## A: Datasheet

Algorithm: gorilla\_004

Developer: Gorilla Technology

Submission Date: 2020\_01\_06

Template size: 2192 bytes

Template time (2.5 percentile): 385 msec

Template time (median): 388 msec

Template time (97.5 percentile): 423 msec

Investigation:

Frontal mugshot ranking 90 (out of 259) -- FNIR(1600000, 0, 1) = 0.0063 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 90 (out of 221) -- FNIR(1600000, 0, 1) = 0.0238 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 70 (out of 190) -- FNIR(1600000, 0, 1) = 0.6966 vs. lowest 0.0591 from sensetime\_005

Immigration visa-border ranking 59 (out of 142) -- FNIR(1600000, 0, 1) = 0.0116 vs. lowest 0.0014 from visionlabs\_009

Immigration visa-kiosk ranking 61 (out of 139) -- FNIR(1600000, 0, 1) = 0.1615 vs. lowest 0.0694 from cib\_000

Identification:

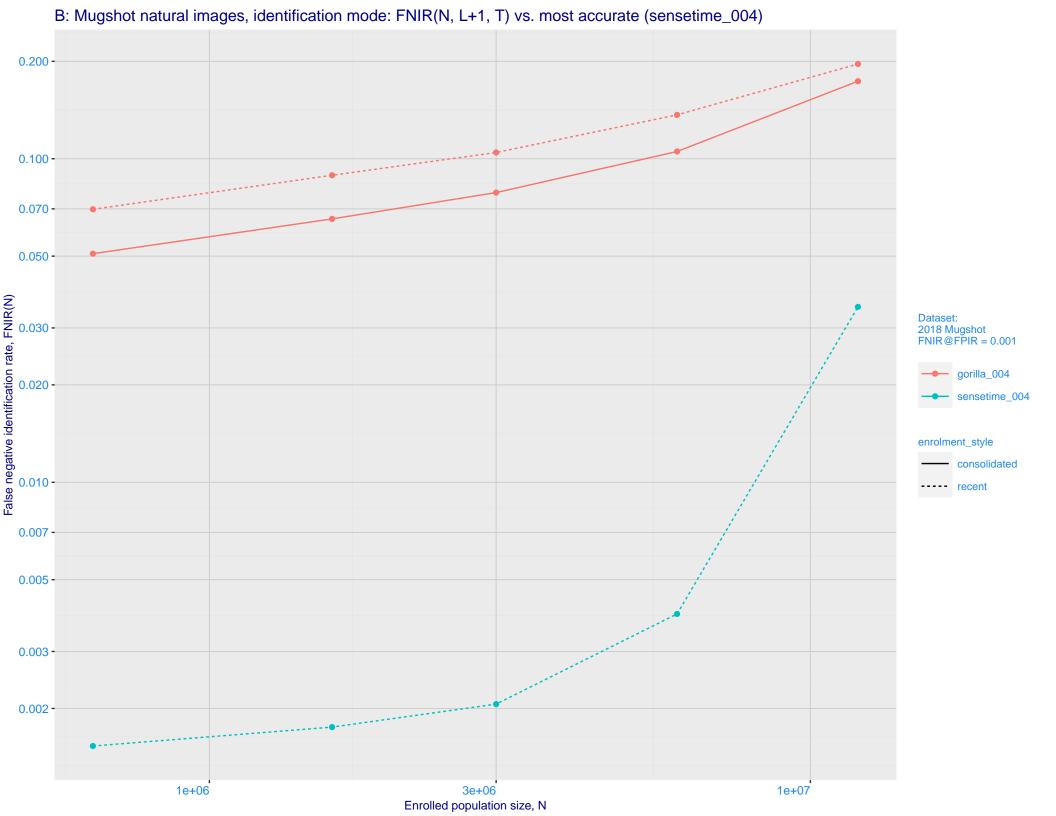
Frontal mugshot ranking 124 (out of 259) -- FNIR(1600000, T, L+1) = 0.0889, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Mugshot webcam ranking 108 (out of 219) -- FNIR(1600000, T, L+1) = 0.1601, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

