A: Datasheet

Algorithm: ntechlab_5

Developer: N-Tech Lab

Submission Date: 2018_10_30

Template size: 1940 bytes

Template time (2.5 percentile): 708 msec

Template time (median): 712 msec

Template time (97.5 percentile): 753 msec

Investigation:

Frontal mugshot ranking 74 (out of 259) -- FNIR(1600000, 0, 1) = 0.0047 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 58 (out of 221) -- FNIR(1600000, 0, 1) = 0.0181 vs. lowest 0.0062 from sensetime_005

Mugshot profile ranking 32 (out of 190) -- FNIR(1600000, 0, 1) = 0.3673 vs. lowest 0.0591 from sensetime_005

Immigration visa-border ranking 49 (out of 142) -- FNIR(1600000, 0, 1) = 0.0080 vs. lowest 0.0014 from visionlabs_009

Immigration visa-kiosk ranking 38 (out of 139) -- FNIR(1600000, 0, 1) = 0.1179 vs. lowest 0.0694 from cib_000

Identification:

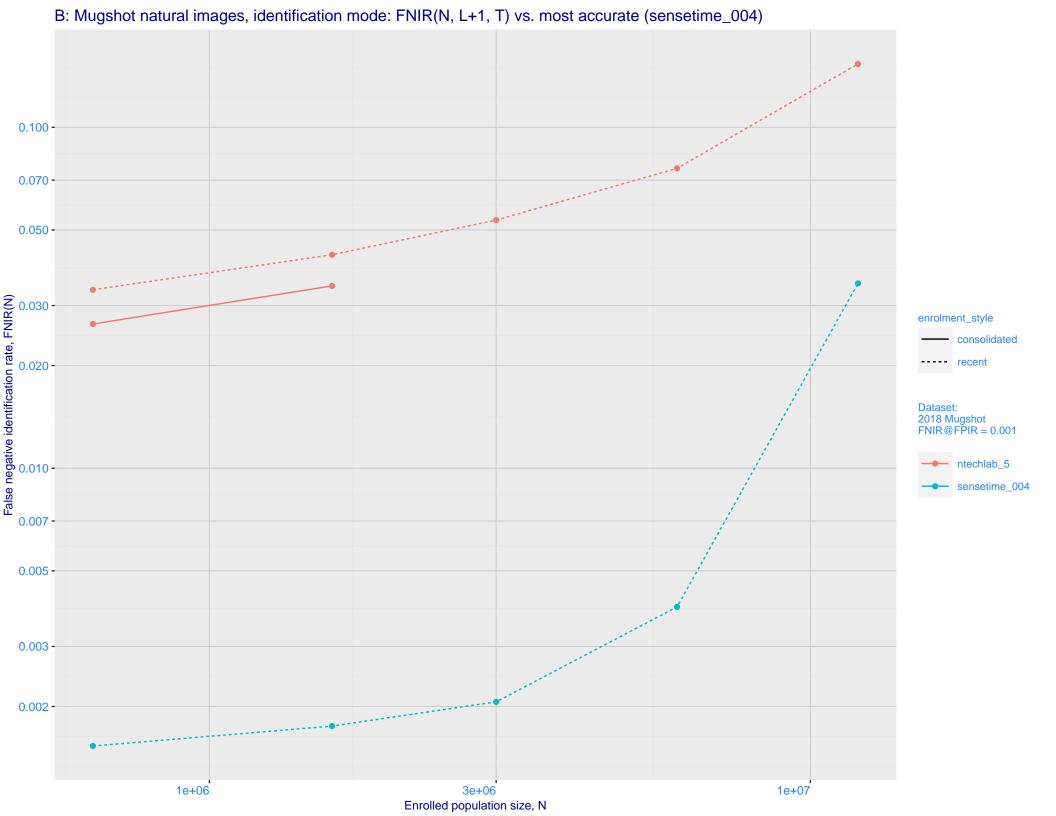
Frontal mugshot ranking 60 (out of 259) -- FNIR(1600000, T, L+1) = 0.0423, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

