## A: Datasheet

Algorithm: vocord\_5

Developer: Vocord

Submission Date: 2018\_10\_30

Template size: 768 bytes

Template time (2.5 percentile): 778 msec

Template time (median): 781 msec

Template time (97.5 percentile): 1210 msec

Investigation:

Frontal mugshot ranking 98 (out of 259) -- FNIR(1600000, 0, 1) = 0.0070 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 87 (out of 221) -- FNIR(1600000, 0, 1) = 0.0232 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 94 (out of 190) -- FNIR(1600000, 0, 1) = 0.8121 vs. lowest 0.0591 from sensetime\_005

Immigration visa-border ranking 88 (out of 142) -- FNIR(1600000, 0, 1) = 0.0548 vs. lowest 0.0014 from visionlabs\_009

Immigration visa-kiosk ranking 71 (out of 139) -- FNIR(1600000, 0, 1) = 0.2056 vs. lowest 0.0694 from cib\_000

Identification:

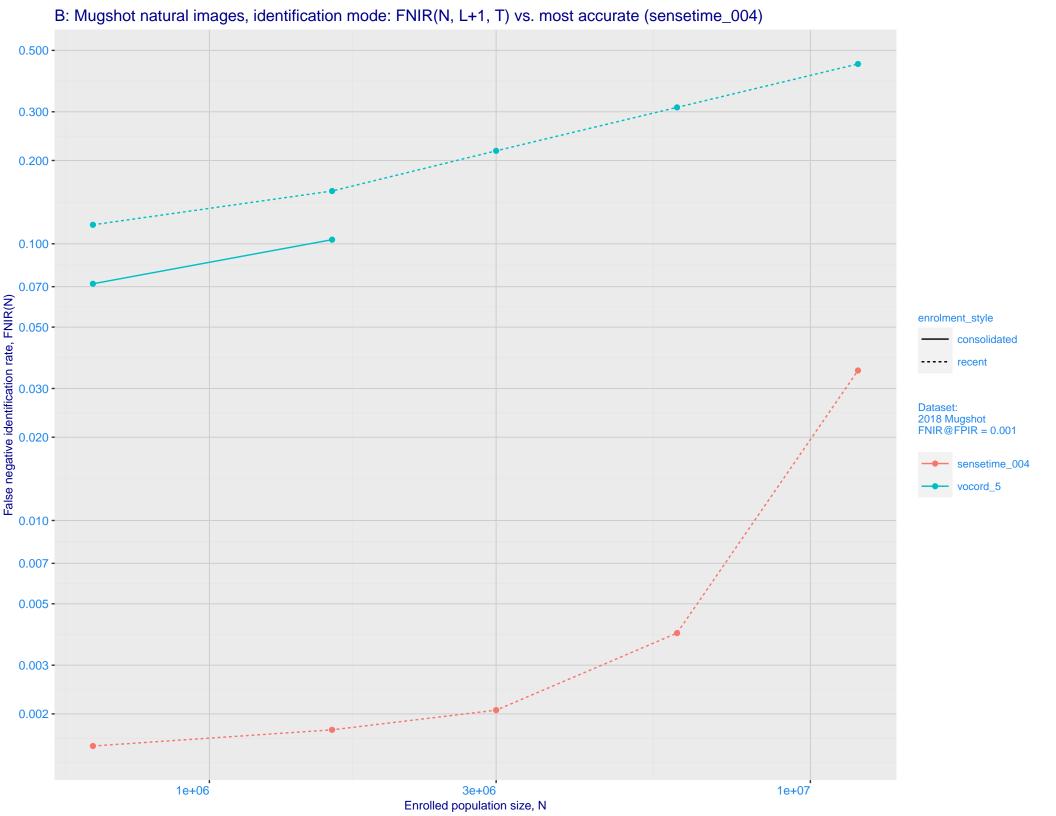
Frontal mugshot ranking 153 (out of 259) -- FNIR(1600000, T, L+1) = 0.1551, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Mugshot webcam ranking 88 (out of 219) -- FNIR(1600000, T, L+1) = 0.1295, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

