## A: Datasheet

Algorithm: toshiba\_0

Developer: Toshiba

Submission Date: 2018\_10\_30

Template size: 1548 bytes

Template time (2.5 percentile): 875 msec

Template time (median): 876 msec

Template time (97.5 percentile): 1661 msec

Investigation:

Frontal mugshot ranking 86 (out of 279) -- FNIR(1600000, 0, 1) = 0.0045 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 93 (out of 241) -- FNIR(1600000, 0, 1) = 0.0216 vs. lowest 0.0062 from sensetime\_005

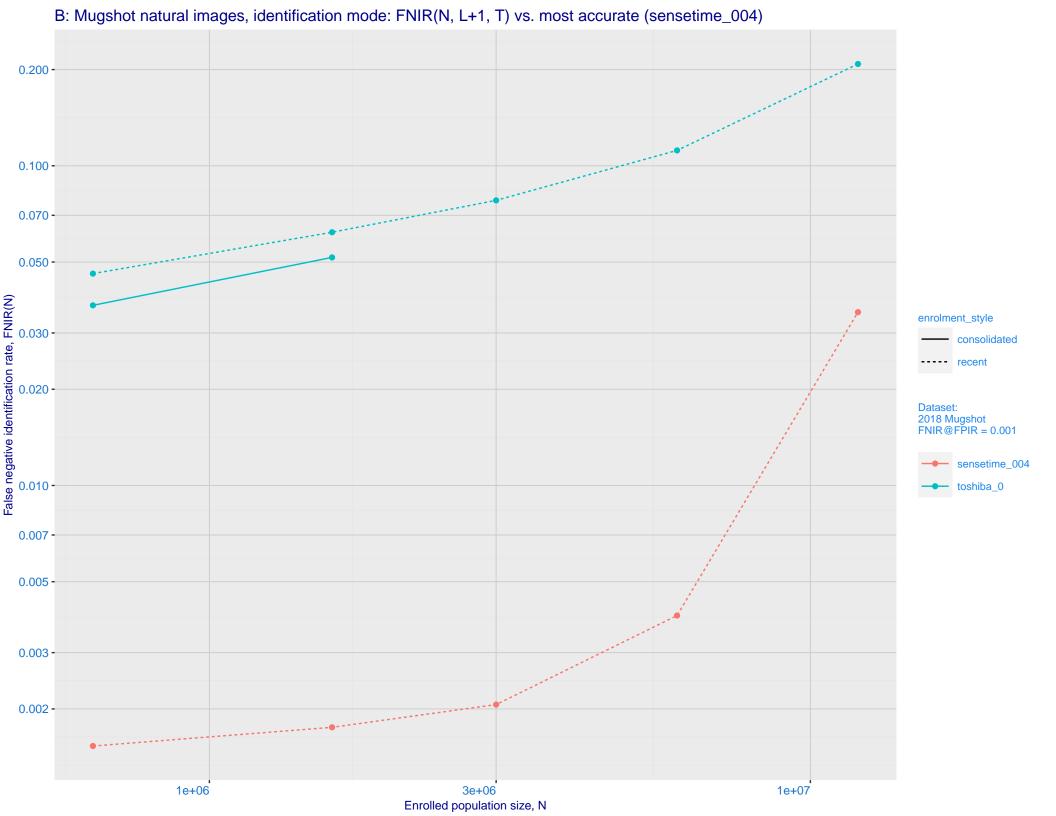
Mugshot profile ranking 99 (out of 210) -- FNIR(1600000, 0, 1) = 0.7664 vs. lowest 0.0587 from xforwardai\_002

Identification:

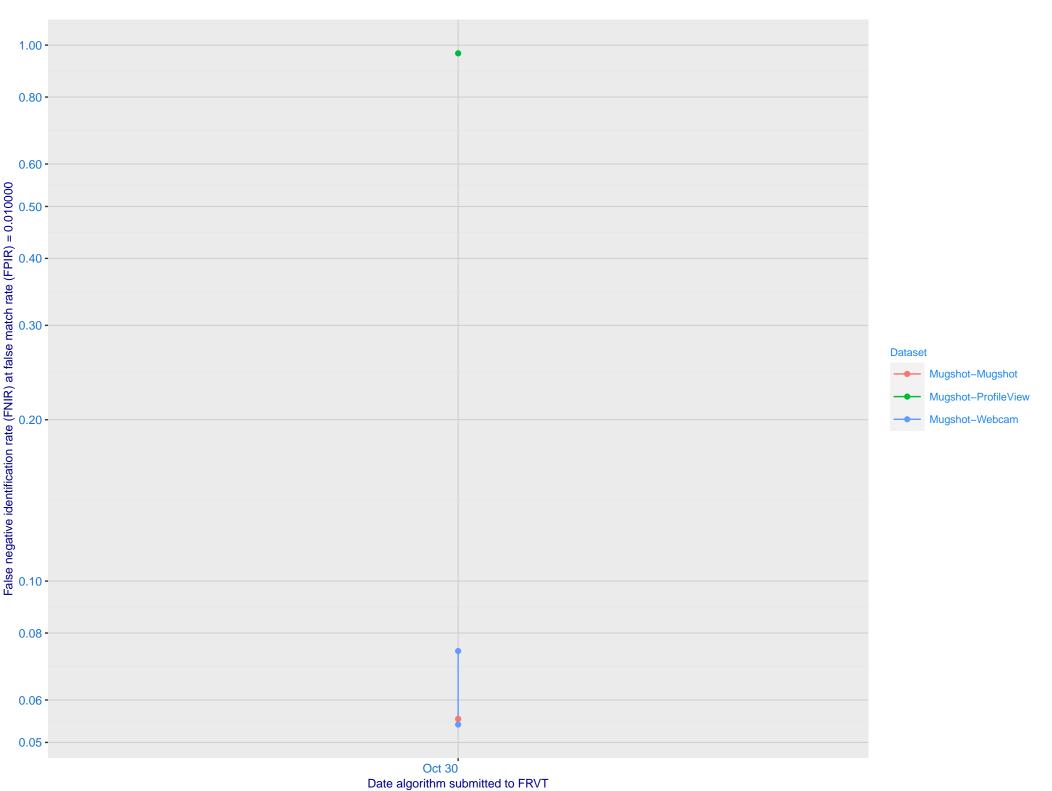
Frontal mugshot ranking 115 (out of 279) -- FNIR(1600000, T, L+1) = 0.0620, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Mugshot webcam ranking 91 (out of 236) -- FNIR(1600000, T, L+1) = 0.1180, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

Mugshot profile ranking 108 (out of 209) -- FNIR(1600000, T, L+1) = 0.9952, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk\_hr\_000



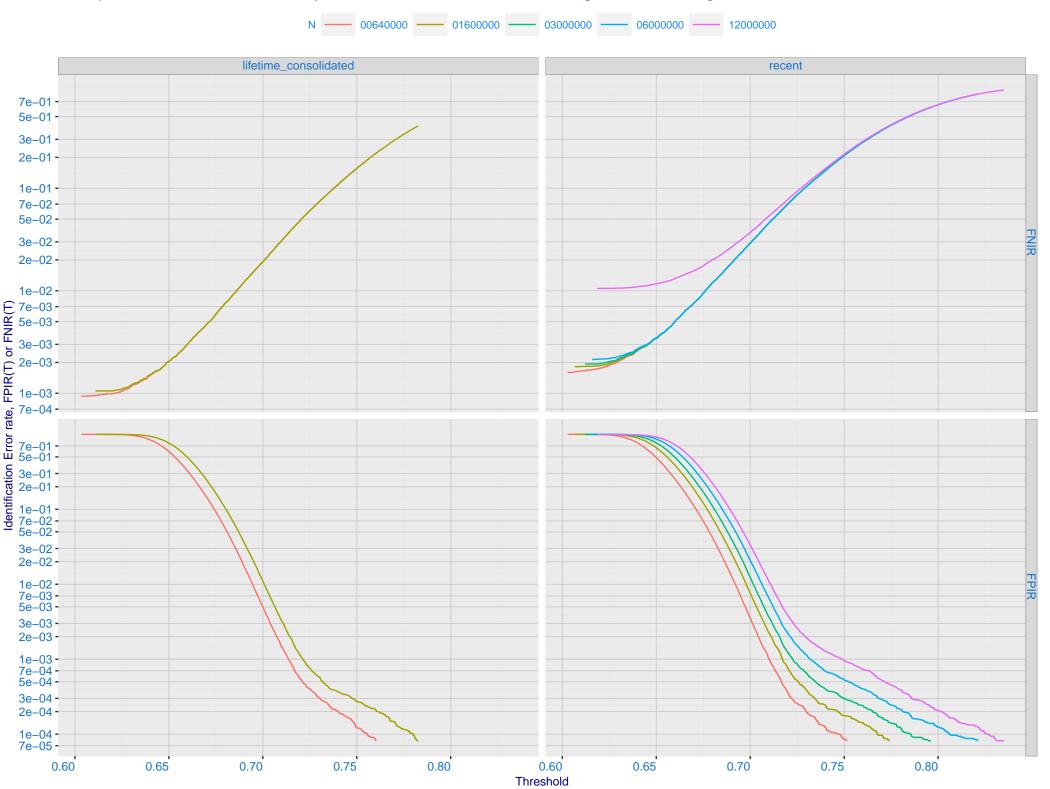
## C: Evolution of accuracy for TOSHIBA algorithms on three datasets 2018 – present



