## A: Datasheet

Algorithm: yitu\_4

Developer: Shanghai Yitu Technology

Submission Date: 2018\_10\_30

Template size: 2070 bytes

Template time (2.5 percentile): 865 msec

Template time (median): 898 msec

Template time (97.5 percentile): 986 msec

Investigation:

Frontal mugshot ranking 8 (out of 259) -- FNIR(1600000, 0, 1) = 0.0013 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 8 (out of 221) -- FNIR(1600000, 0, 1) = 0.0083 vs. lowest 0.0062 from sensetime\_005

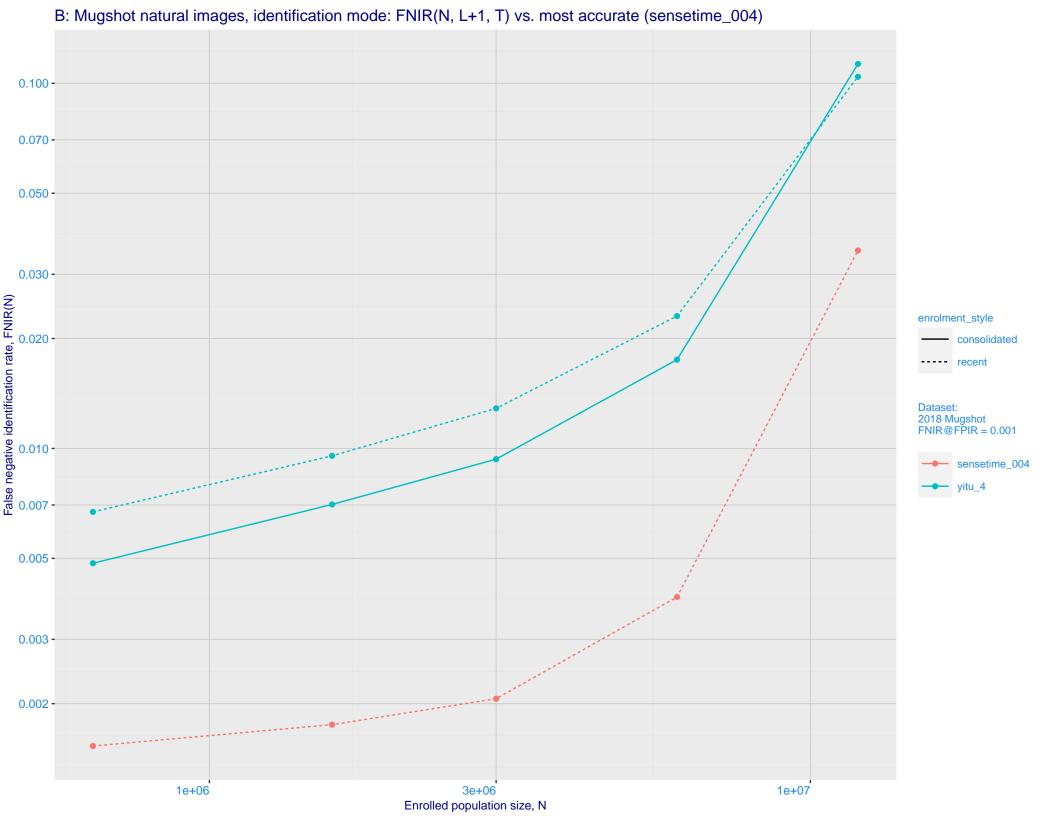
Mugshot profile ranking 104 (out of 190) -- FNIR(1600000, 0, 1) = 0.8660 vs. lowest 0.0591 from sensetime\_005

