## A: Datasheet

Algorithm: microsoft\_0

Developer: Microsoft

Submission Date: 2018\_01\_30

Template size: 512 bytes

Template time (2.5 percentile): 274 msec

Template time (median): 281 msec

Template time (97.5 percentile): 297 msec

Investigation:

Frontal mugshot ranking 60 (out of 259) -- FNIR(1600000, 0, 1) = 0.0038 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 71 (out of 221) -- FNIR(1600000, 0, 1) = 0.0206 vs. lowest 0.0062 from sensetime\_005

Immigration visa-border ranking 55 (out of 142) -- FNIR(1600000, 0, 1) = 0.0101 vs. lowest 0.0014 from visionlabs\_009

Immigration visa-kiosk ranking 56 (out of 139) -- FNIR(1600000, 0, 1) = 0.1422 vs. lowest 0.0694 from cib\_000

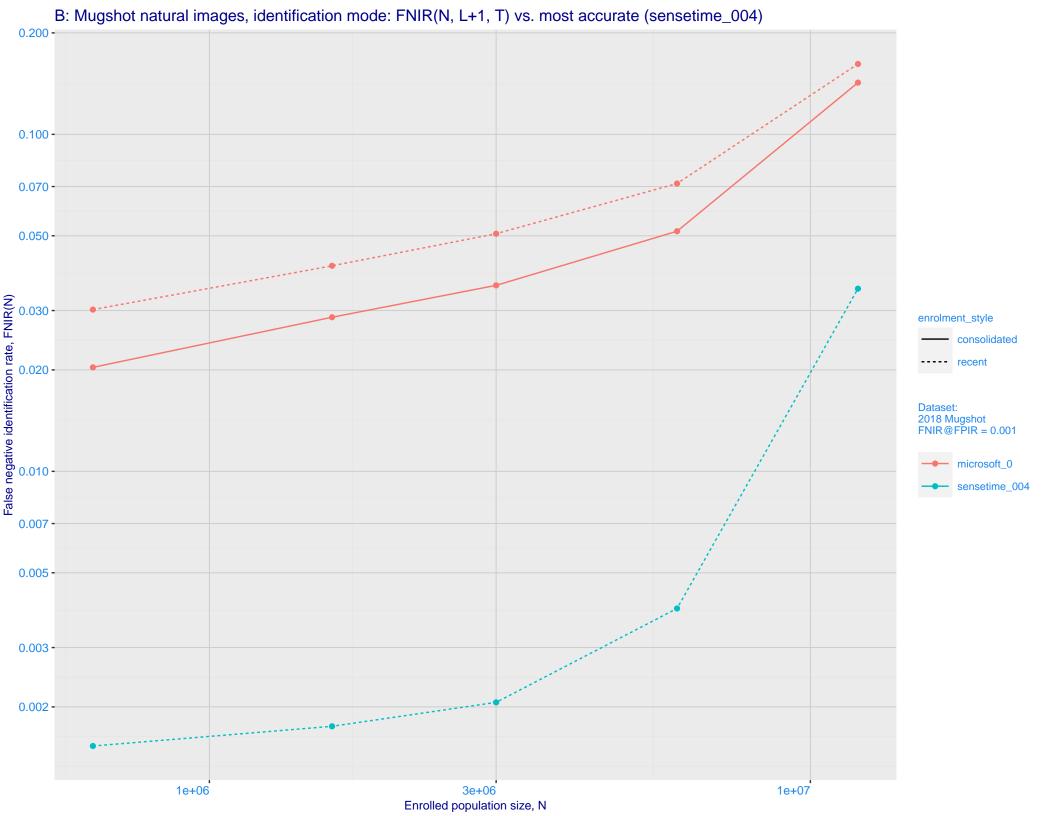
Identification:

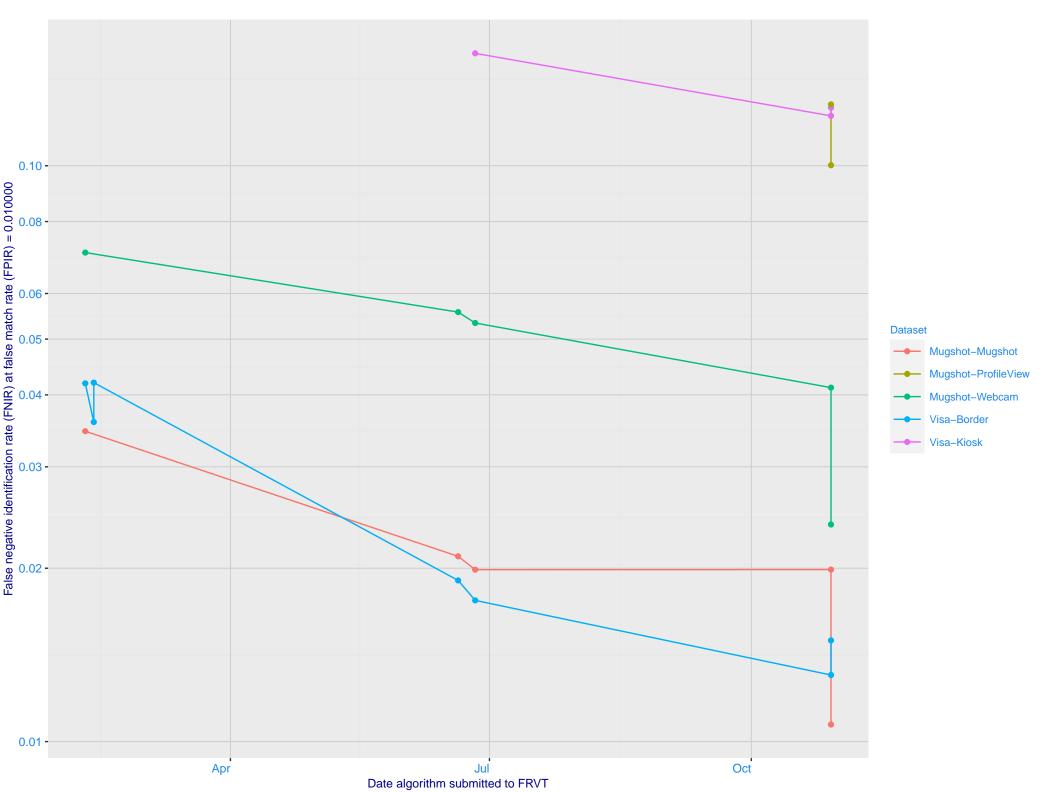
Frontal mugshot ranking 58 (out of 259) -- FNIR(1600000, T, L+1) = 0.0407, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Mugshot webcam ranking 72 (out of 219) -- FNIR(1600000, T, L+1) = 0.1145, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

Immigration visa-border ranking 57 (out of 139) -- FNIR(1600000, T, L+1) = 0.0774, FPIR=0.001000 vs. lowest 0.0059 from sensetime\_004

Immigration visa-kiosk ranking 34 (out of 134) -- FNIR(1600000, T, L+1) = 0.2998, FPIR=0.001000 vs. lowest 0.1048 from sensetime\_005

