## A: Datasheet

Algorithm: microsoft\_2

Developer: Microsoft

Submission Date: 2018\_02\_12

Template size: 1024 bytes

Template time (2.5 percentile): 546 msec

Template time (median): 554 msec

Template time (97.5 percentile): 575 msec

Investigation:

Frontal mugshot ranking 68 (out of 265) -- FNIR(1600000, 0, 1) = 0.0040 vs. lowest 0.0009 from sensetime\_005

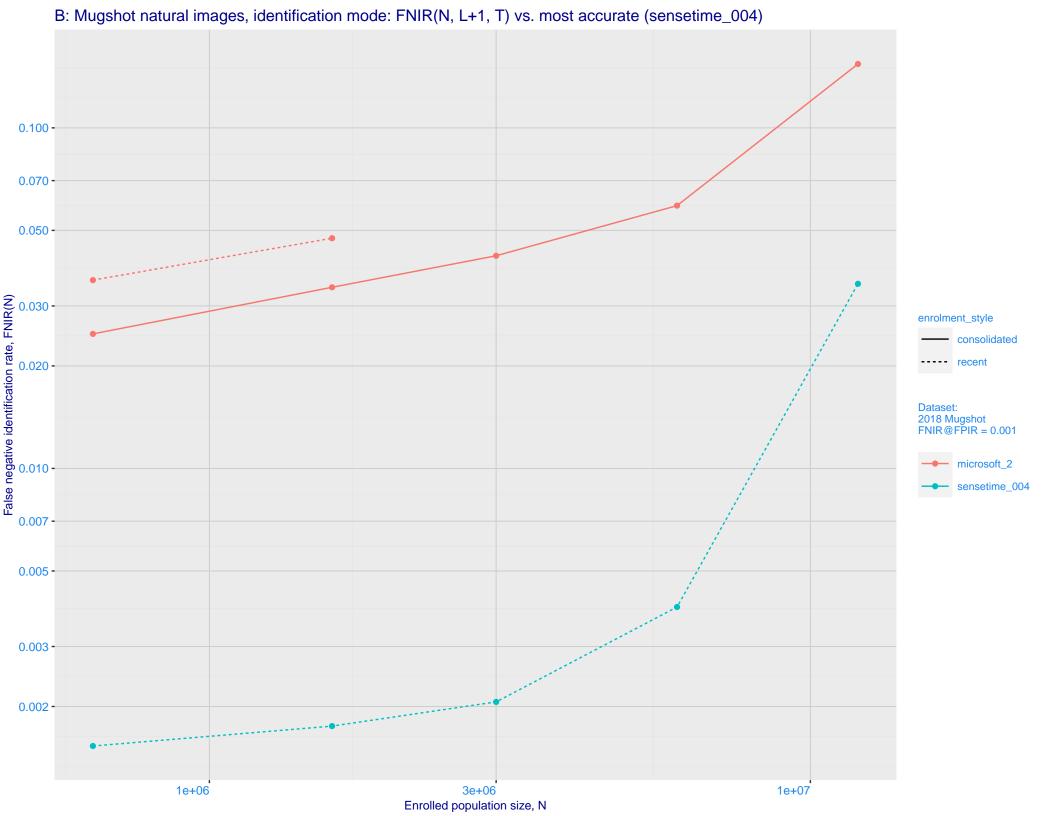
Immigration visa-border ranking 58 (out of 148) -- FNIR(1600000, 0, 1) = 0.0089 vs. lowest 0.0013 from visionlabs\_010

