A: Datasheet

Algorithm: vocord_3

Developer: Vocord

Submission Date: 2018_06_30

Template size: 896 bytes

Template time (2.5 percentile): 650 msec

Template time (median): 696 msec

Template time (97.5 percentile): 829 msec

Investigation:

Frontal mugshot ranking 88 (out of 259) -- FNIR(1600000, 0, 1) = 0.0062 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 91 (out of 221) -- FNIR(1600000, 0, 1) = 0.0241 vs. lowest 0.0062 from sensetime_005

Mugshot profile ranking 92 (out of 190) -- FNIR(1600000, 0, 1) = 0.8040 vs. lowest 0.0591 from sensetime_005

Immigration visa-border ranking 92 (out of 142) -- FNIR(1600000, 0, 1) = 0.0613 vs. lowest 0.0014 from visionlabs_009

Immigration visa-kiosk ranking 69 (out of 139) -- FNIR(1600000, 0, 1) = 0.1877 vs. lowest 0.0694 from cib_000

Identification:

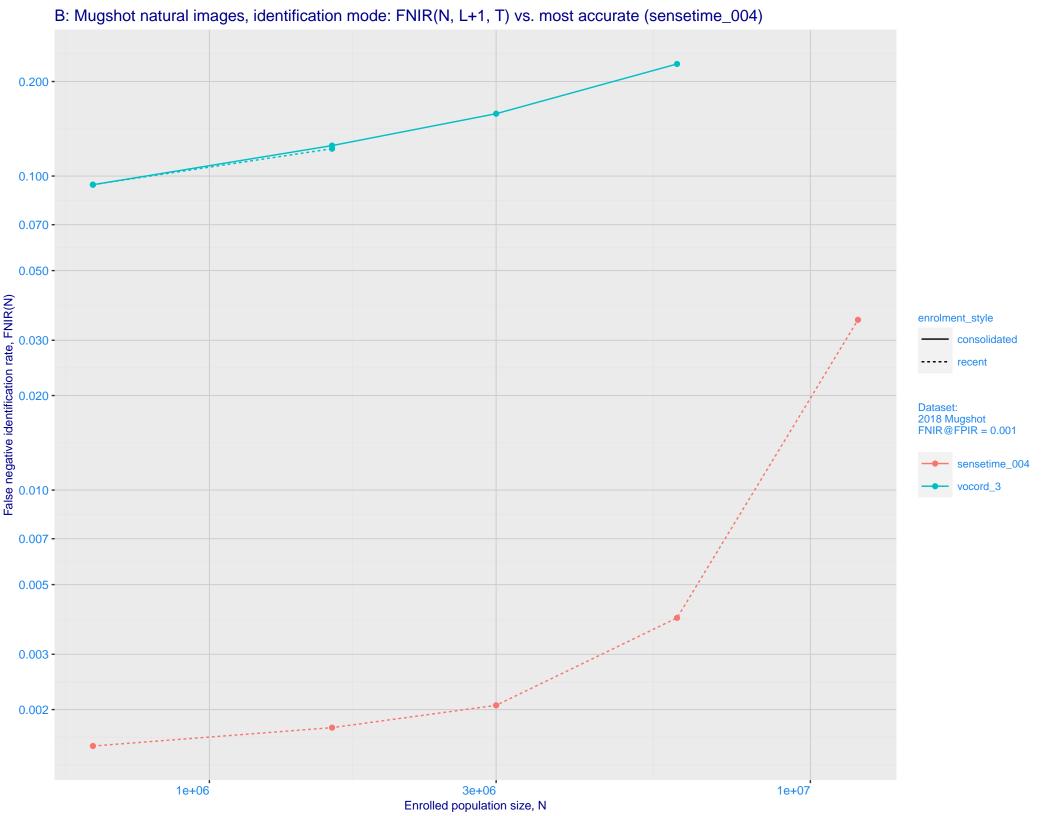
Frontal mugshot ranking 143 (out of 259) -- FNIR(1600000, T, L+1) = 0.1222, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

Mugshot webcam ranking 102 (out of 219) -- FNIR(1600000, T, L+1) = 0.1544, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

