A: Datasheet

Algorithm: vocord_4

Developer: Vocord

Submission Date: 2018_06_30

Template size: 896 bytes

Template time (2.5 percentile): 479 msec

Template time (median): 516 msec

Template time (97.5 percentile): 648 msec

Investigation:

Frontal mugshot ranking 103 (out of 259) -- FNIR(1600000, 0, 1) = 0.0079 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 72 (out of 221) -- FNIR(1600000, 0, 1) = 0.0207 vs. lowest 0.0062 from sensetime_005

Mugshot profile ranking 86 (out of 190) -- FNIR(1600000, 0, 1) = 0.7916 vs. lowest 0.0591 from sensetime_005

Immigration visa-border ranking 60 (out of 142) -- FNIR(1600000, 0, 1) = 0.0122 vs. lowest 0.0014 from visionlabs_009

Immigration visa-kiosk ranking 42 (out of 139) -- FNIR(1600000, 0, 1) = 0.1270 vs. lowest 0.0694 from cib_000

Identification:

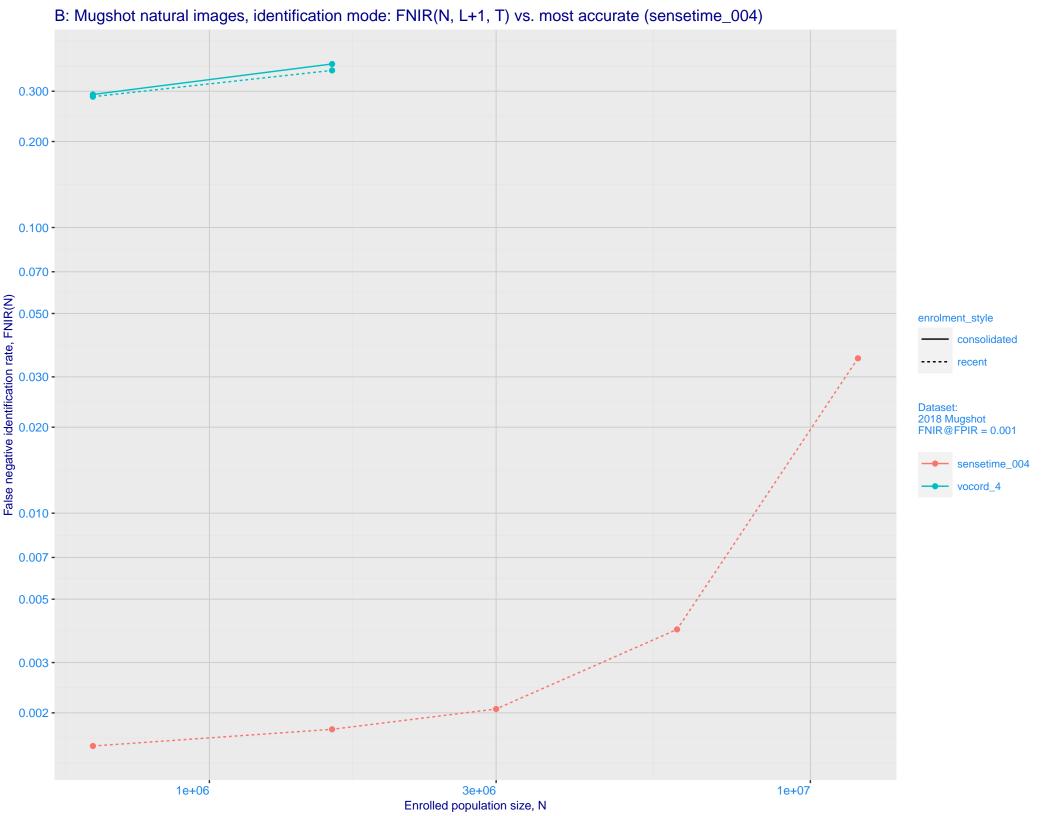
Frontal mugshot ranking 196 (out of 259) -- FNIR(1600000, T, L+1) = 0.3548, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

Mugshot webcam ranking 115 (out of 219) -- FNIR(1600000, T, L+1) = 0.1726, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

