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 94 (out of 265) -- FNIR(1600000, 0, 1) = 0.0062 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 97 (out of 227) -- FNIR(1600000, 0, 1) = 0.0241 vs. lowest 0.0062 from sensetime_005

Mugshot profile ranking 97 (out of 196) -- FNIR(1600000, 0, 1) = 0.8040 vs. lowest 0.0591 from sensetime_005

Immigration visa-border ranking 98 (out of 148) -- FNIR(1600000, 0, 1) = 0.0613 vs. lowest 0.0013 from visionlabs_010

Immigration visa-kiosk ranking 75 (out of 145) -- FNIR(1600000, 0, 1) = 0.1877 vs. lowest 0.0568 from hr_000

Identification:

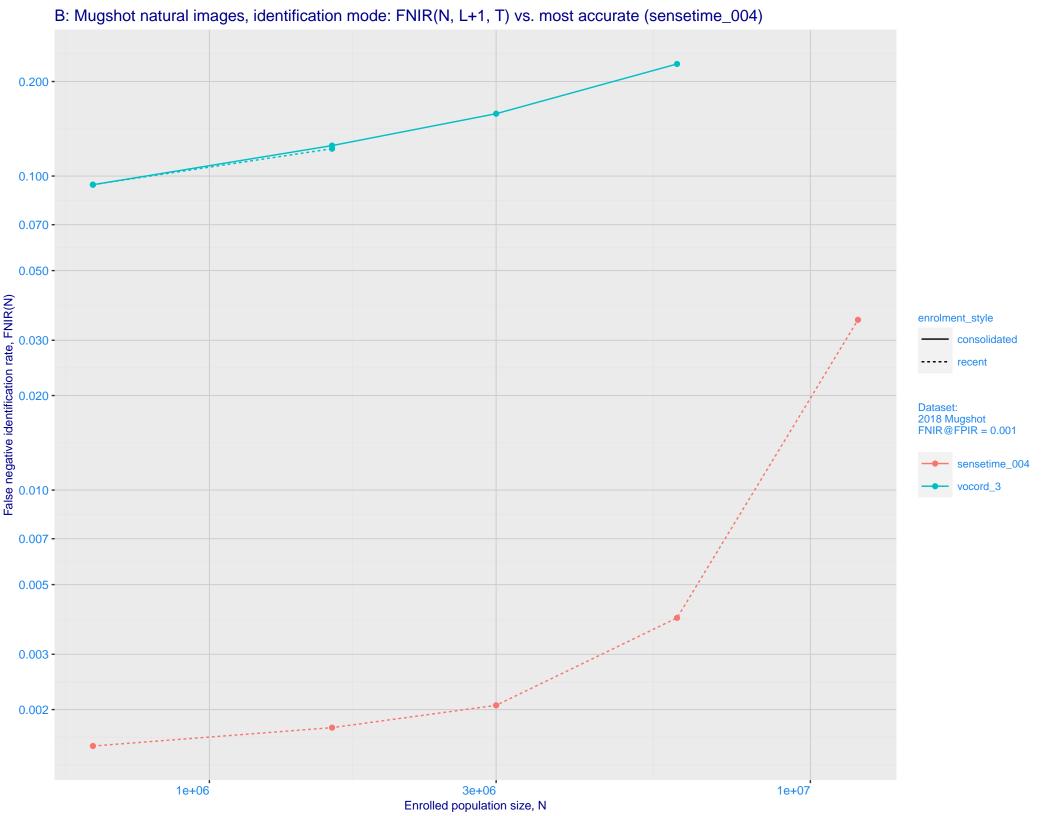
Frontal mugshot ranking 149 (out of 265) -- FNIR(1600000, T, L+1) = 0.1222, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

Mugshot webcam ranking 108 (out of 225) -- FNIR(1600000, T, L+1) = 0.1544, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