Mugshot webcam ranking 62 (out of 219) -- FNIR(1600000, T, L+1) = 0.1016, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

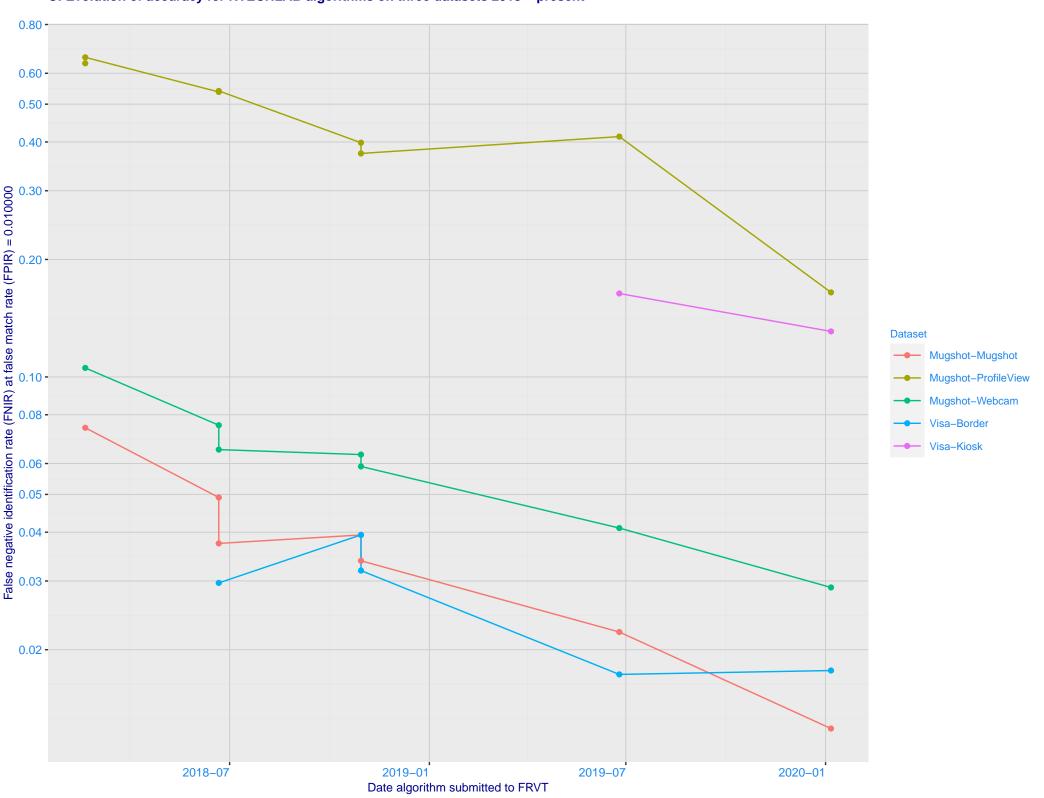
Mugshot profile ranking 16 (out of 189) -- FNIR(1600000, T, L+1) = 0.7728, FPIR=0.001000 vs. lowest 0.1733 from sensetime_005

Immigration visa-border ranking 53 (out of 139) -- FNIR(1600000, T, L+1) = 0.0727, FPIR=0.001000 vs. lowest 0.0059 from sensetime_004

Immigration visa-kiosk ranking 31 (out of 134) -- FNIR(1600000, T, L+1) = 0.2937, FPIR=0.001000 vs. lowest 0.1048 from sensetime_005