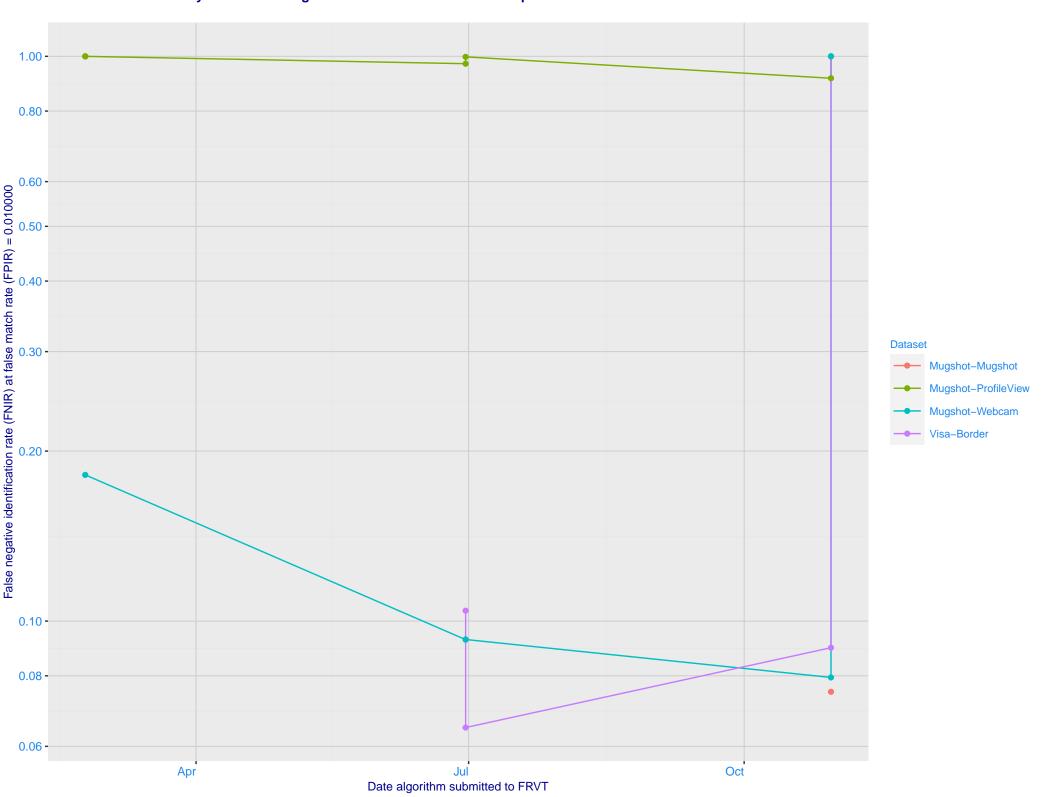
Mugshot profile ranking 115 (out of 189) -- FNIR(1600000, T, L+1) = 0.9980, FPIR=0.001000 vs. lowest 0.1733 from sensetime_005

Immigration visa-border ranking 74 (out of 139) -- FNIR(1600000, T, L+1) = 0.1576, FPIR=0.001000 vs. lowest 0.0059 from sensetime_004

Immigration visa-kiosk ranking 49 (out of 134) -- FNIR(1600000, T, L+1) = 0.4039, FPIR=0.001000 vs. lowest 0.1048 from sensetime_005