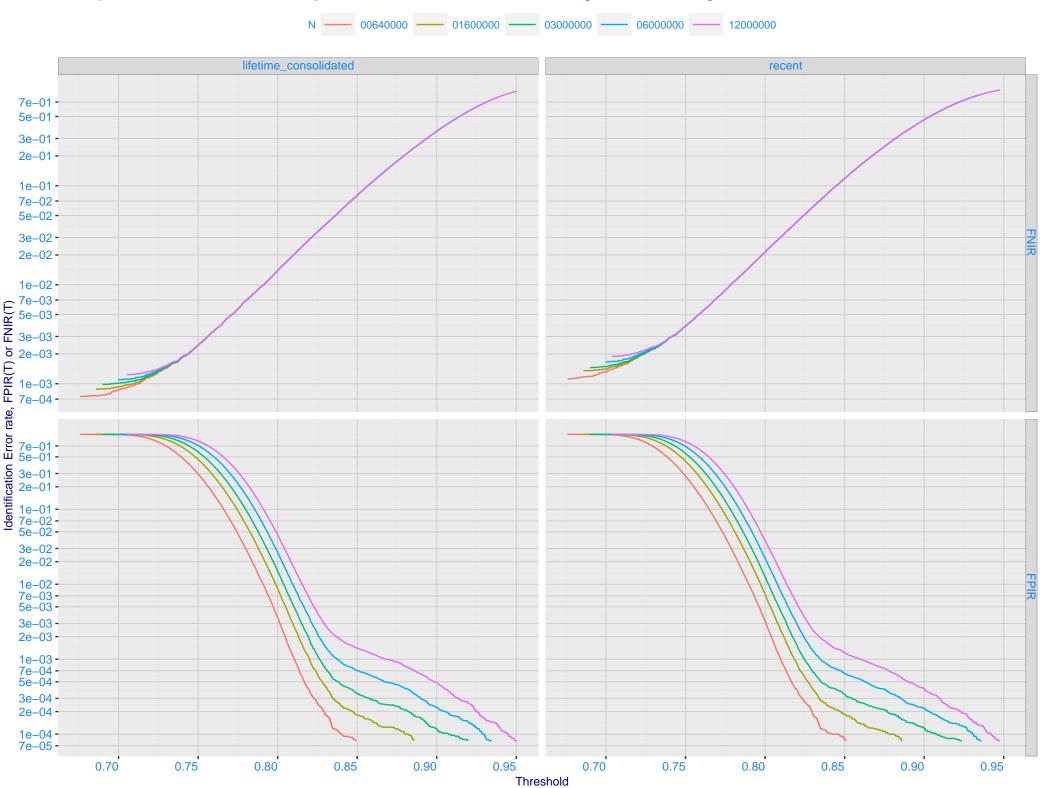




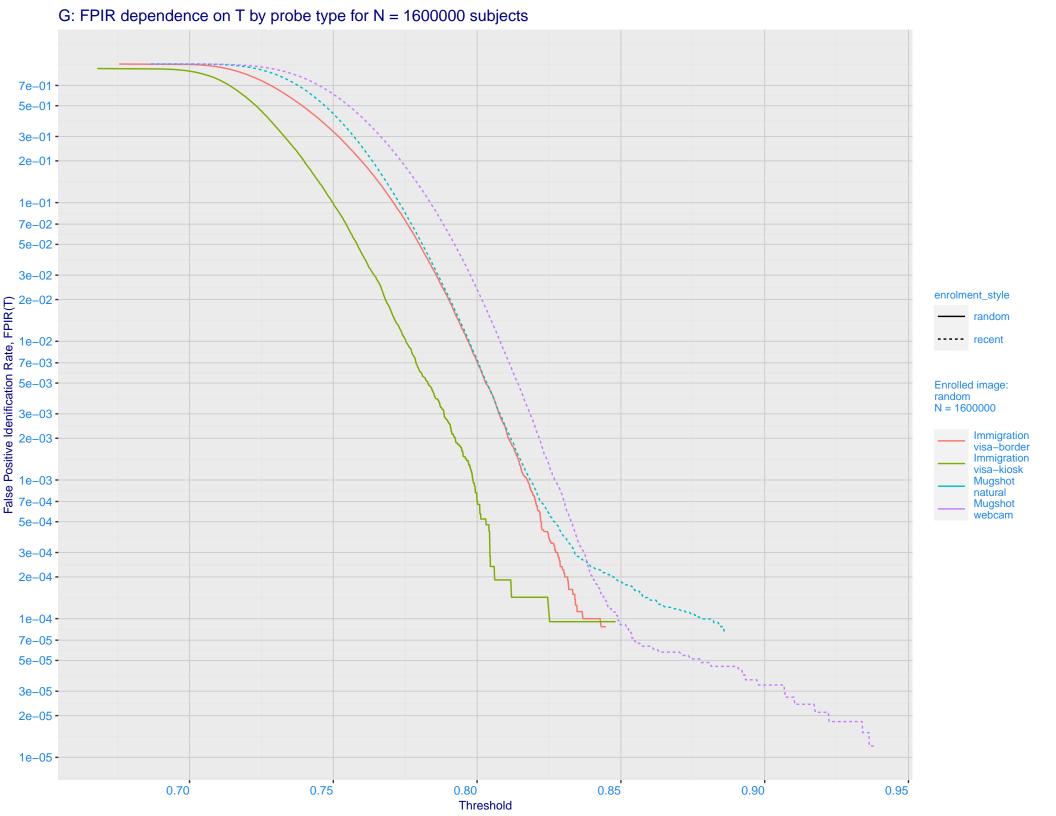
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.0001 - 0.700 - 0.500 - 0.200 - 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 -

