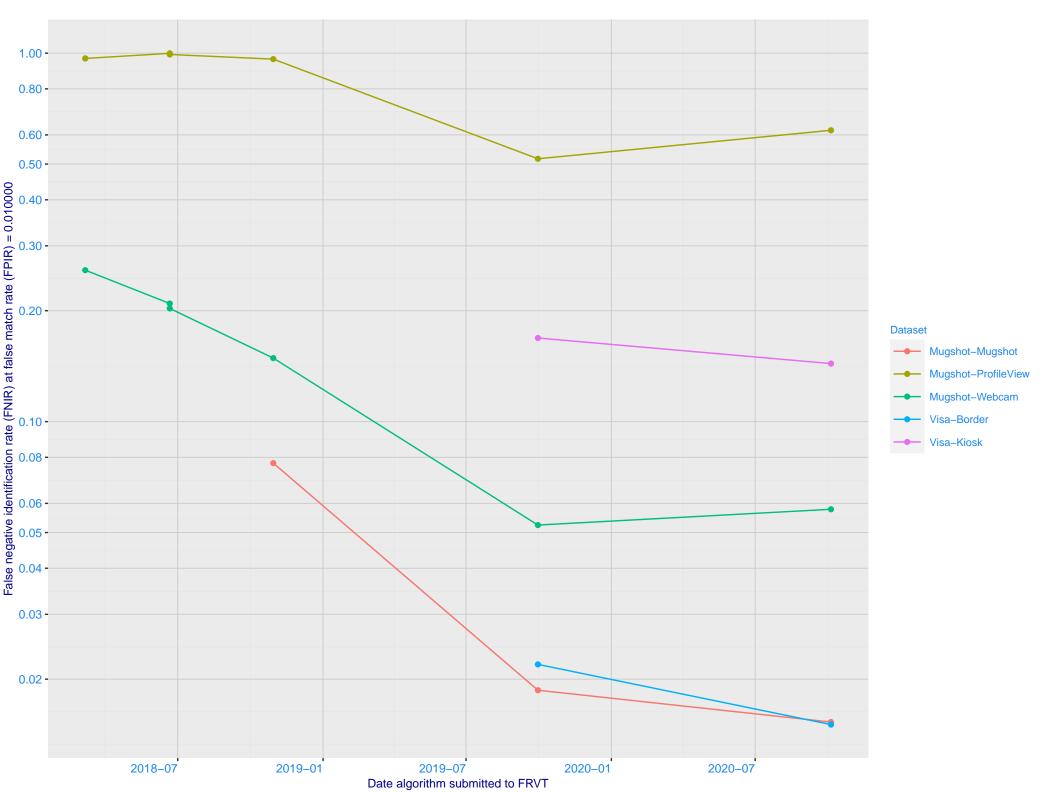
Frontal mugshot ranking 153 (out of 265) -- FNIR(1600000, T, L+1) = 0.1317, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Mugshot webcam ranking 134 (out of 225) -- FNIR(1600000, T, L+1) = 0.2214, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

Mugshot profile ranking 58 (out of 195) -- FNIR(1600000, T, L+1) = 0.9804, FPIR=0.001000 vs. lowest 0.1331 from hr\_000