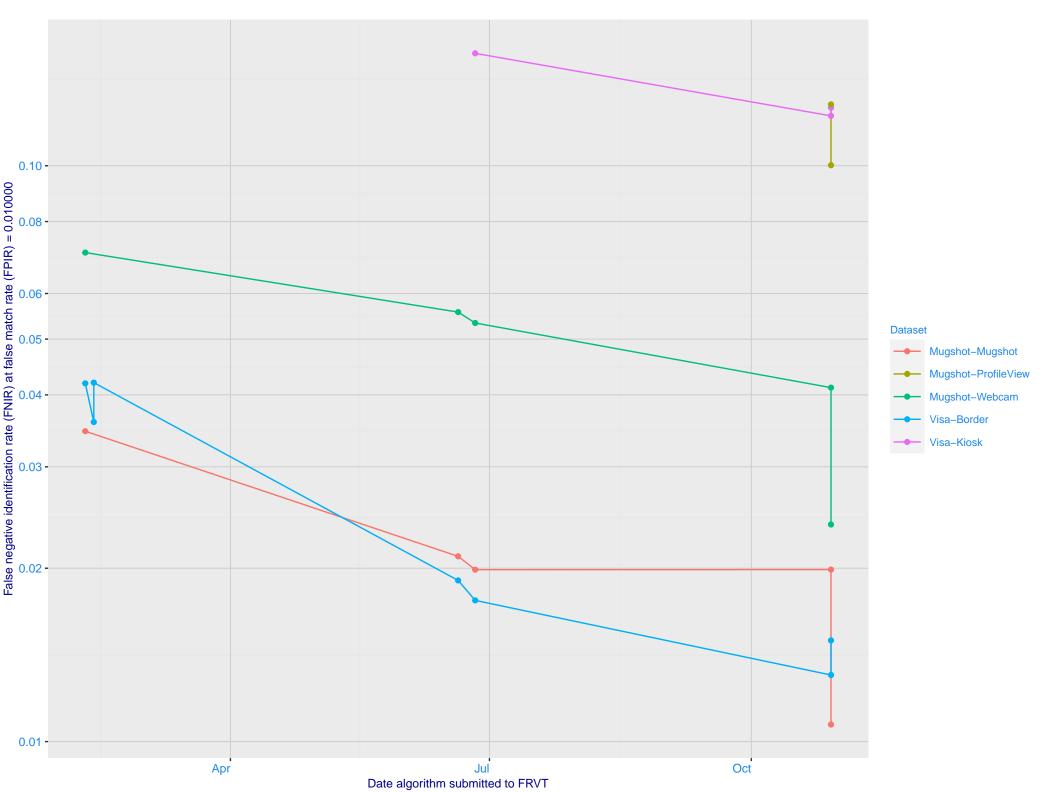
Immigration visa-kiosk ranking 59 (out of 145) -- FNIR(1600000, 0, 1) = 0.1372 vs. lowest 0.0568 from hr\_000

Identification:

Frontal mugshot ranking 79 (out of 265) -- FNIR(1600000, T, L+1) = 0.0474, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Immigration visa-border ranking 59 (out of 146) -- FNIR(1600000, T, L+1) = 0.0753, FPIR=0.001000 vs. lowest 0.0049 from hr\_000