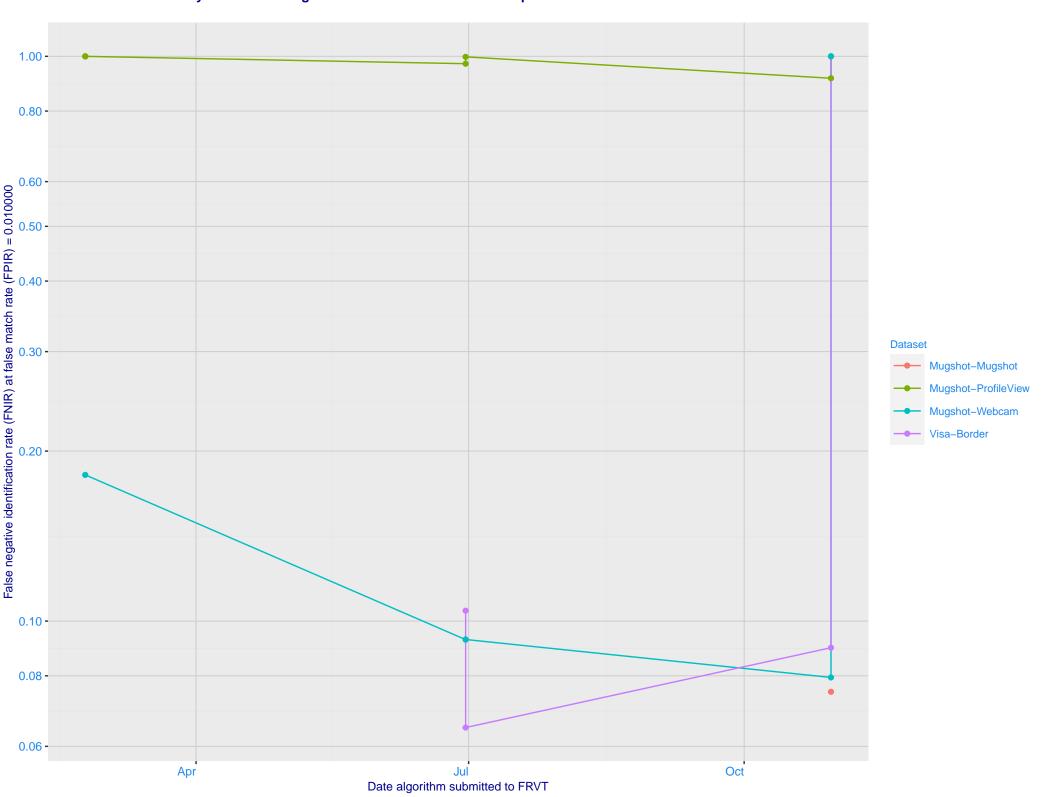
Mugshot profile ranking 104 (out of 189) -- FNIR(1600000, T, L+1) = 0.9973, FPIR=0.001000 vs. lowest 0.1733 from sensetime\_005

Immigration visa-border ranking 70 (out of 139) -- FNIR(1600000, T, L+1) = 0.1380, FPIR=0.001000 vs. lowest 0.0059 from sensetime\_004

Immigration visa-kiosk ranking 46 (out of 134) -- FNIR(1600000, T, L+1) = 0.3835, FPIR=0.001000 vs. lowest 0.1048 from sensetime\_005