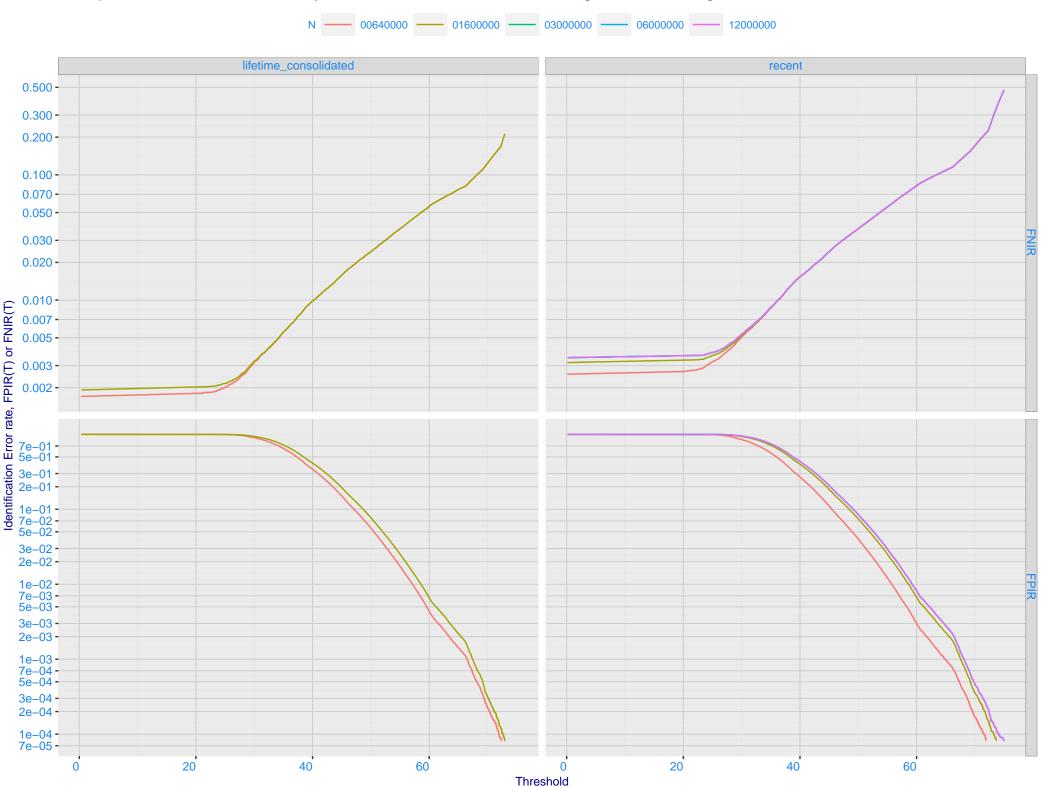


C: Evolution of accuracy for INNOVATRICS algorithms on three datasets 2018 – present