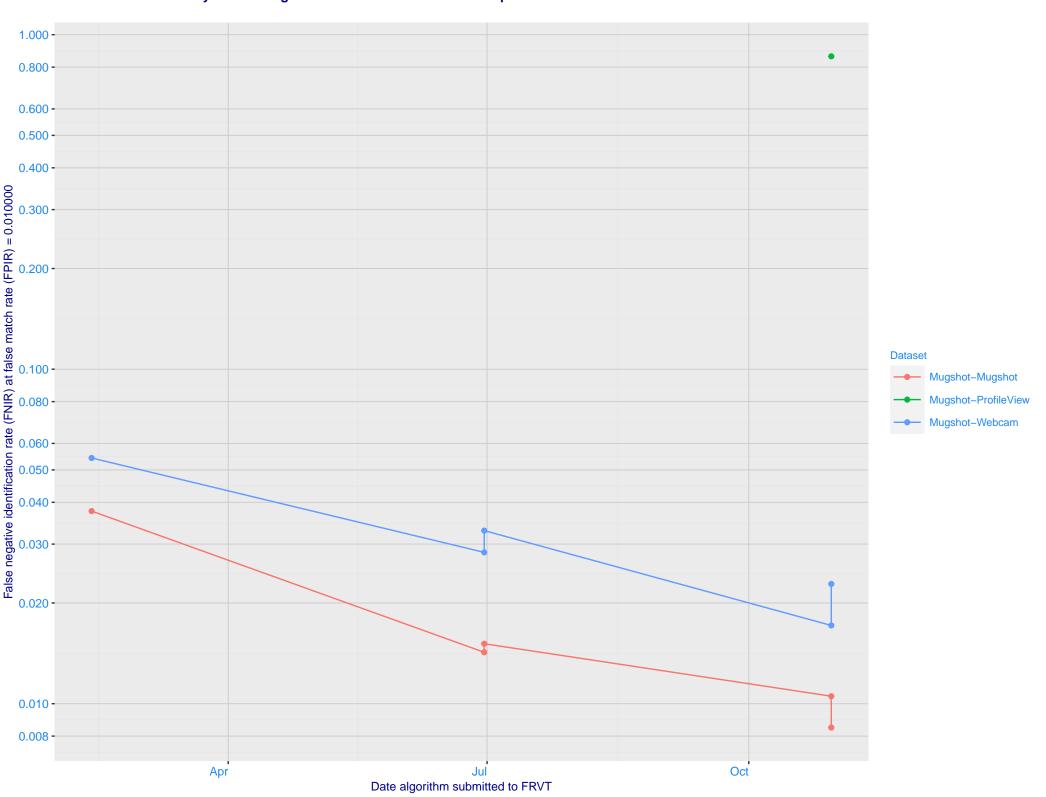
Identification:

Frontal mugshot ranking 12 (out of 259) -- FNIR(1600000, T, L+1) = 0.0095, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Mugshot webcam ranking 10 (out of 219) -- FNIR(1600000, T, L+1) = 0.0271, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

Mugshot profile ranking 33 (out of 189) -- FNIR(1600000, T, L+1) = 0.9365, FPIR=0.001000 vs. lowest 0.1733 from sensetime\_005