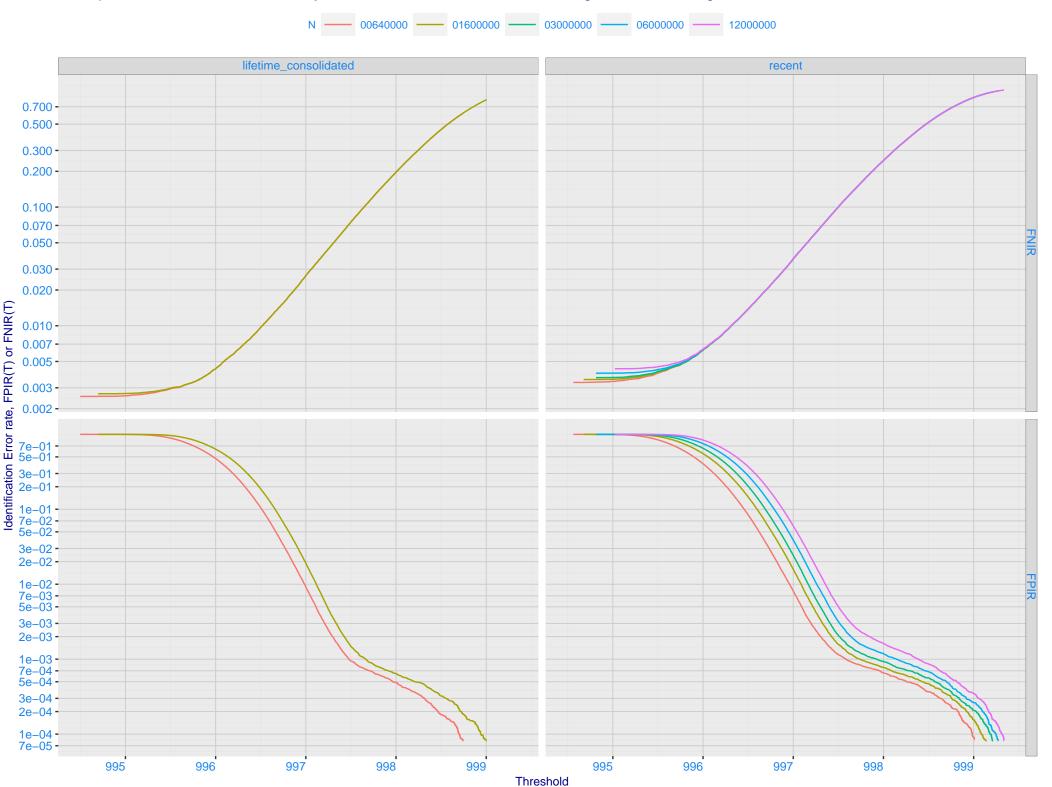


C: Evolution of accuracy for VOCORD algorithms on three datasets 2018 – present

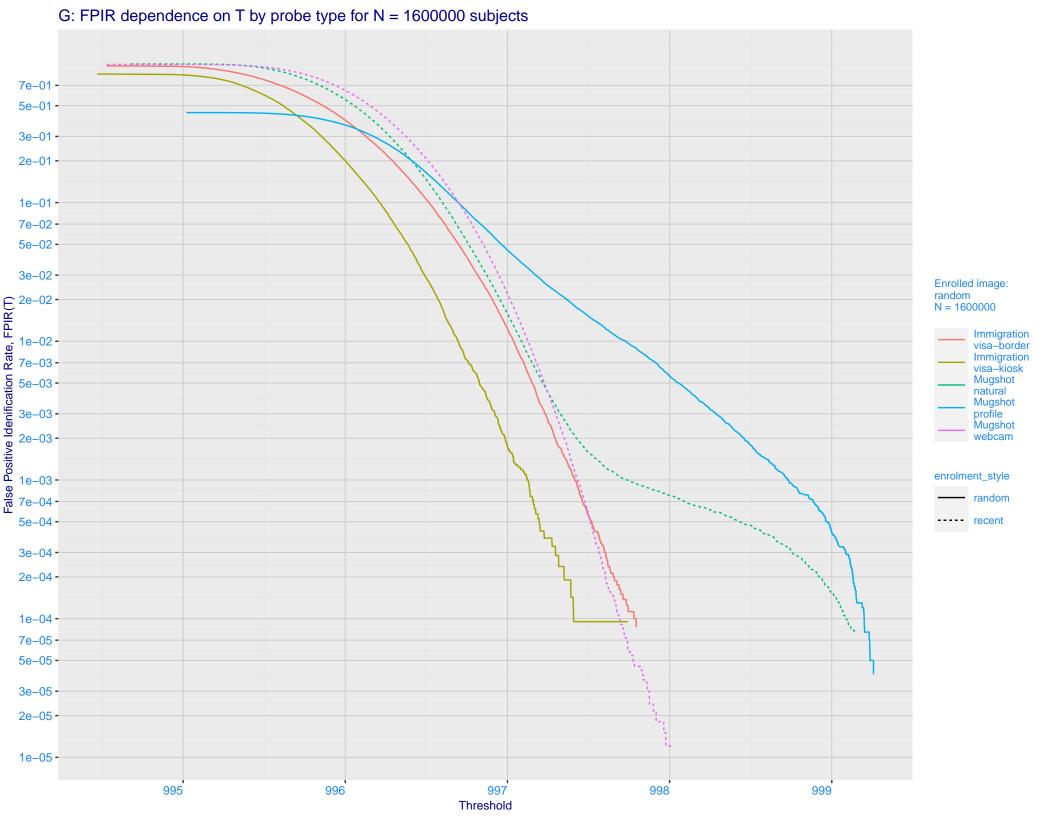


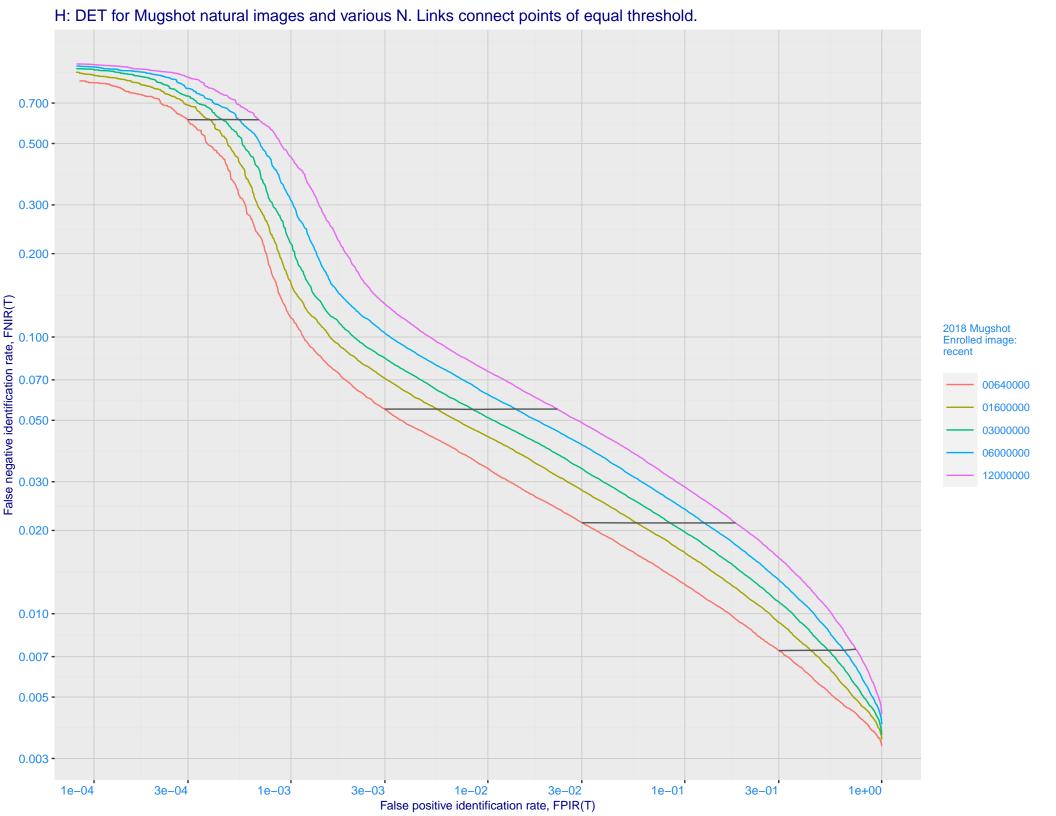
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration** Mugshot **Immigration** visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 - 0.005 - 0.005 - 0.002 - 0.001 - 0.001 - 0.700 - 0.500 - 0.200 enrolment\_style consolidated-ONE-MATE random-ONE-MATE recent-ONE-MATE unconsolidated-ALL-MATES unconsolidated-ANY-MATE 0.100 -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)