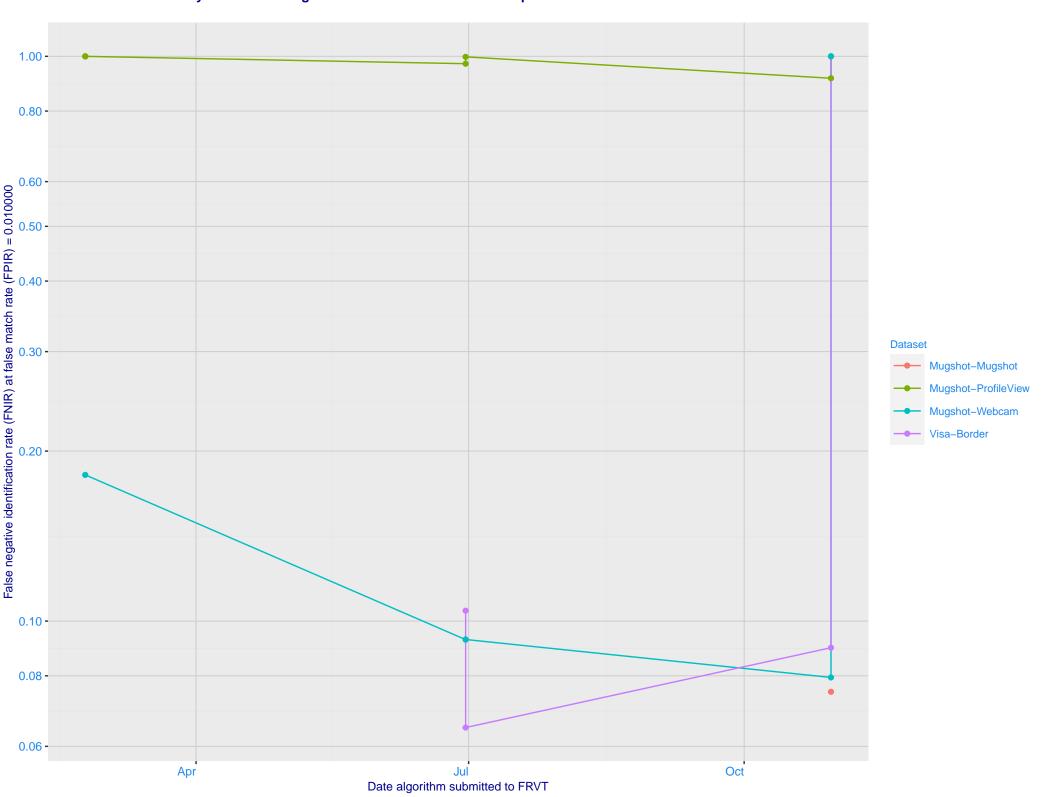
Mugshot profile ranking 120 (out of 195) -- FNIR(1600000, T, L+1) = 0.9980, FPIR=0.001000 vs. lowest 0.1331 from hr_000

Immigration visa-border ranking 80 (out of 146) -- FNIR(1600000, T, L+1) = 0.1576, FPIR=0.001000 vs. lowest 0.0049 from hr_000

Immigration visa-kiosk ranking 54 (out of 141) -- FNIR(1600000, T, L+1) = 0.4039, FPIR=0.001000 vs. lowest 0.0996 from hr_000