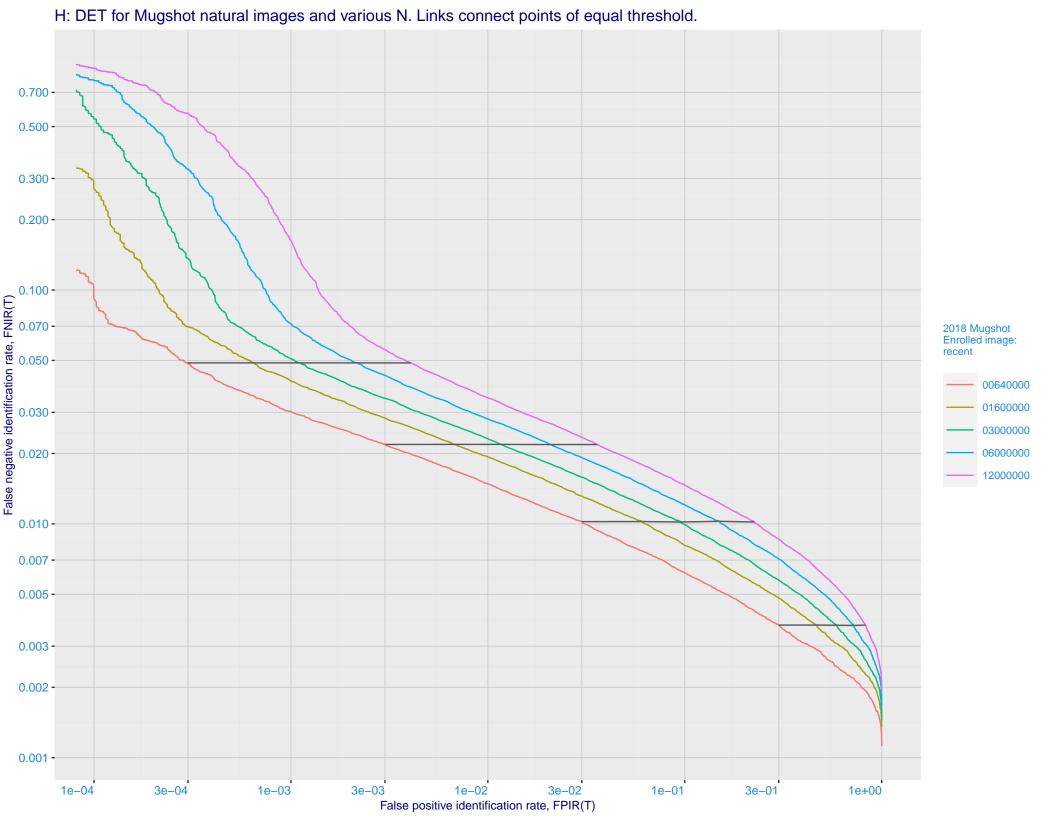
False positive identification rate, FPIR(T)

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 -1e-01 -Selectivity, SEL(T) 5e-02 - 5e-02 - 2e-02 - 1e-02 - 1 **Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam 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 -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)

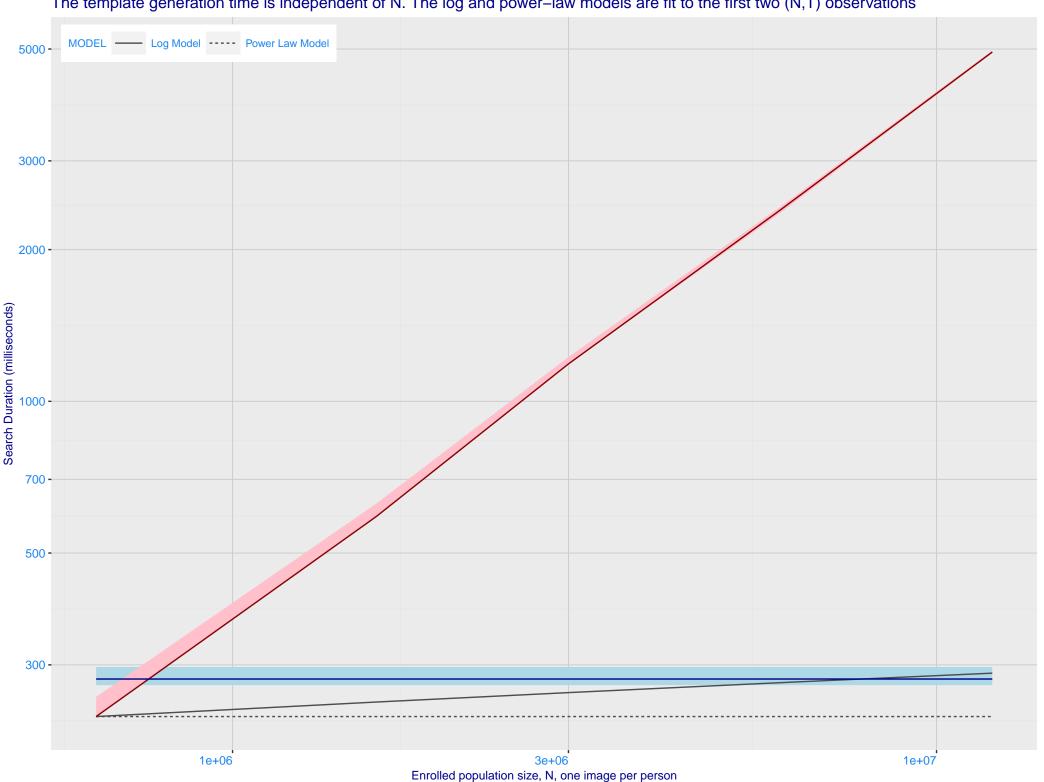




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 - 0.002 - 0.001 - 0.001 - 0.000 FNIR@Rank = 1 microsoft\_0 sensetime\_005 Mugshot webcam Mugshot natural enrolment\_style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