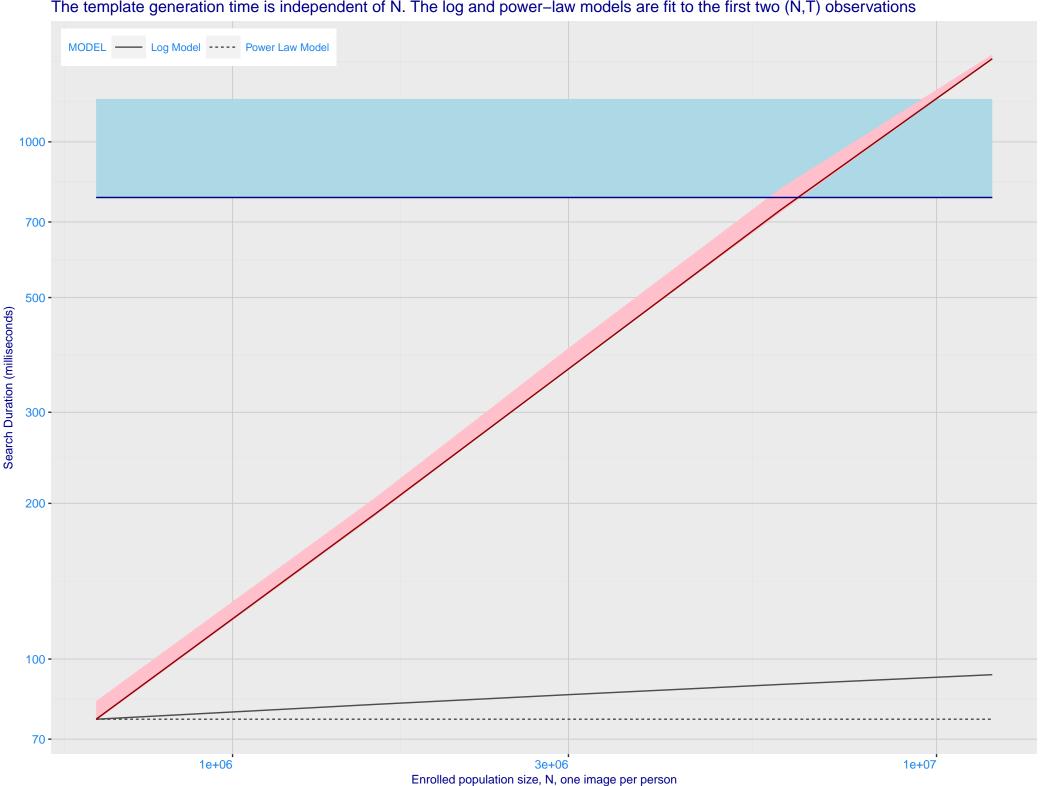




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -Ealse negative identification rate, FNIR(N) 0.003 - 0.001 - 0.001 - 0.100 - 0.070 - 0. enrolment\_style consolidated ---- random --- recent Mugshot webcam Mugshot natural FNIR@Rank = 1 sensetime\_005 vocord\_5 0.050 -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 sensetime\_005 vocord\_5 0.200 -0.100 -0.070 -0.050 enrolment\_style False negative identification rate, FNIR(N) lifetime\_consolidated ---- random --- recent FNIR(R) N = 1600000 Immigration visa-border Immigration visa-kiosk Mugshot natural Mugshot 0.005 webcam 0.003 -0.002 -0.001 -3 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