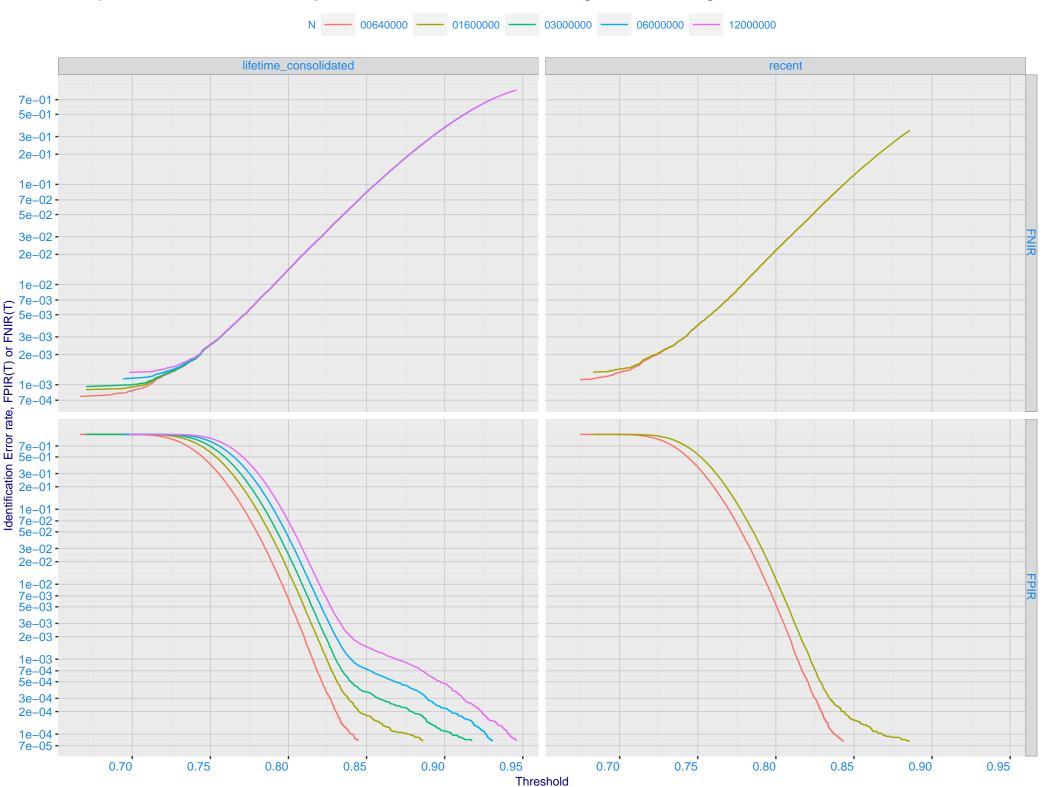




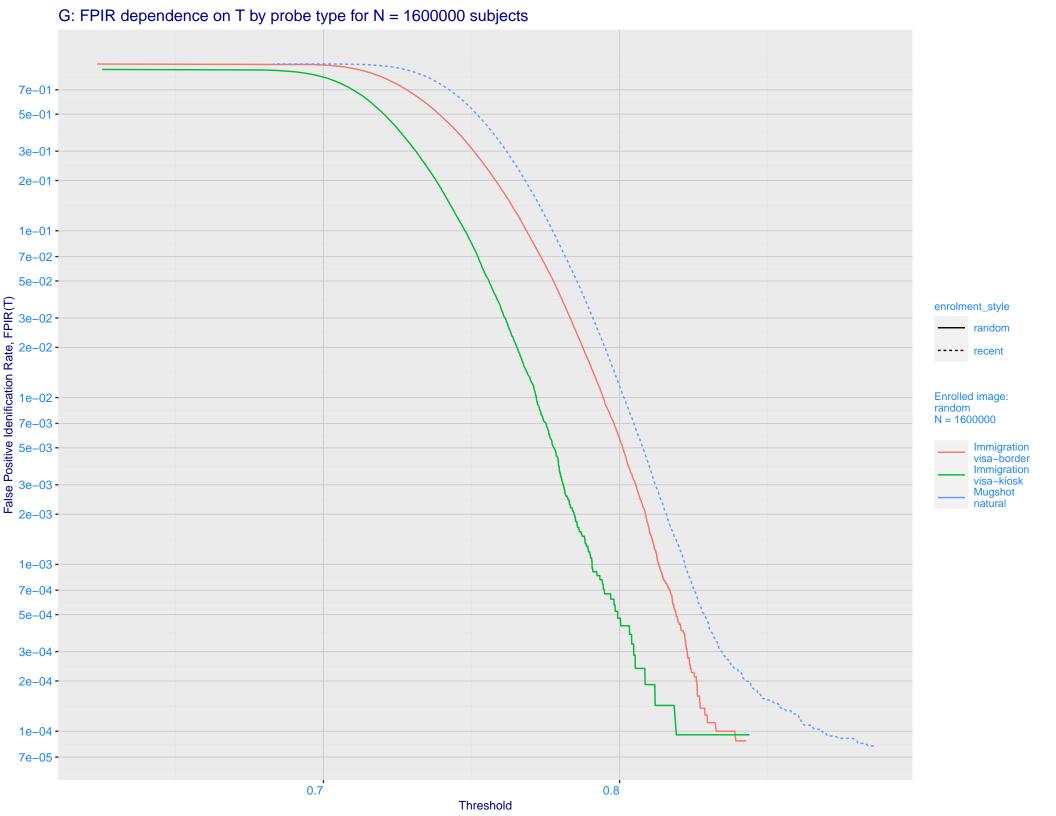
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.0001 - 0.700 - 0.500 - 0.200 - 0.100 - 0 enrolment\_style consolidated-ONE-MATE random-ONE-MATE recent-ONE-MATE 0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -0.002 -0.001 -

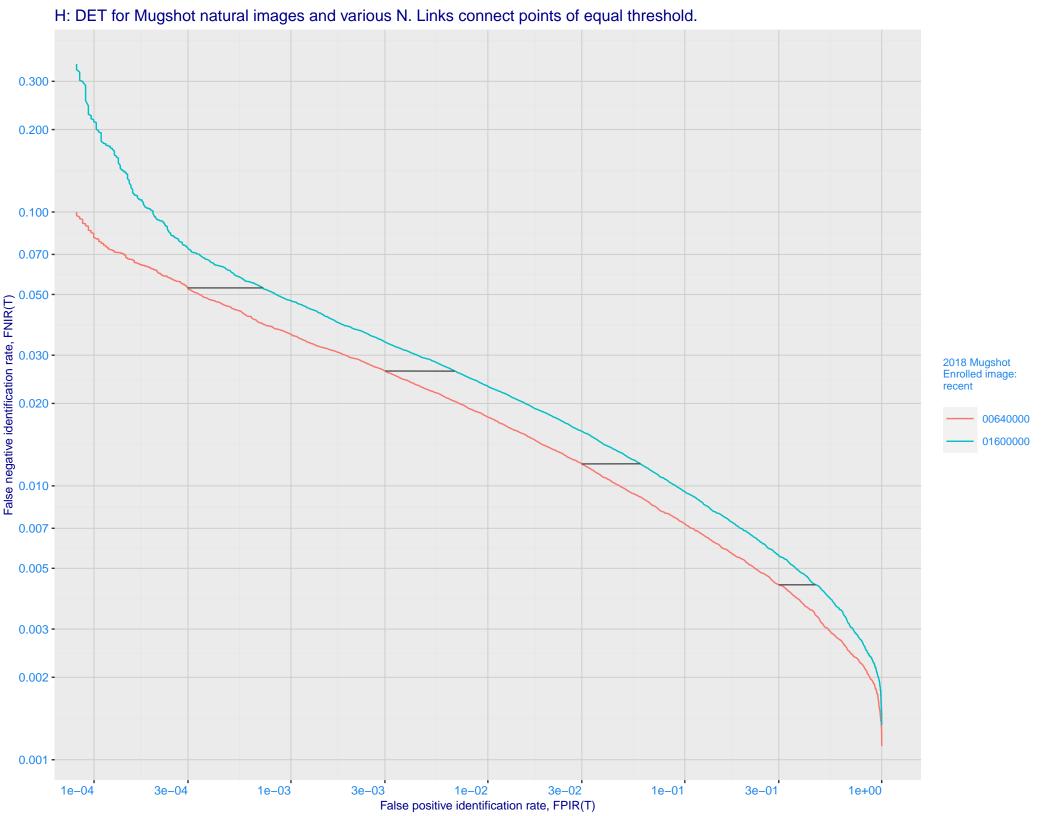
False positive identification rate, FPIR(T)