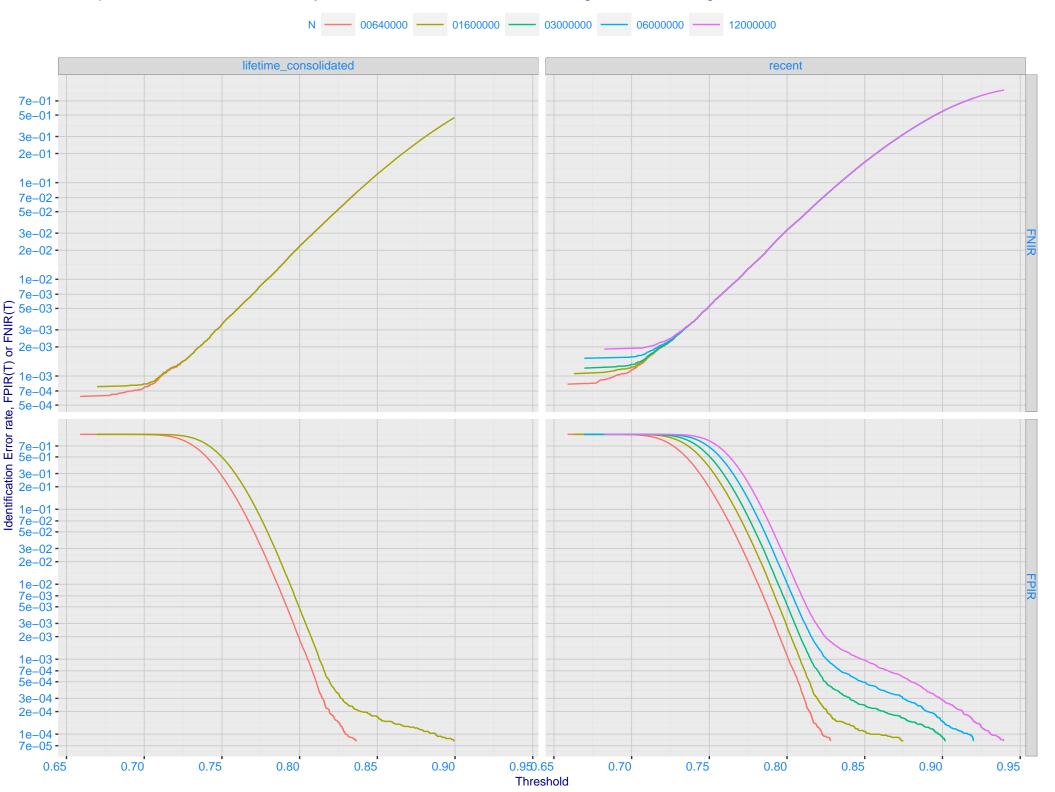


C: Evolution of accuracy for NTECHLAB algorithms on three datasets 2018 – present