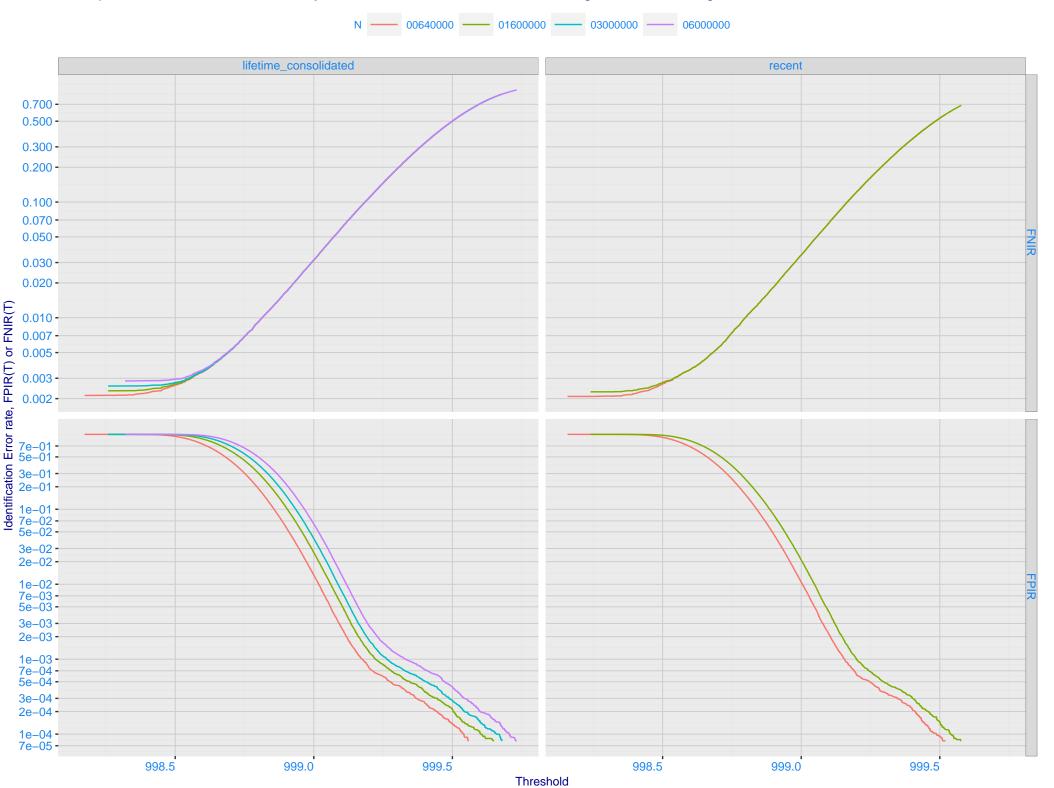
C: Evolution of accuracy for VOCORD algorithms on three datasets 2018 – present



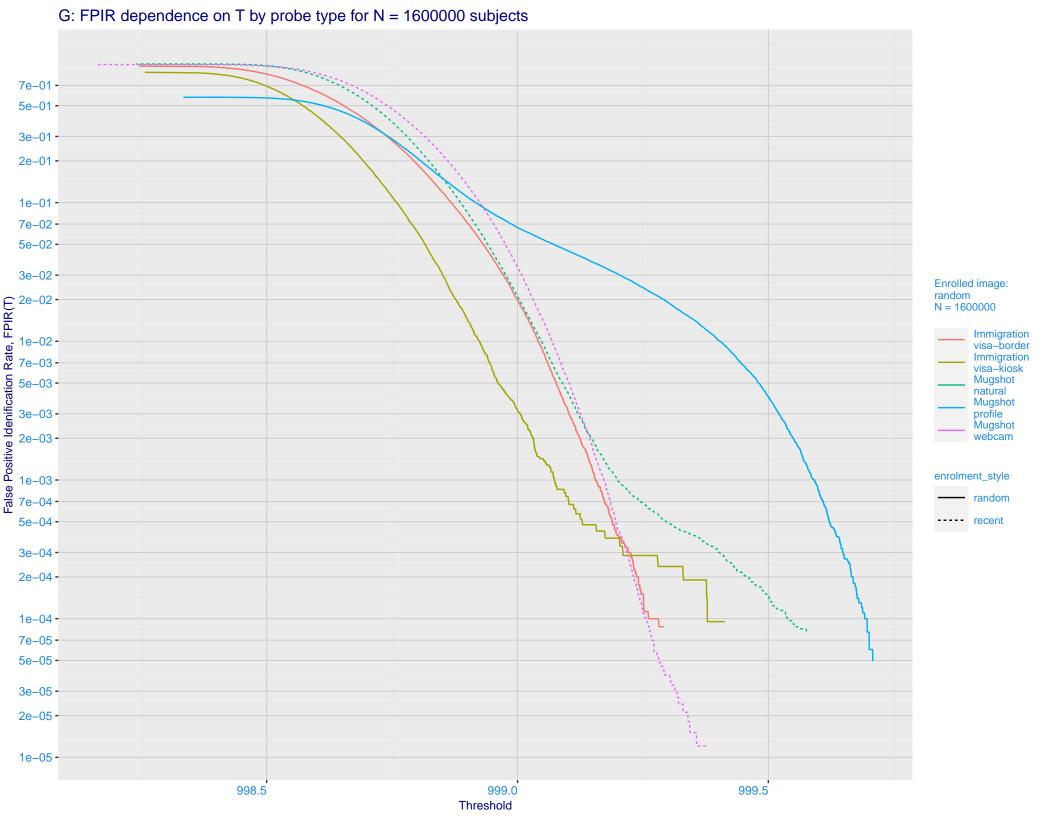
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.002 - 0.002 - 0.500 - 0.500 - 0.200 -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