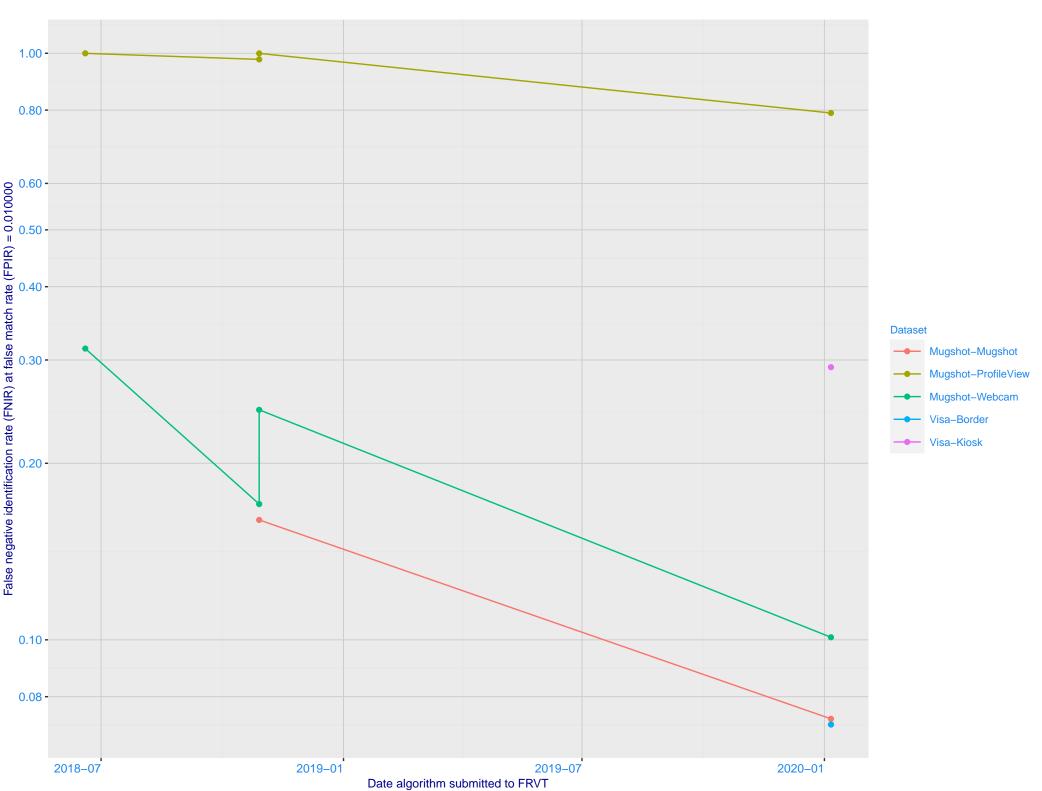
Mugshot profile ranking 35 (out of 189) -- FNIR(1600000, T, L+1) = 0.9587, FPIR=0.001000 vs. lowest 0.1733 from sensetime\_005

Immigration visa-border ranking 69 (out of 139) -- FNIR(1600000, T, L+1) = 0.1350, FPIR=0.001000 vs. lowest 0.0059 from sensetime\_004

Immigration visa-kiosk ranking 52 (out of 134) -- FNIR(1600000, T, L+1) = 0.4381, FPIR=0.001000 vs. lowest 0.1048 from sensetime\_005



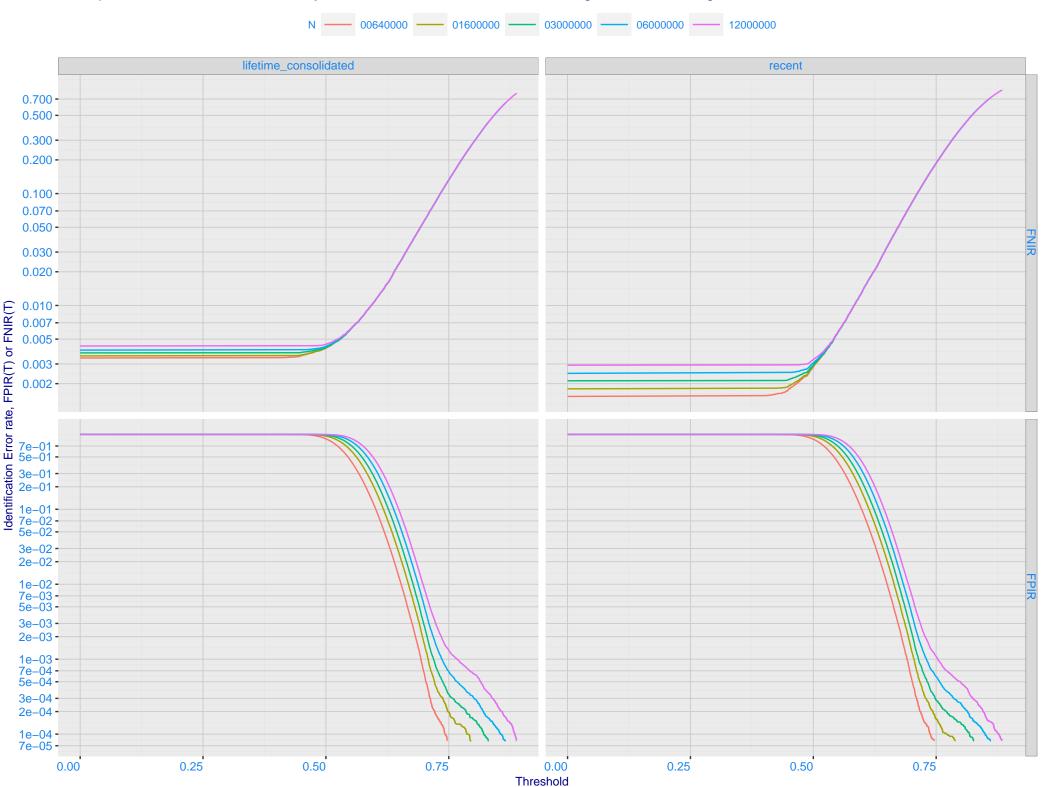
C: Evolution of accuracy for GORILLA algorithms on three datasets 2018 – present