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 -E 1e-01 -Enrolled images: recent N = 1600000 Selectivity, 26–05 - 26–05 - 3 Mugshot natural 2e-02 -1e-02 -7e-03 -5e-03 -3e-03 -2e-03 -1e-03 -7e-04 -5e-04 -3e-04 -2e-04 -1e-04 -7e-05 -5e-05 -1e-04 3e-04 1e-03 3e-03 1e-02 3e-02 1e-01 3e-01 False Positive Idenification Rate, FPIR(T)

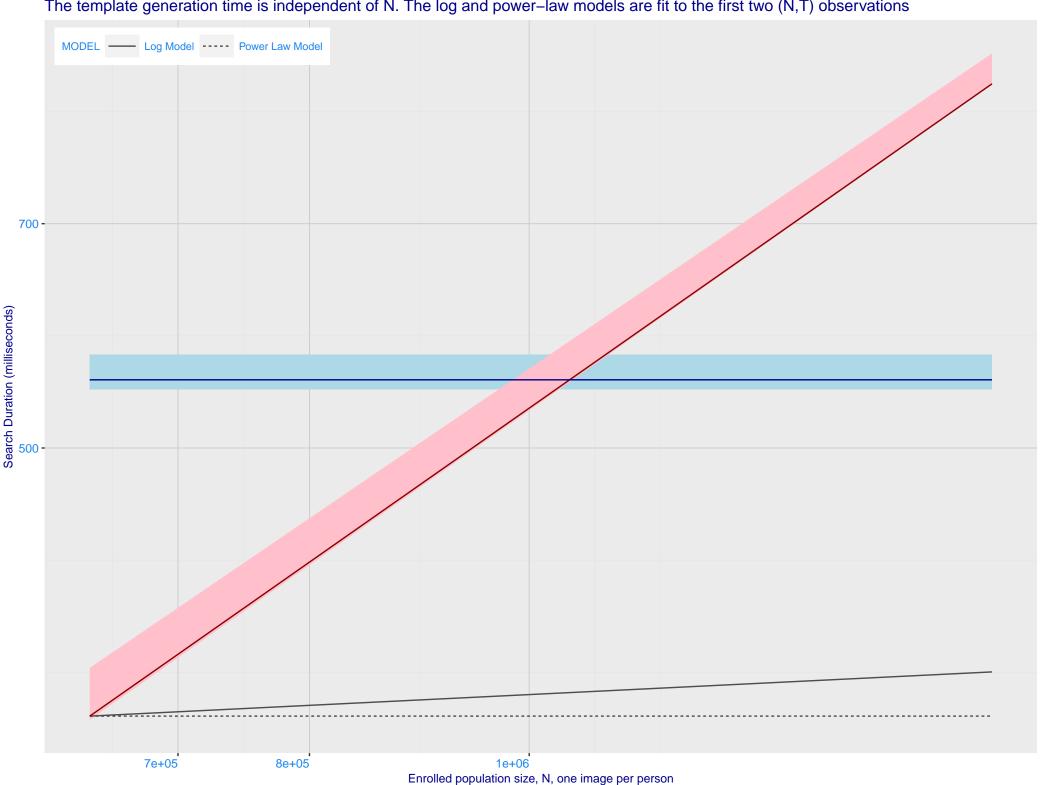




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 - 0.002 - 0.001 - 0.001 - 0.000 - 0.000 - 0.000 - 0.0050 - 0.050 enrolment\_style consolidated ---- random --- recent Mugshot webcam Mugshot natural FNIR@Rank = 1 microsoft\_2 - 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 microsoft\_2 sensetime\_005 0.100 -0.070 -0.050 -0.030 enrolment\_style False negative identification rate, FNIR(N) - 0.000 - 0.0007 - 0.0005 - 0.0 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 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