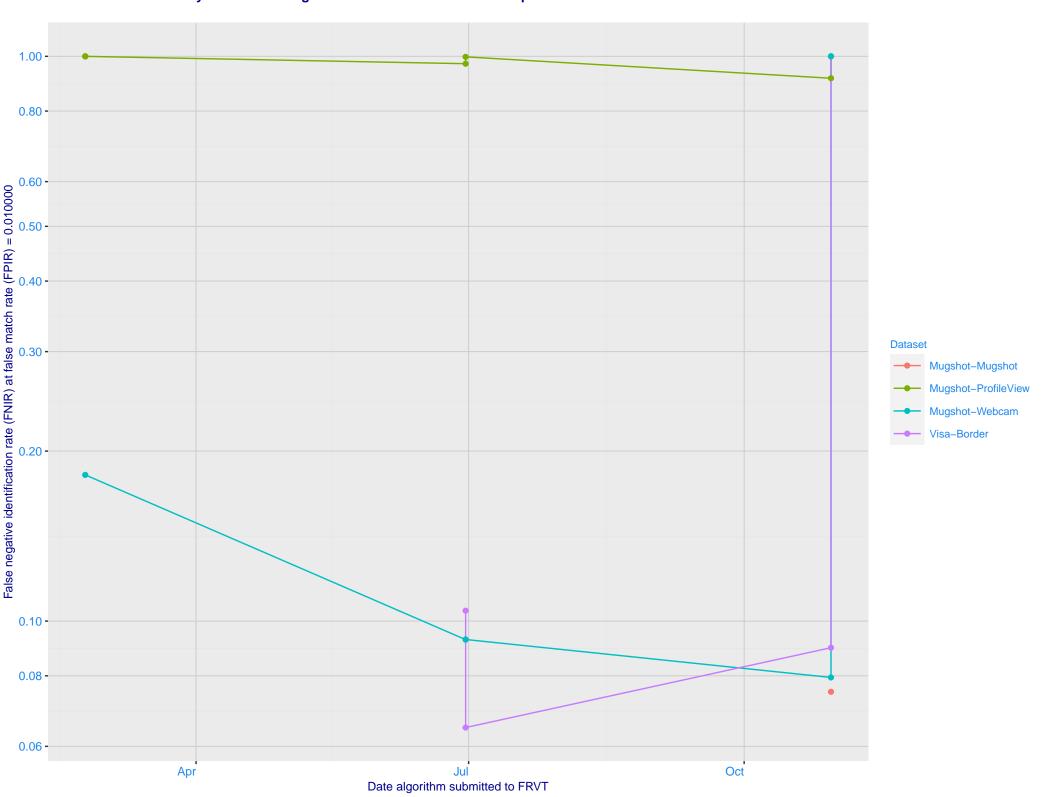
Mugshot profile ranking 154 (out of 189) -- FNIR(1600000, T, L+1) = 0.9998, FPIR=0.001000 vs. lowest 0.1733 from sensetime_005

Immigration visa-border ranking 80 (out of 139) -- FNIR(1600000, T, L+1) = 0.1943, FPIR=0.001000 vs. lowest 0.0059 from sensetime_004

Immigration visa-kiosk ranking 117 (out of 134) -- FNIR(1600000, T, L+1) = 0.9911, 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 - 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 0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -0.002 -0.001 -