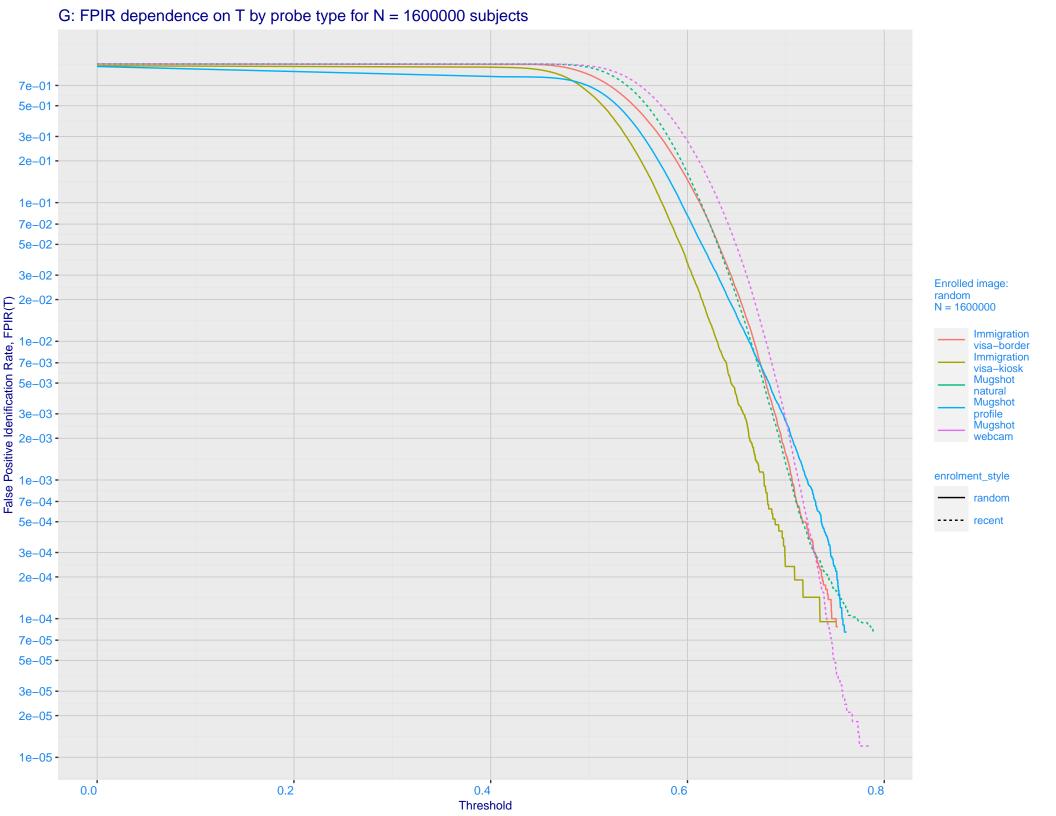
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration Immigration** Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.002 - 0.001 - 0.500 - 0.200 - 0. 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 -