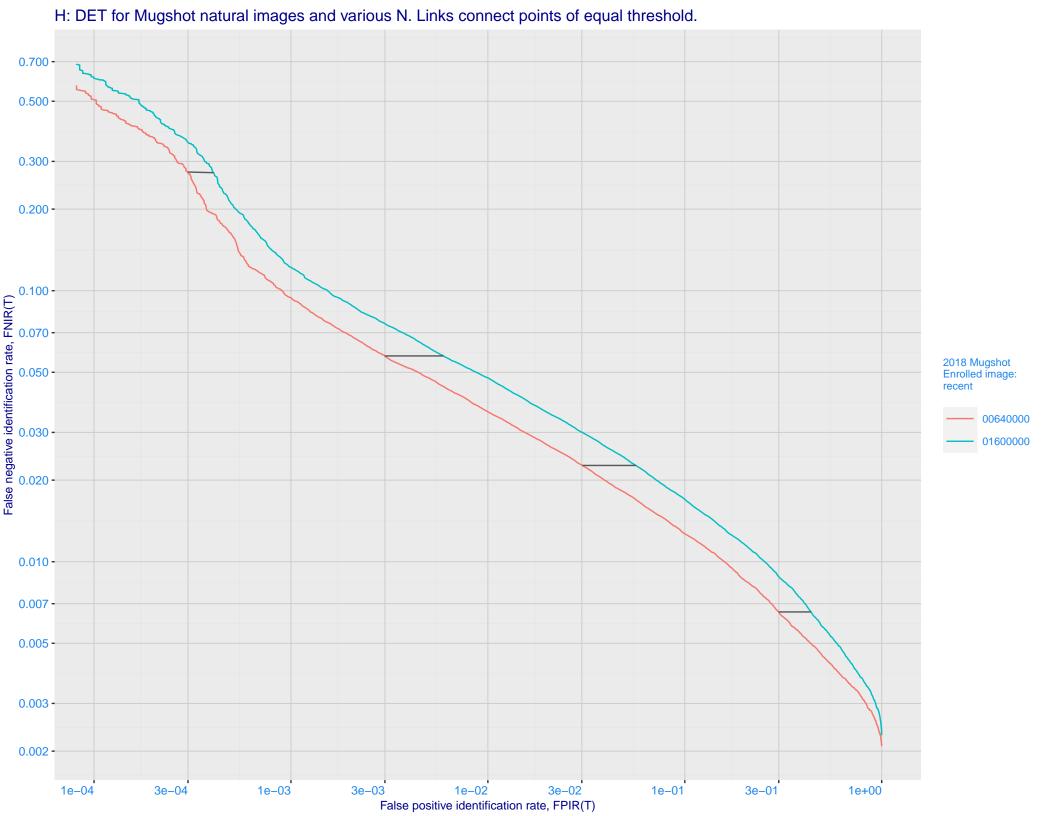
False positive identification rate, FPIR(T)

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 -Selectivity. 3e-02 - 3e-02 - 2e-02 - 2e-02 - 3e-02 - 3 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 -1e-02 1e-05 3e-05 1e-04 3e-04 1e-03 3e-03 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 - 0.000 - 0. FNIR@Rank = 1 sensetime_005 vocord_3 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 sensetime_005 vocord_3 0.200 -0.100 -0.070 -0.050 enrolment_style Ealse negative identification rate, FNIR(N) 0.000 - 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 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 Log Model
Power Law Model 700 -500 -300 -200 -100 -

1e+06

Enrolled population size, N, one image per person

Search Duration (milliseconds)

7e+05

8e+05

M: Identification FNIR(N, T, L+1) and Investigational FNIR(N, 0, R) under ageing