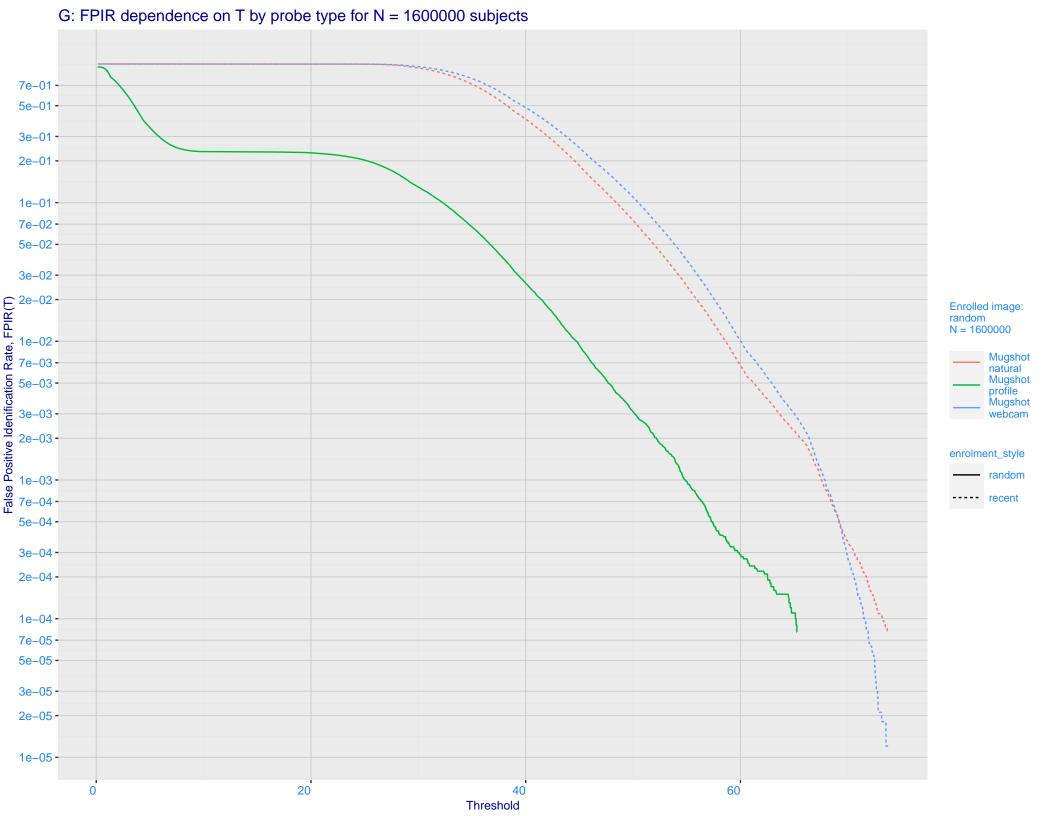


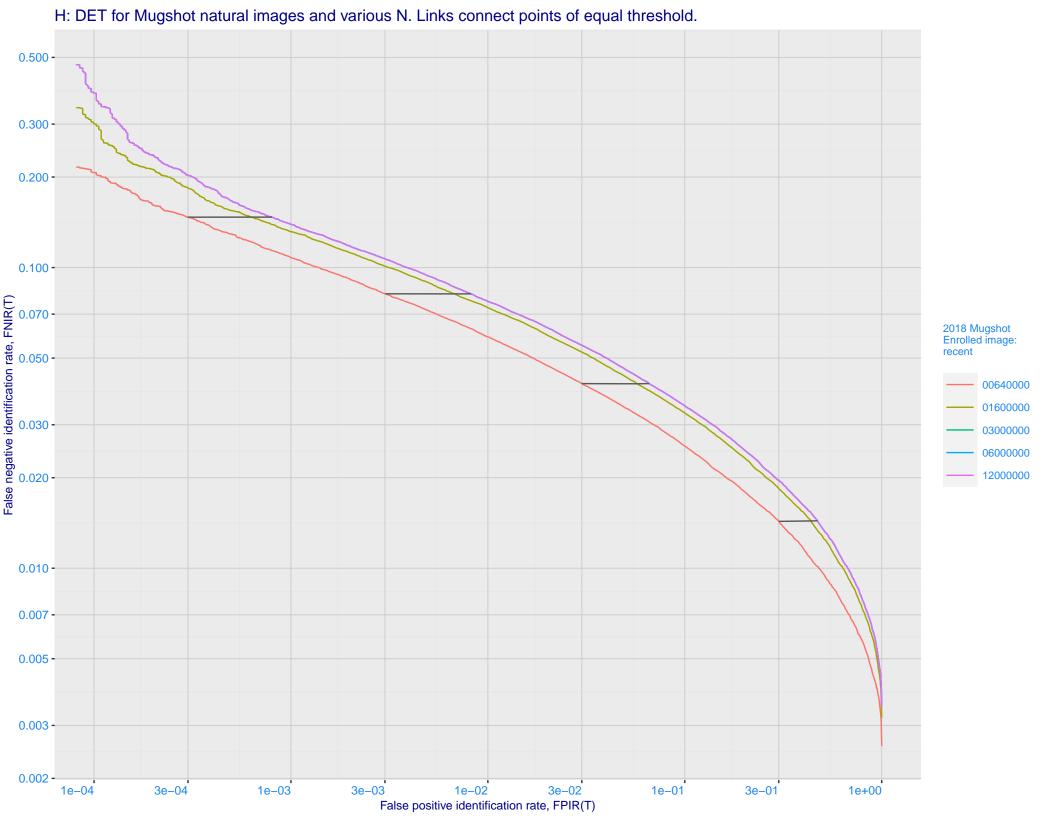
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration** Mugshot **Immigration** visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.0001 - 0.700 - 0.500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