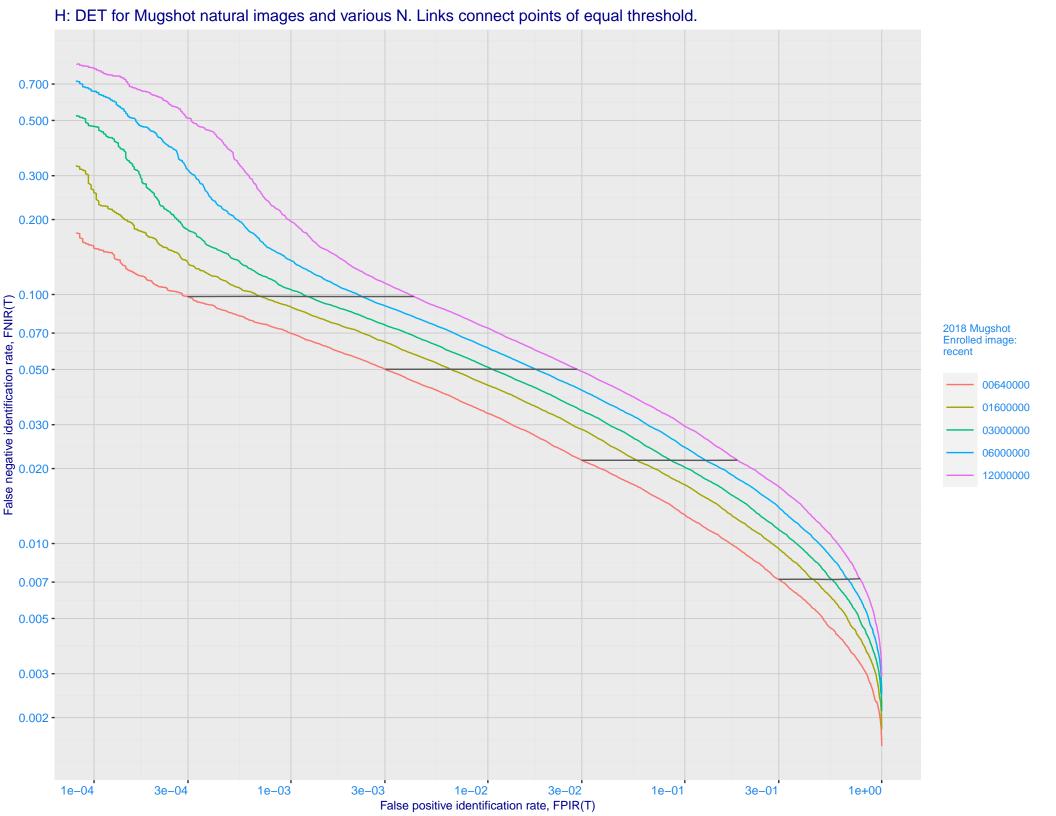
False positive identification rate, FPIR(T)