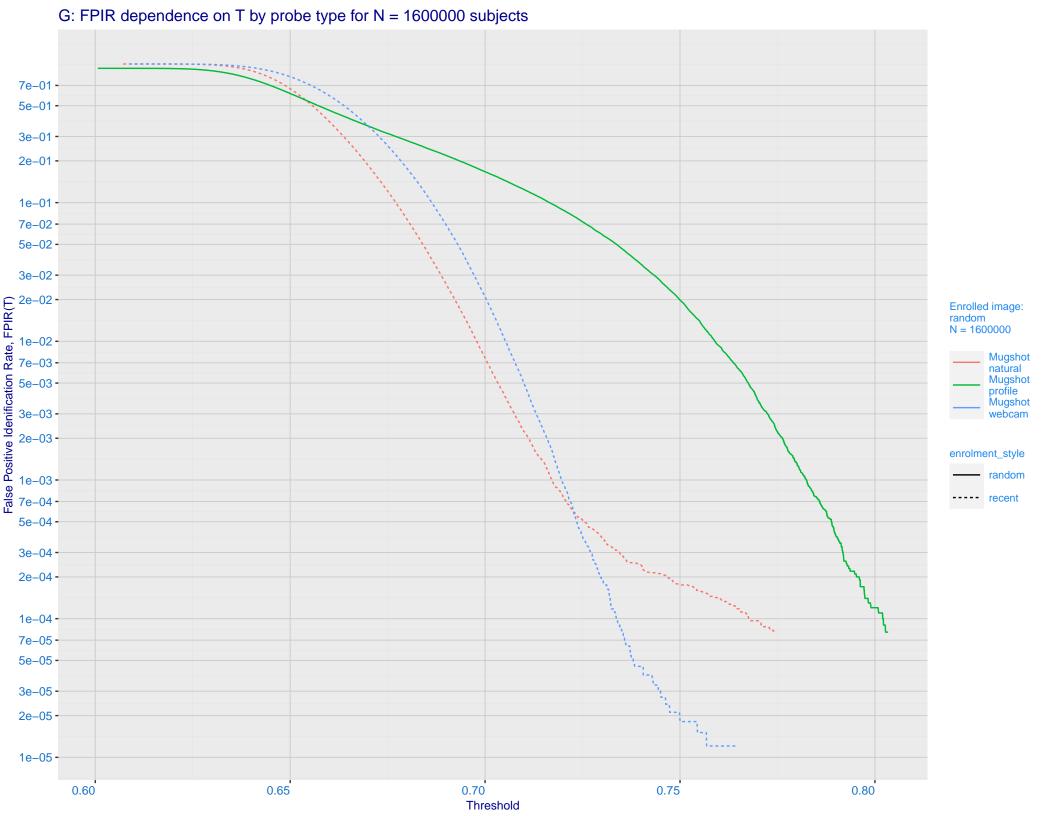
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration** Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 sensetime 004 0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.000 - 0.500 - 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 -