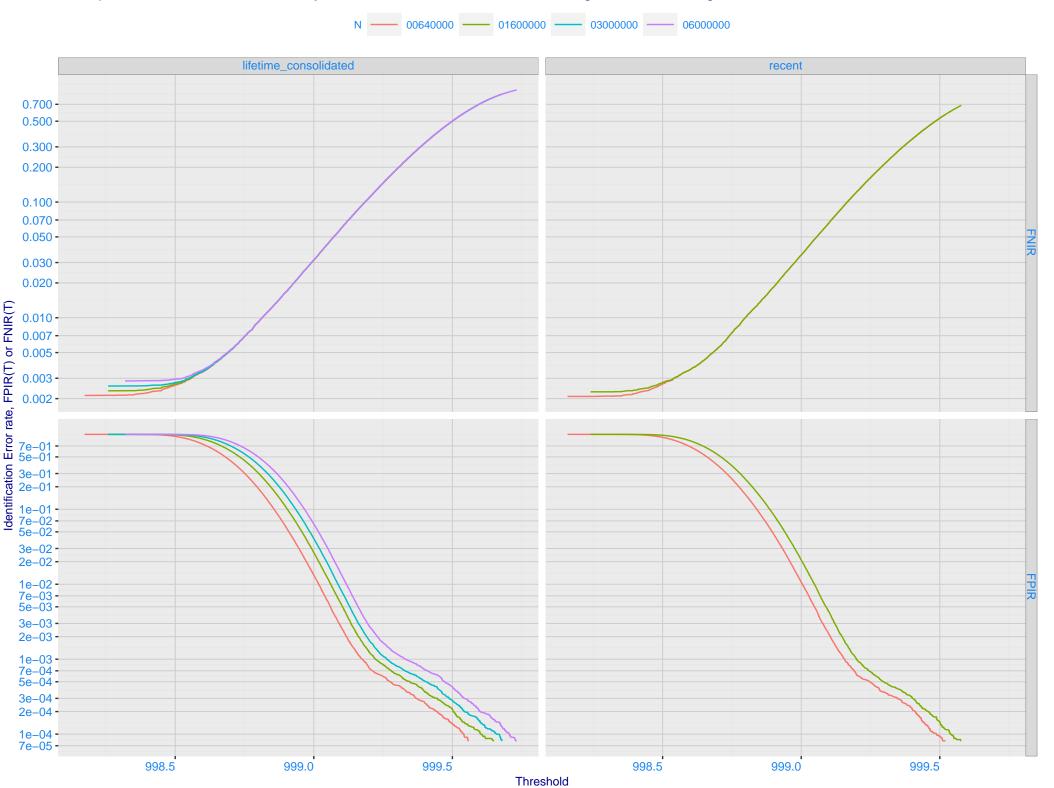
C: Evolution of accuracy for VOCORD algorithms on three datasets 2018 – present



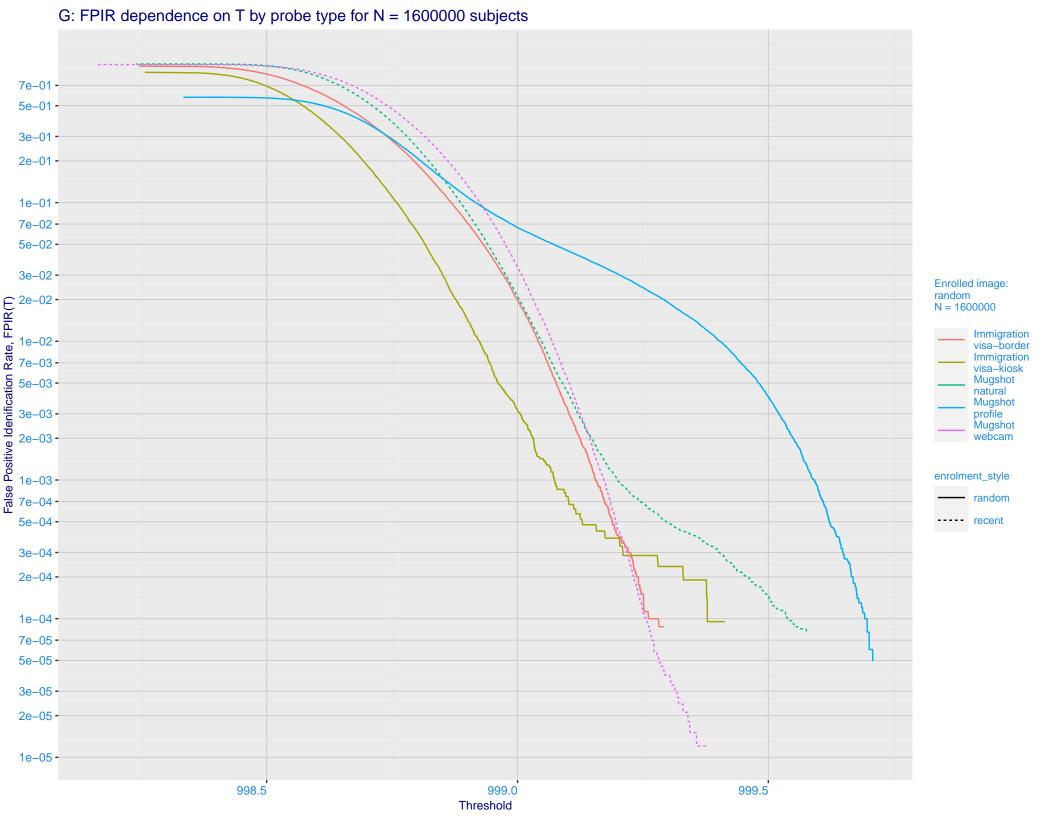
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.002 - 0.002 - 0.500 - 0.500 - 0.200 -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