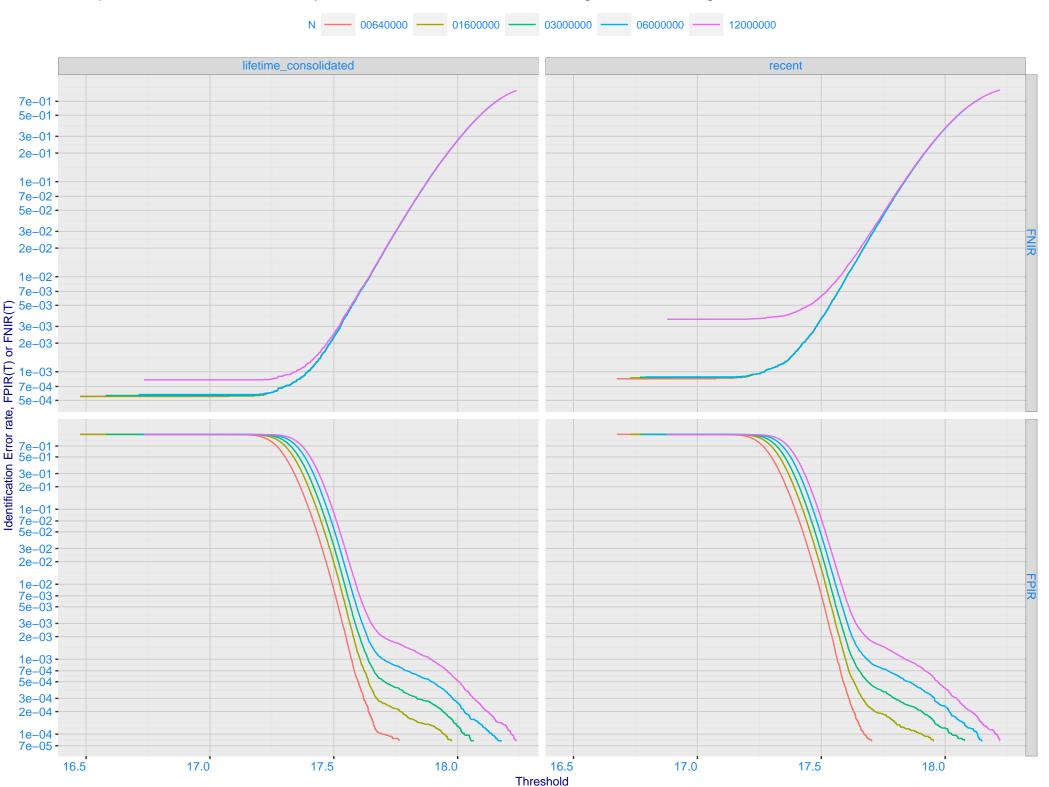




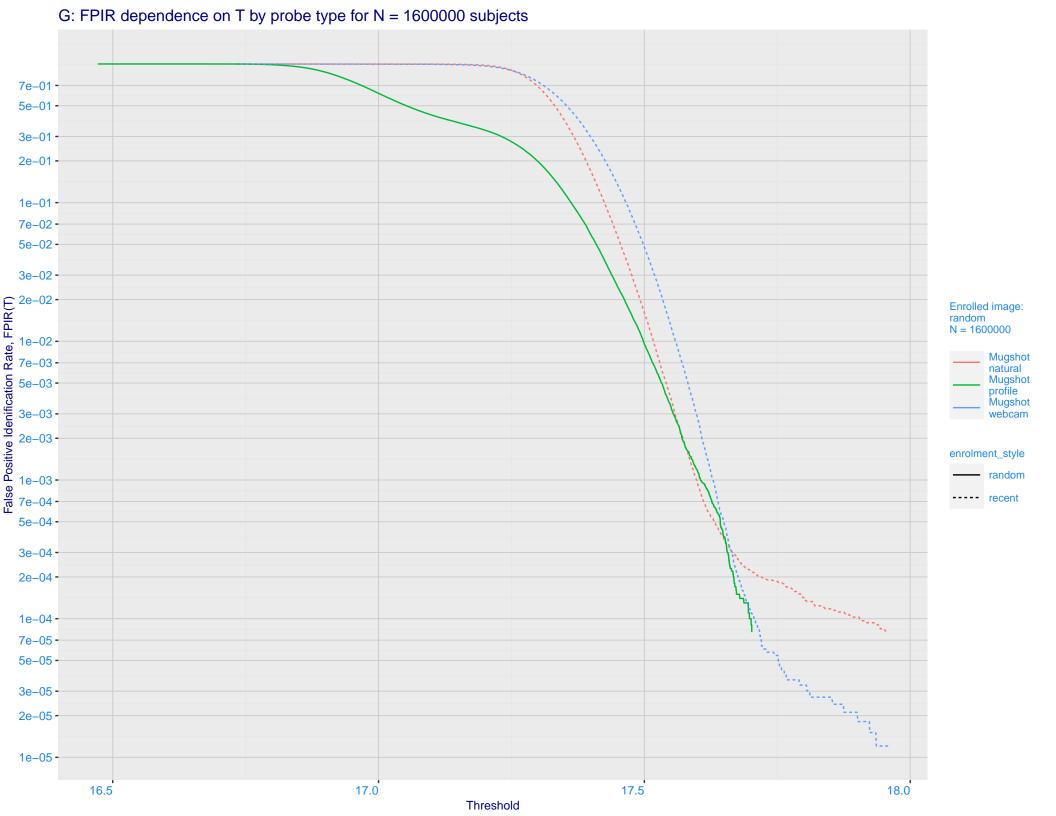
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration Immigration** Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -Ealse negative identification rate, FNIR(T) 0.003 - 0.001 - 0.700 - 0.500 - 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 -