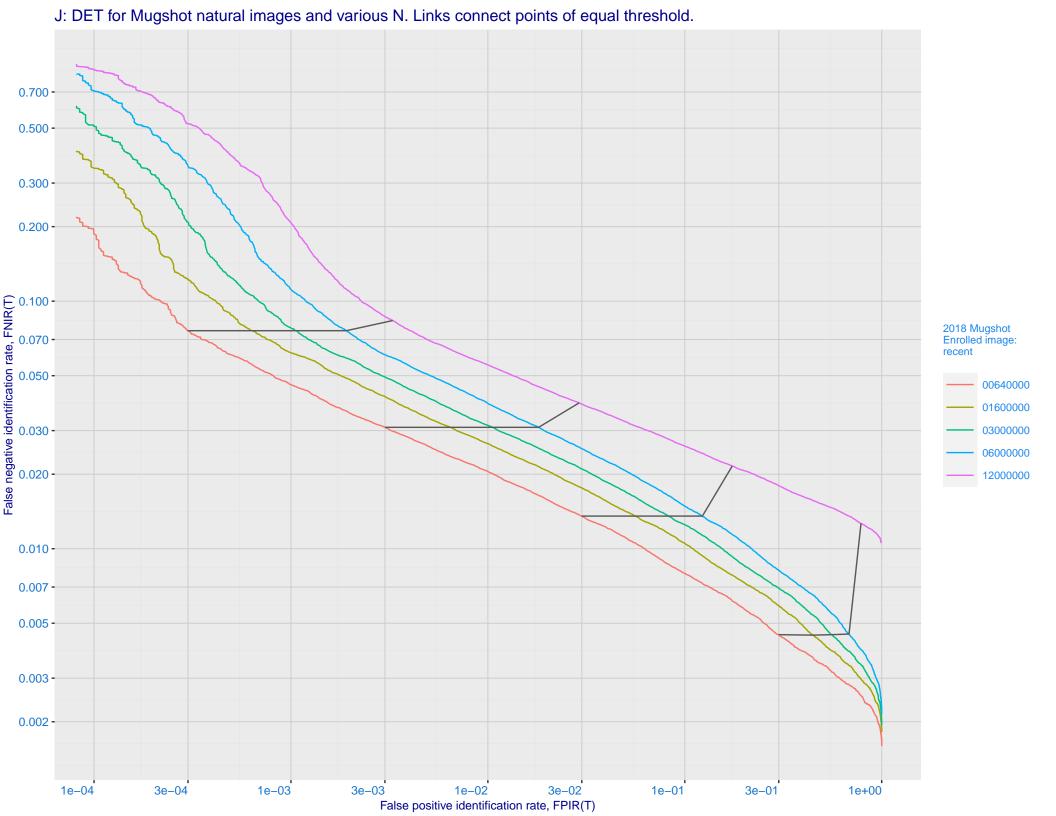
False positive identification rate, FPIR(T)