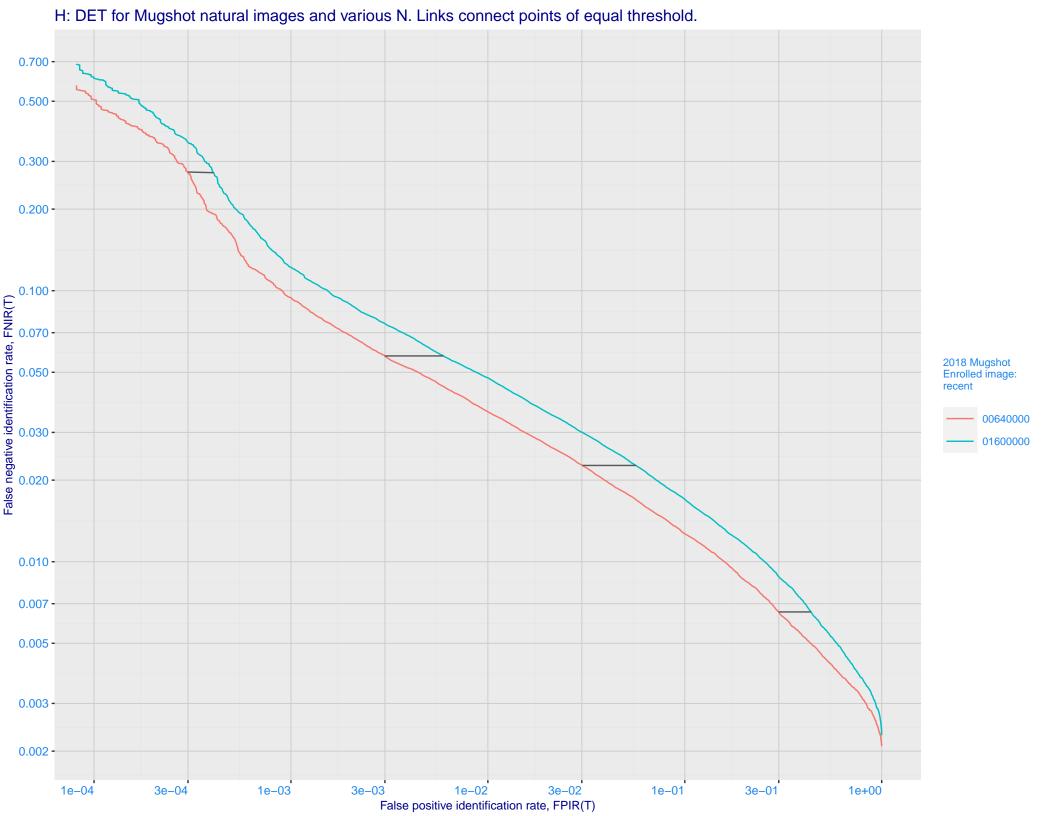
False positive identification rate, FPIR(T)

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