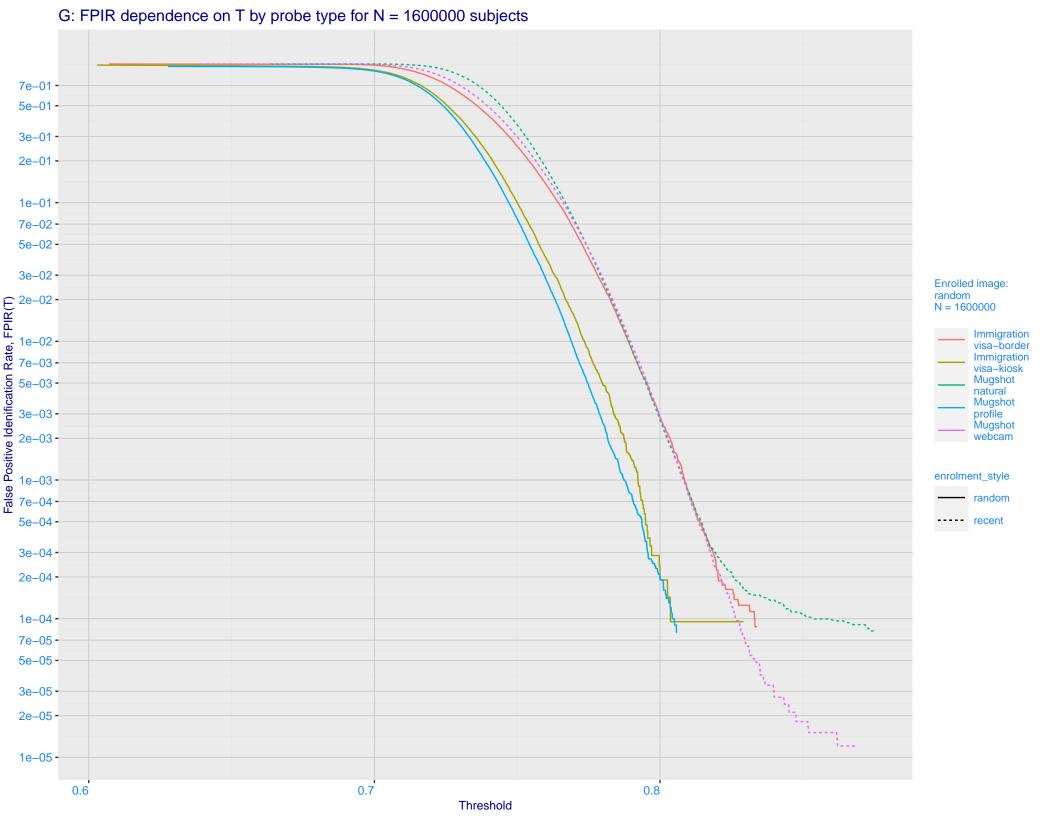


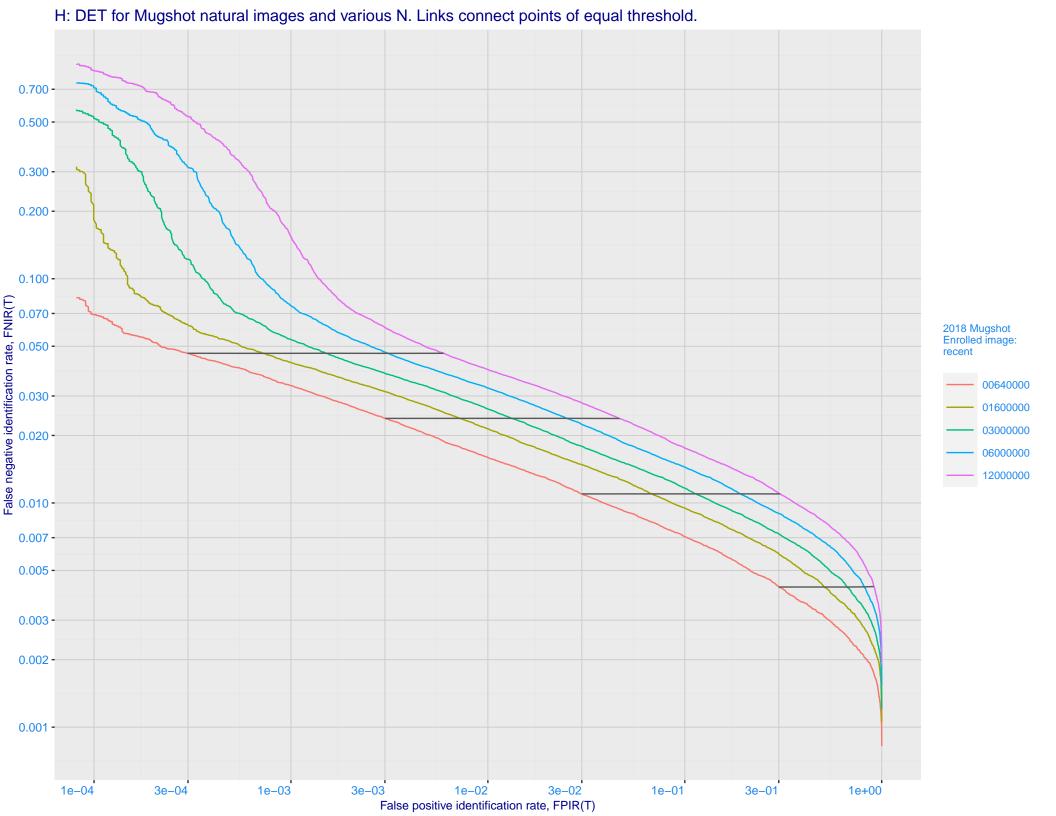
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration Immigration** Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.002 - 0.001 - 0.500 - 0.500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