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

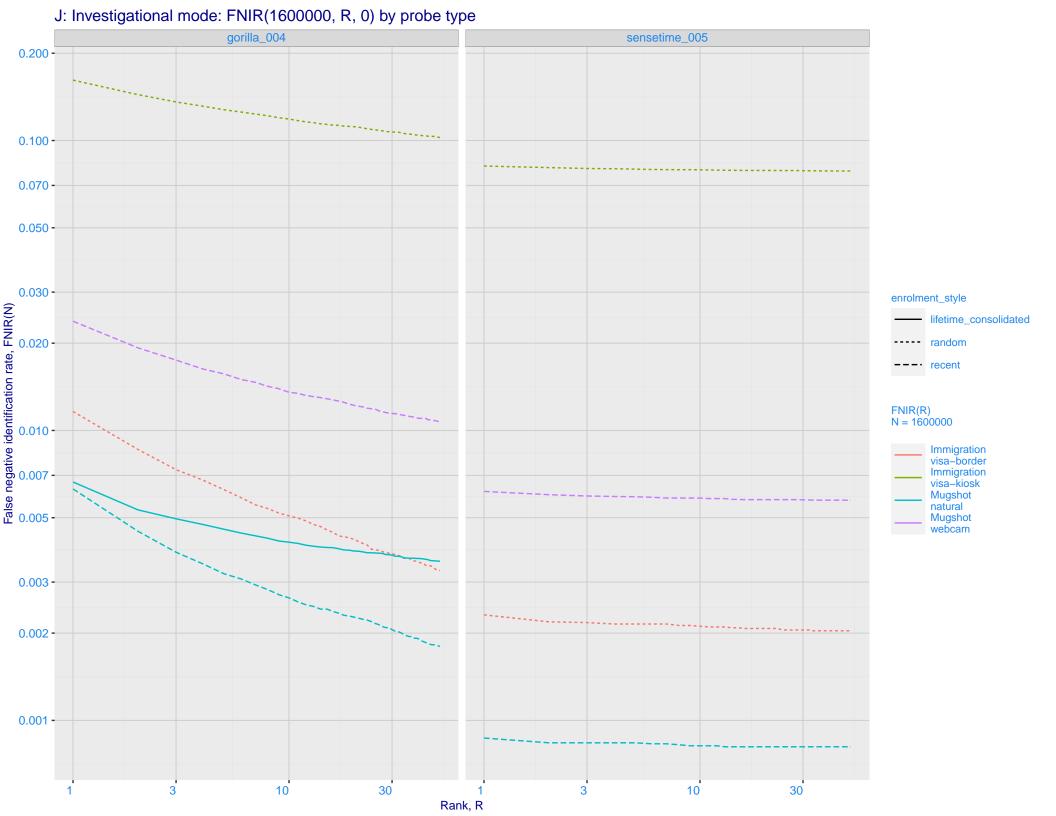


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 -5e-02 -3e-02 -3e-02 -1e-02 -**Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam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

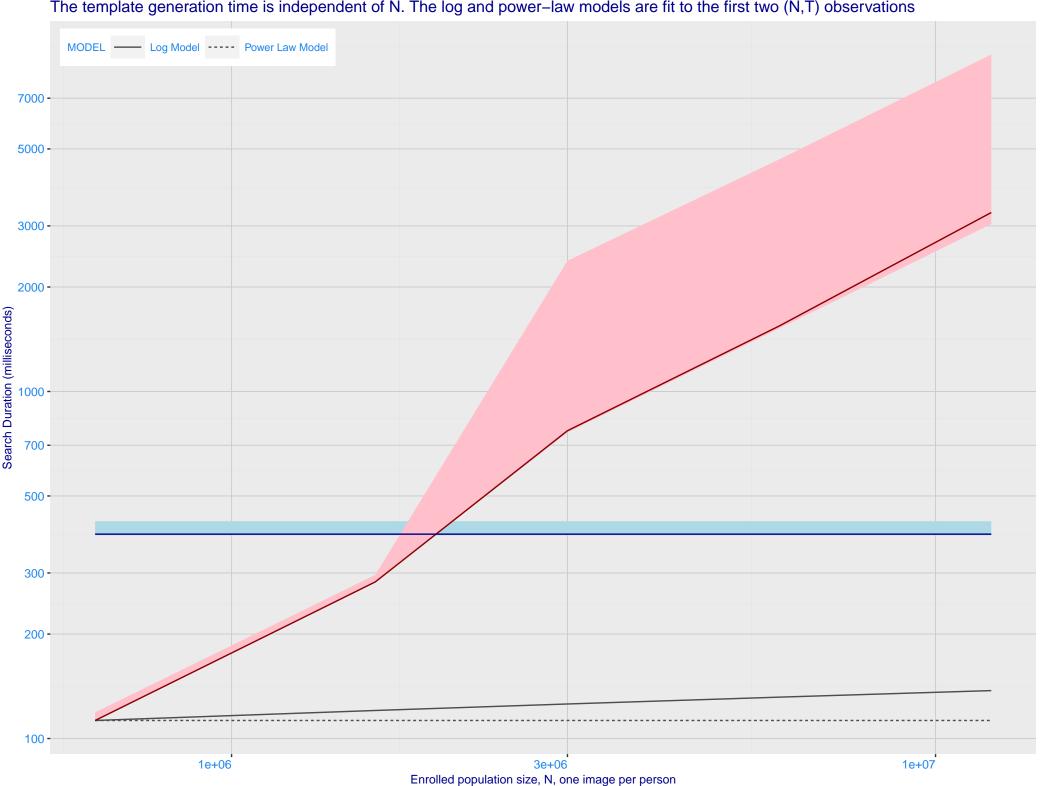




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -• 0.010 -0.007 -0.005 -Palse negative identification rate, FNIR(N) 0.002 - 0.001 - 0.000 - 0. enrolment\_style consolidated ---- random --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 gorilla\_004 sensetime\_005 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