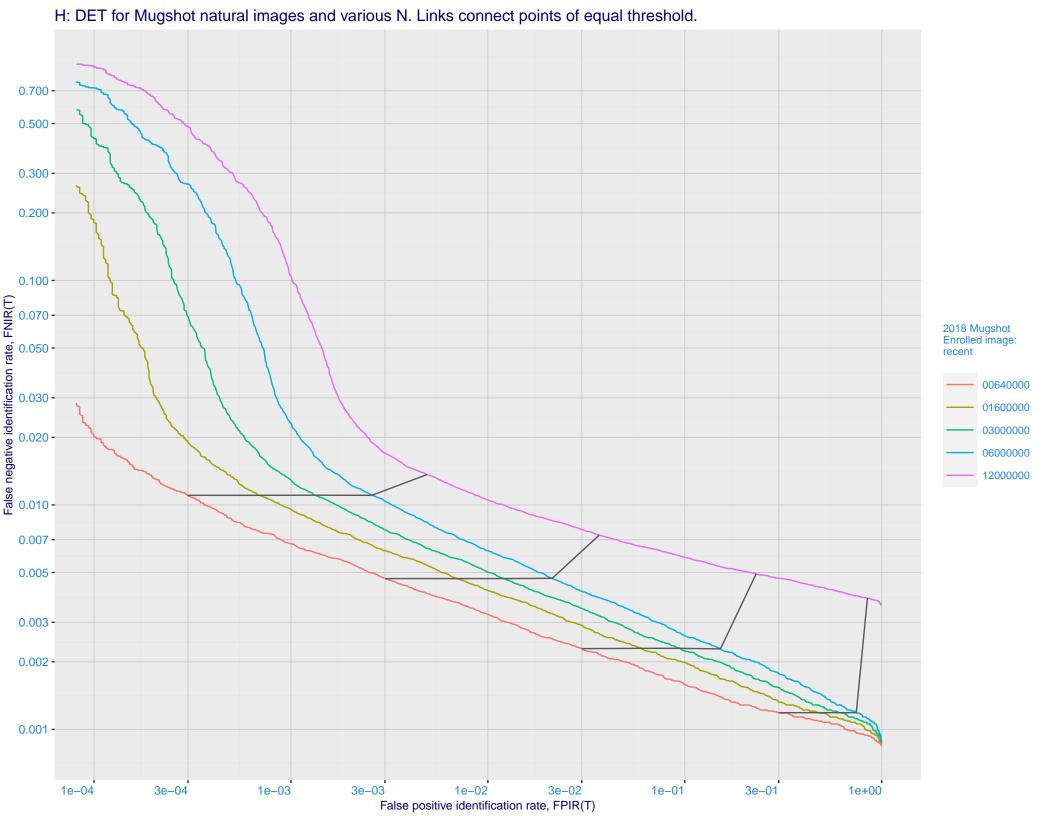
False positive identification rate, FPIR(T)