0.700 -0.500 -

0.300 -0.200 -

0.100 -0.070 -0.050 -0.030 -0.020 -

Identification Error ate, 0.020 - 0.00

3e-02 -2e-02 -

1e-02 -7e-03 -5e-03 -

3e-03 -2e-03 -

1e-03 -7e-04 -5e-04 -

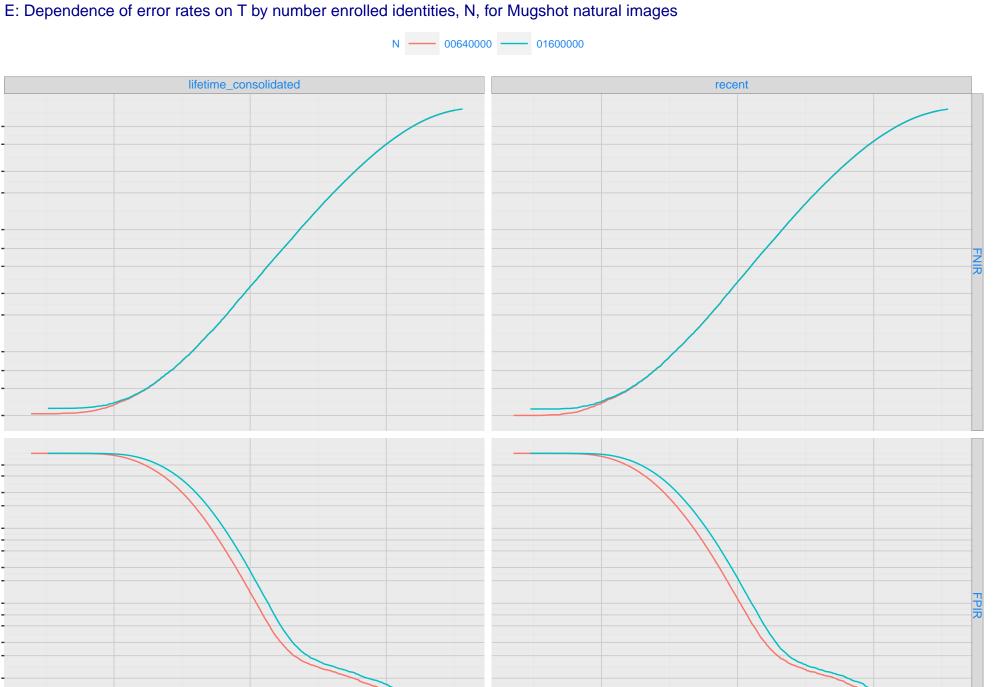
3e-04 -2e-04 -

1e-04 -7e-05 -

998.5

999.0

999.5



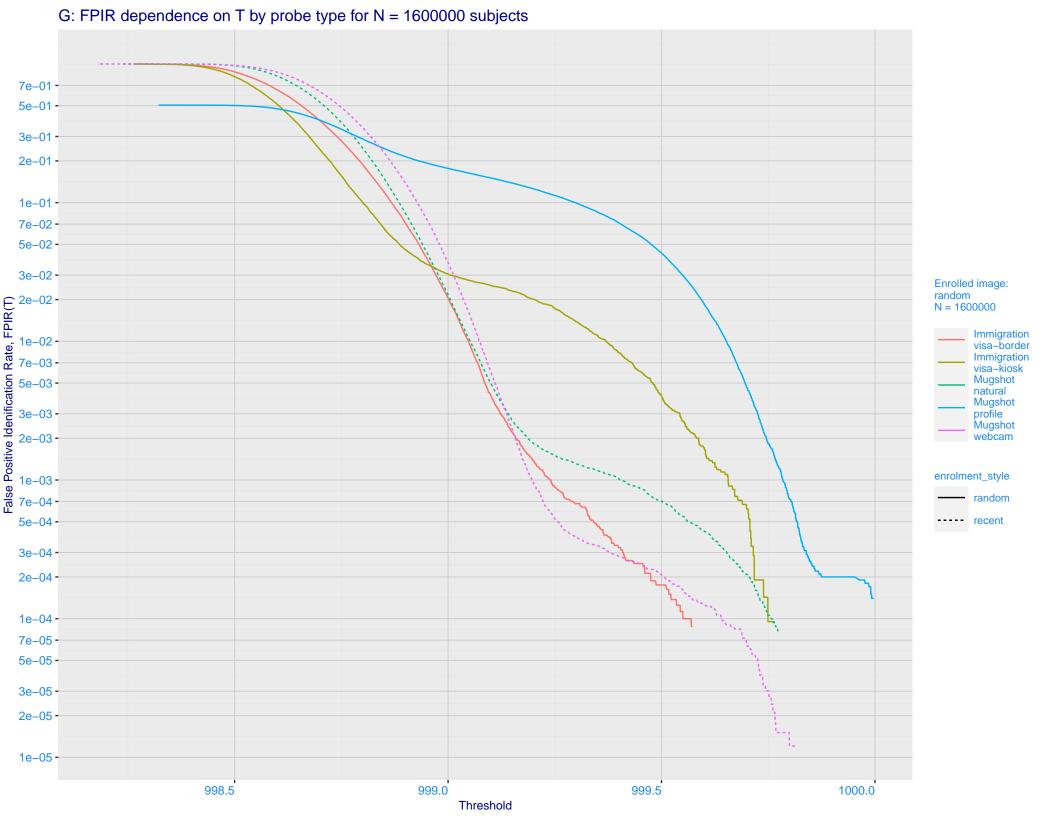
998.5

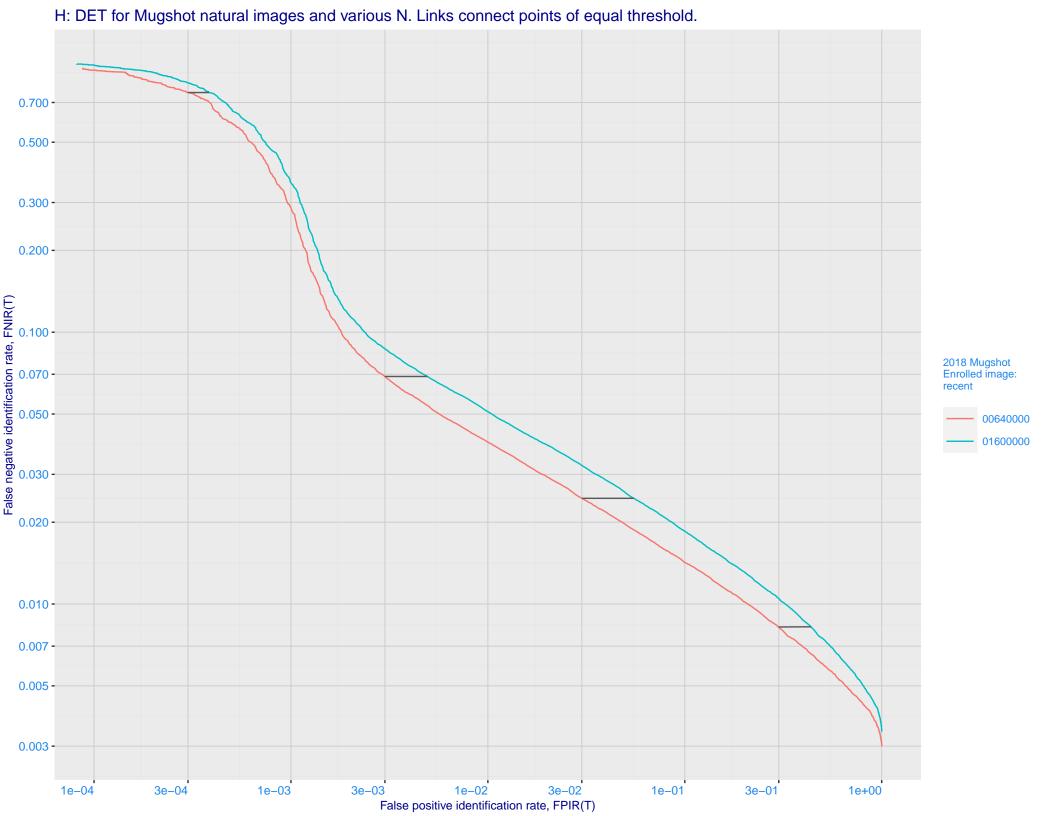
Threshold

999.0

999.5

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 0.100 -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 - 0.050 enrolment_style consolidated ---- random --- recent Mugshot webcam Mugshot natural FNIR@Rank = 1 sensetime_005 vocord_4 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_4 0.100 -0.070 -0.050 -0.030 enrolment_style False negative identification rate, FNIR(N) 0.000 0.00 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 500 -Search Duration (milliseconds) 300 -200 -100 -7e+05 8e+05 1e+06 Enrolled population size, N, one image per person

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