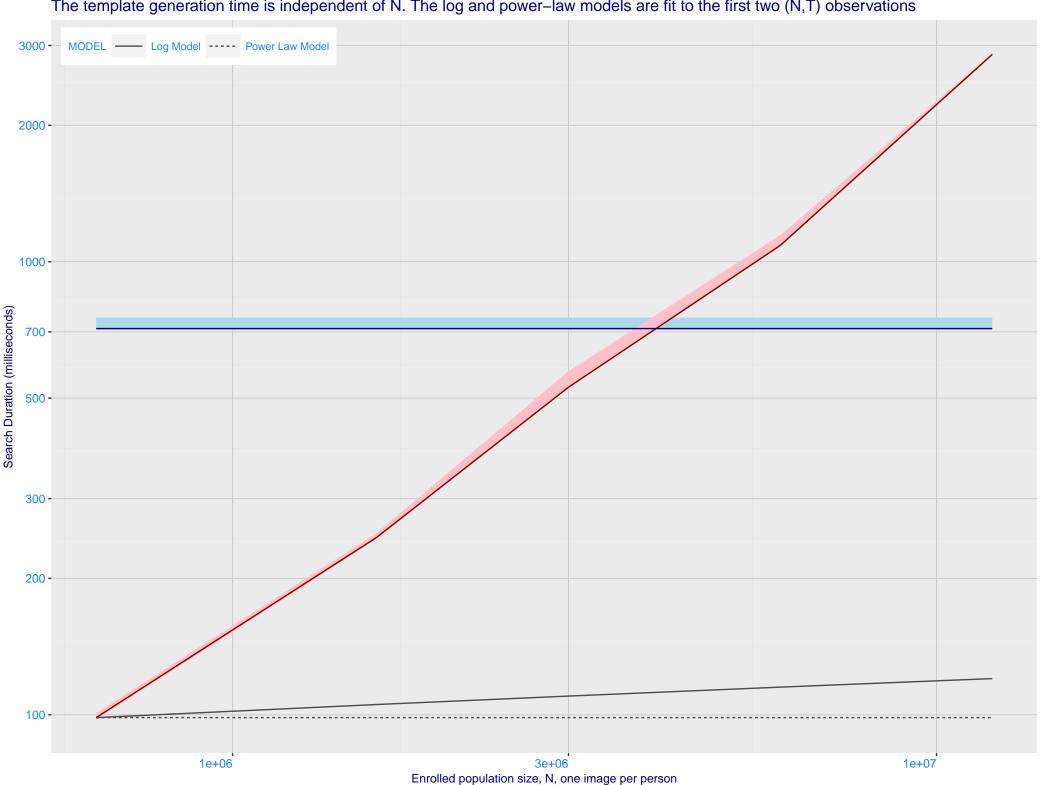




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_005) Immigration **Immigration** visa-border visa-kiosk 0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 - 0.002 - 0.001 - 0.001 - 0.000 - 0.000 - 0.050 enrolment_style consolidated ---- random --- recent Mugshot webcam Mugshot natural FNIR@Rank = 1 ntechlab_5 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

J: Investigational mode: FNIR(1600000, R, 0) by probe type ntechlab_5 sensetime_005 0.100 -0.070 -0.050 -0.030 enrolment_style Ealse negative identification rate, FNIR(N) 0.000 - 0.000 - 0.0005 lifetime_consolidated ---- random --- recent FNIR(R) N = 1600000 Immigration visa-border Immigration visa-kiosk Mugshot natural Mugshot webcam 0.003 -0.002 -0.001 -10 30 3 10 30 Rank, R

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