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

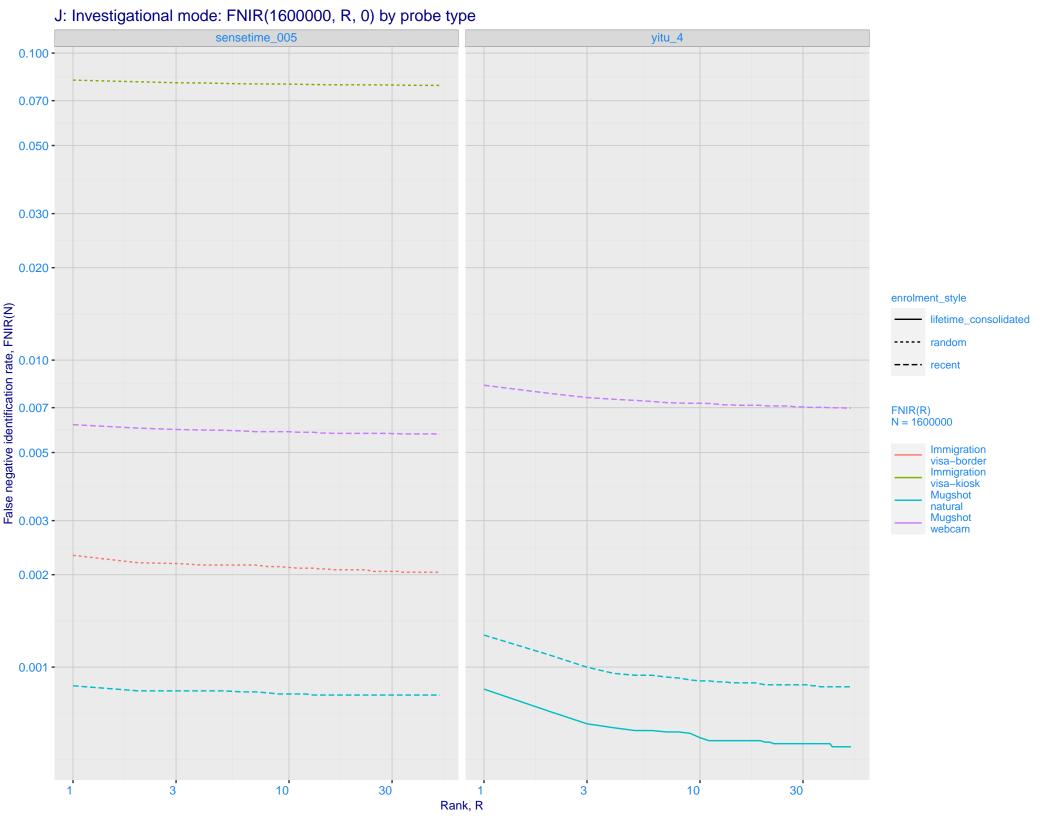


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 -5e-02 -3e-02 -3e-02 -1e-02 -**Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam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

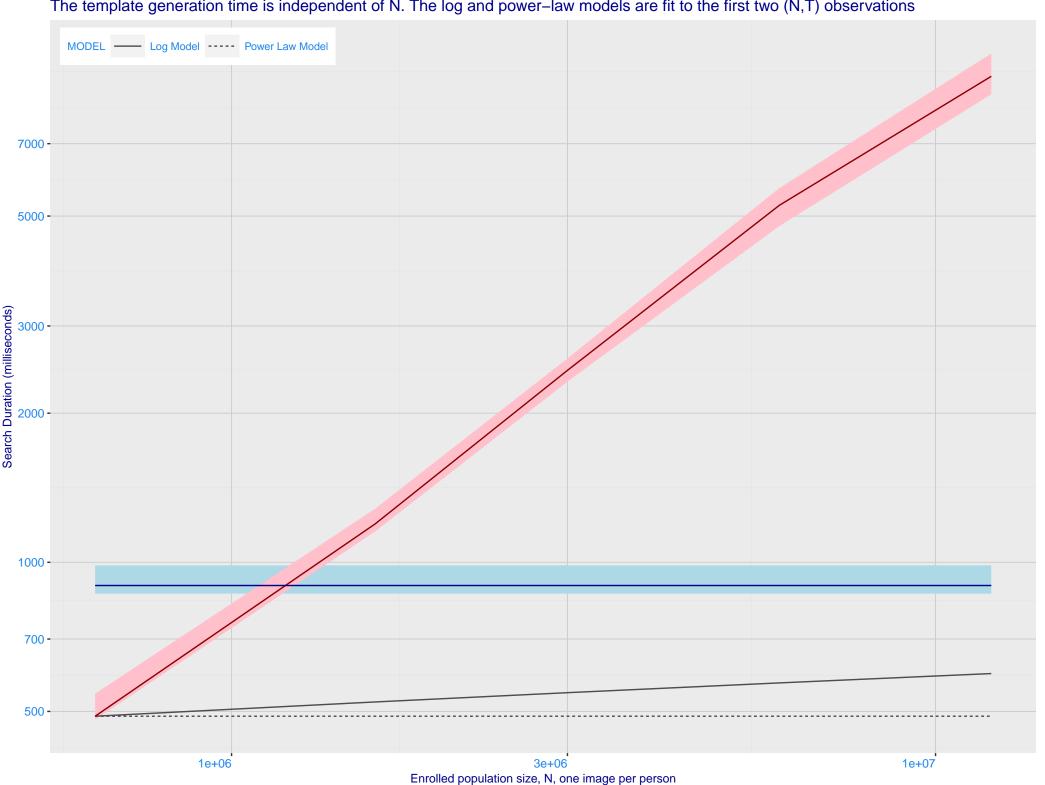




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -Ealse negative identification rate, FNIR(N) - 0.001 - 0.100 - 0.050 - 0.050 - 0.030 enrolment\_style consolidated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