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

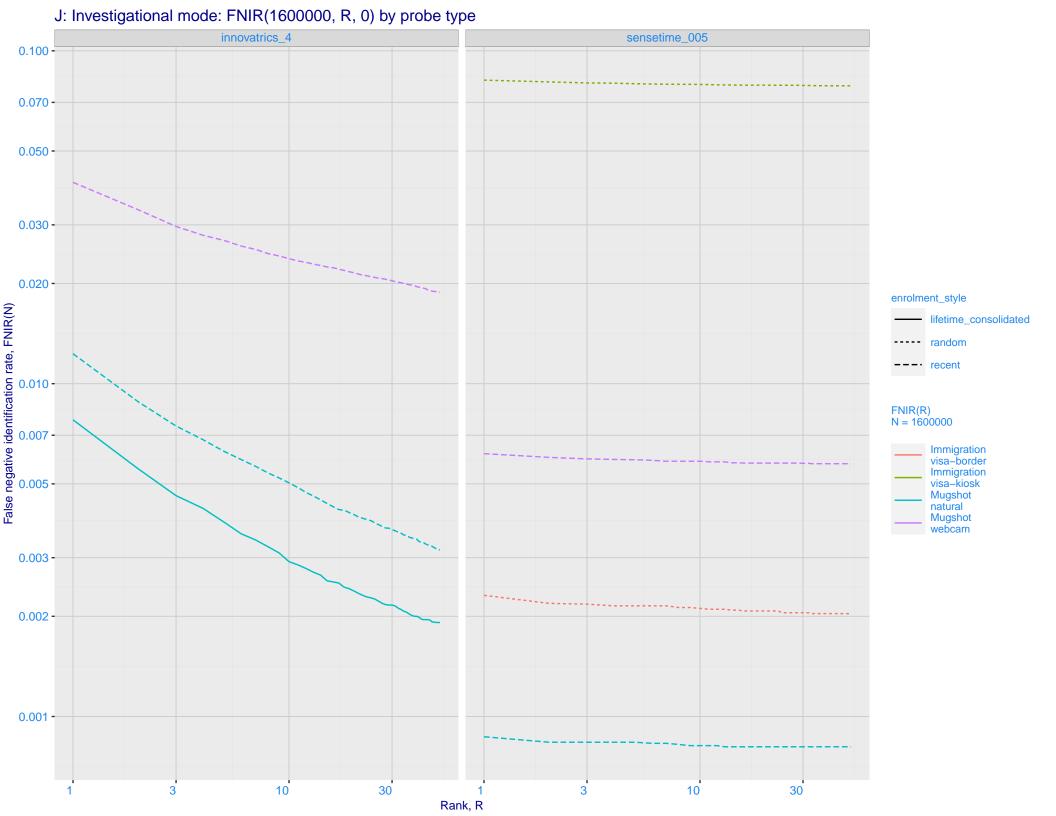


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 -5e-02 -3e-02 -3e-02 -1e-02 -**Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam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

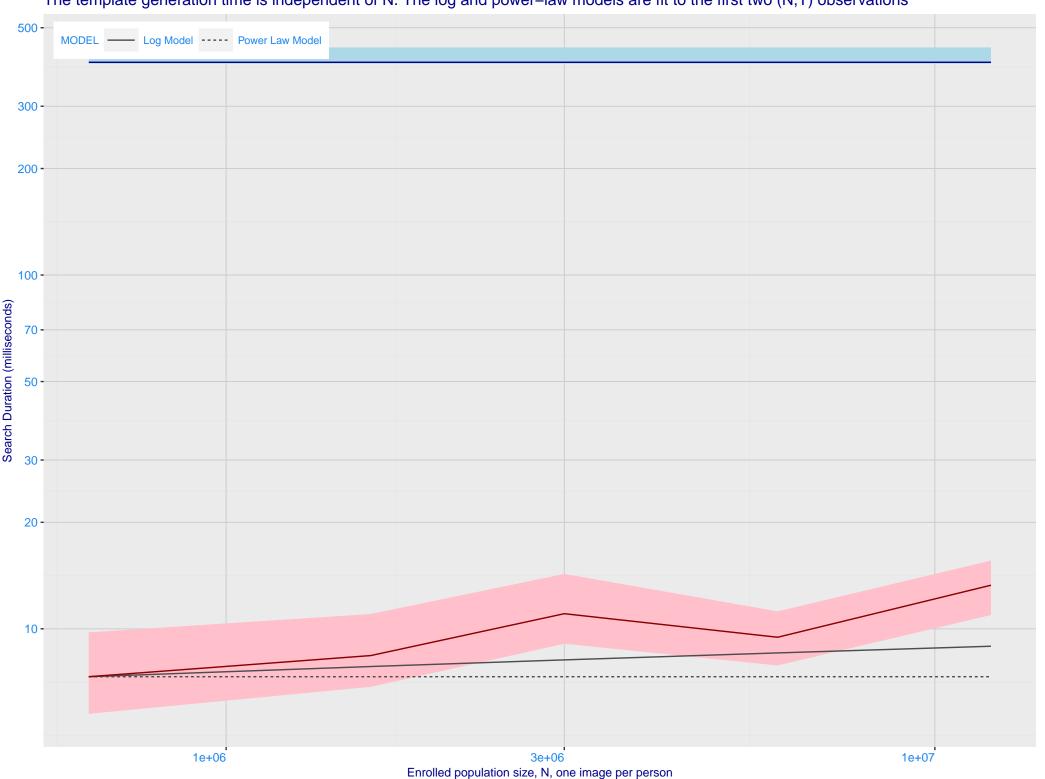




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.100 0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -Palse negative identification rate, FNIR(N) 0.002 - 0.001 - 0.000 - 0.050 - 0.050 - 0.030 - 0. enrolment\_style consolidated ---- random --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 innovatrics\_4 sensetime\_005 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