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

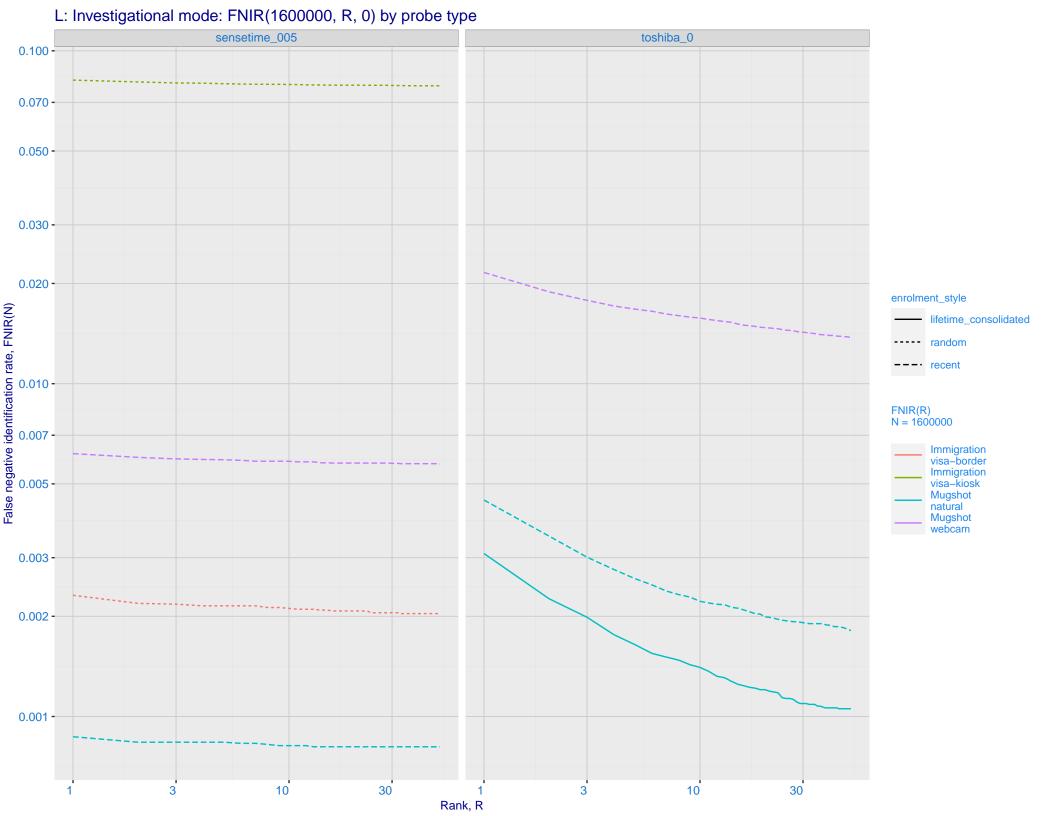


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 · 2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 -5e-02 -3e-02 -3e-02 -1e-02 -**Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam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

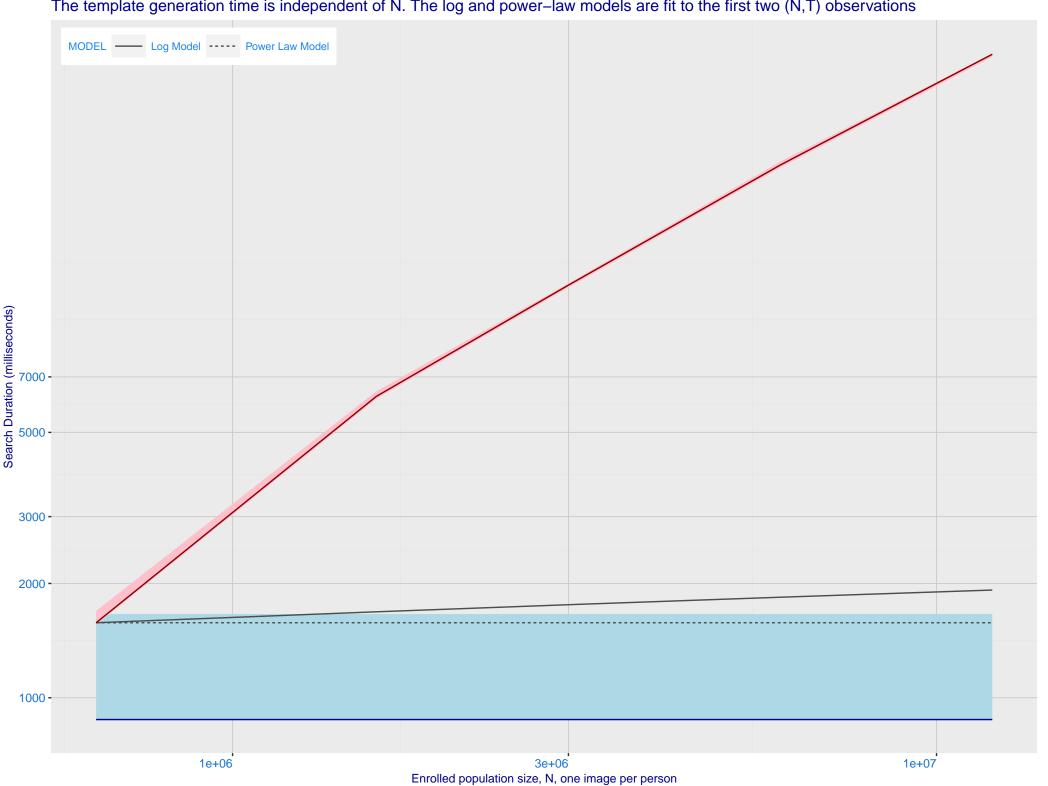




K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -Ealse negative identification rate, FNIR(N) 0.002 - 0.001 - 0.000 - 0.050 - 0.050 - 0.030 - 0. enrolment\_style consolidated ---- random --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 sensetime\_005 toshiba\_0 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



M: 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



Q: Identification FNIR(N, T, L+1) and Investigational FNIR(N, 0, R) under ageing



