## A: Datasheet

Algorithm: camvi\_5

Developer: Camvi Technologies

Submission Date: 2018\_10\_30

Template size: 1024 bytes

Template time (2.5 percentile): 743 msec

Template time (median): 752 msec

Template time (97.5 percentile): 824 msec

Investigation:

Frontal mugshot ranking 204 (out of 259) -- FNIR(1600000, 0, 1) = 0.0652 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 174 (out of 221) -- FNIR(1600000, 0, 1) = 0.1031 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 79 (out of 190) -- FNIR(1600000, 0, 1) = 0.7460 vs. lowest 0.0591 from sensetime\_005

Immigration visa-border ranking 96 (out of 142) -- FNIR(1600000, 0, 1) = 0.0979 vs. lowest 0.0014 from visionlabs\_009

Immigration visa-kiosk ranking 99 (out of 139) -- FNIR(1600000, 0, 1) = 0.3407 vs. lowest 0.0694 from cib\_000

Identification:

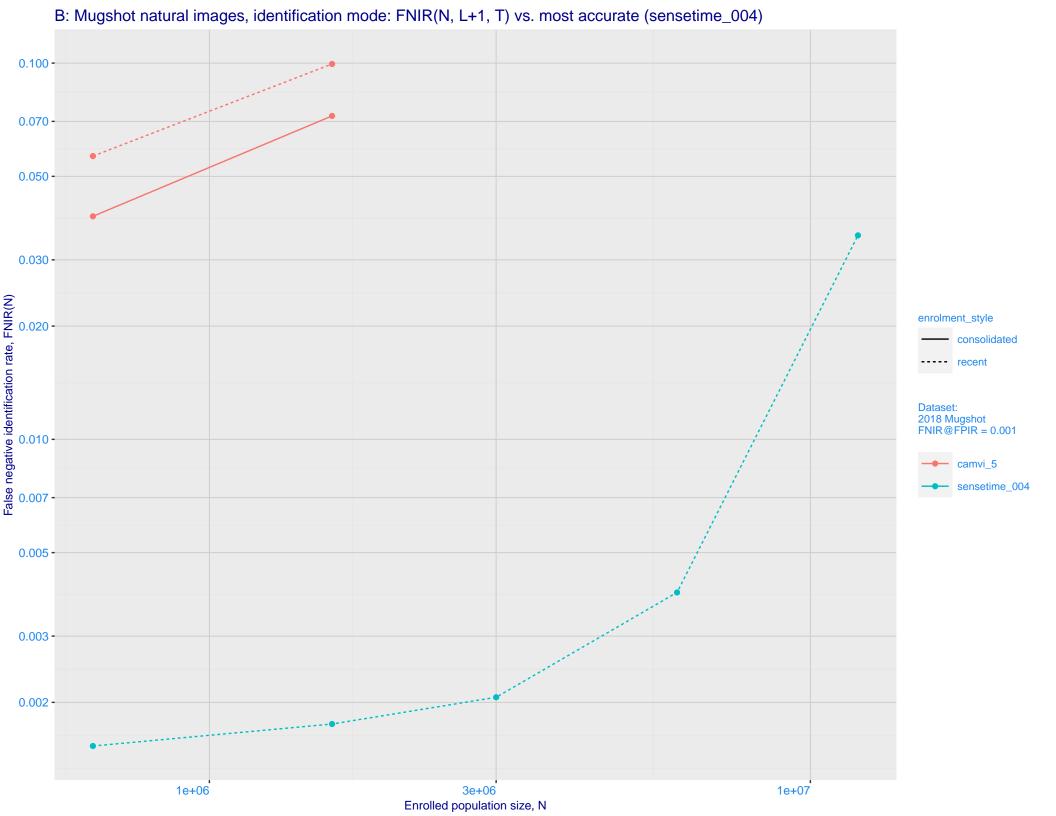
Frontal mugshot ranking 127 (out of 259) -- FNIR(1600000, T, L+1) = 0.0995, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Mugshot webcam ranking 120 (out of 219) -- FNIR(1600000, T, L+1) = 0.1793, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

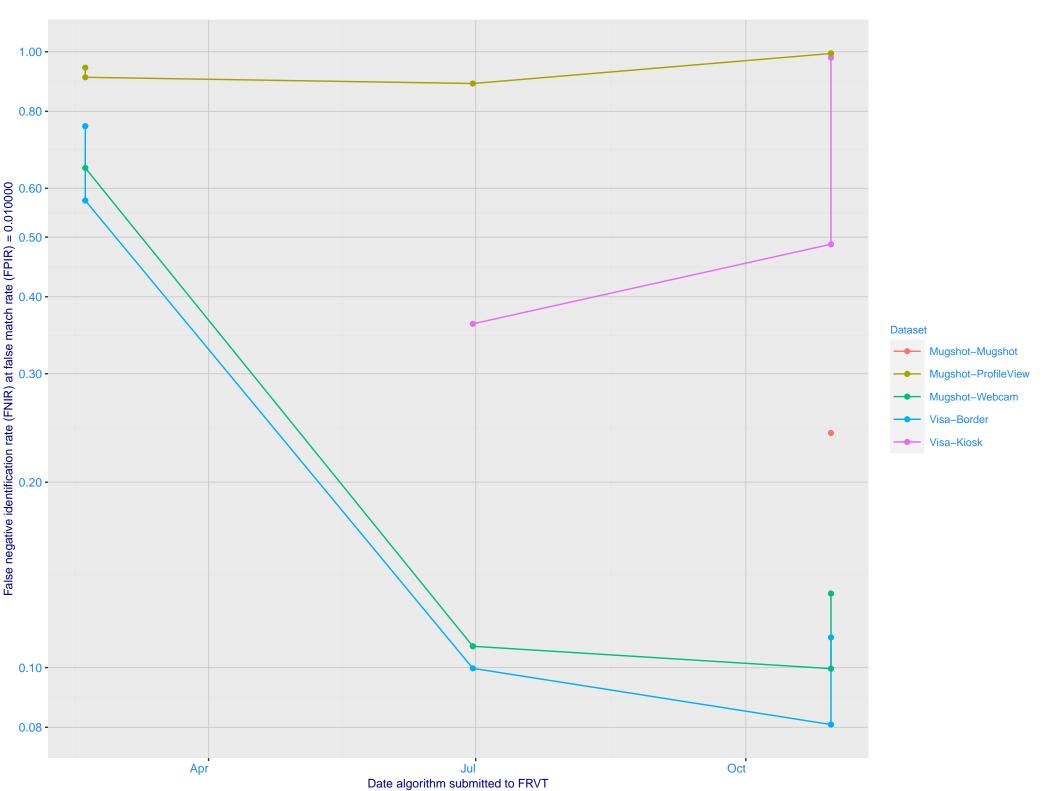
Mugshot profile ranking 144 (out of 189) -- FNIR(1600000, T, L+1) = 0.9996, FPIR=0.001000 vs. lowest 0.1733 from sensetime\_005

Immigration visa-border ranking 73 (out of 139) -- FNIR(1600000, T, L+1) = 0.1562, FPIR=0.001000 vs. lowest 0.0059 from sensetime\_004

Immigration visa-kiosk ranking 123 (out of 134) -- FNIR(1600000, T, L+1) = 0.9988, FPIR=0.001000 vs. lowest 0.1048 from sensetime\_005



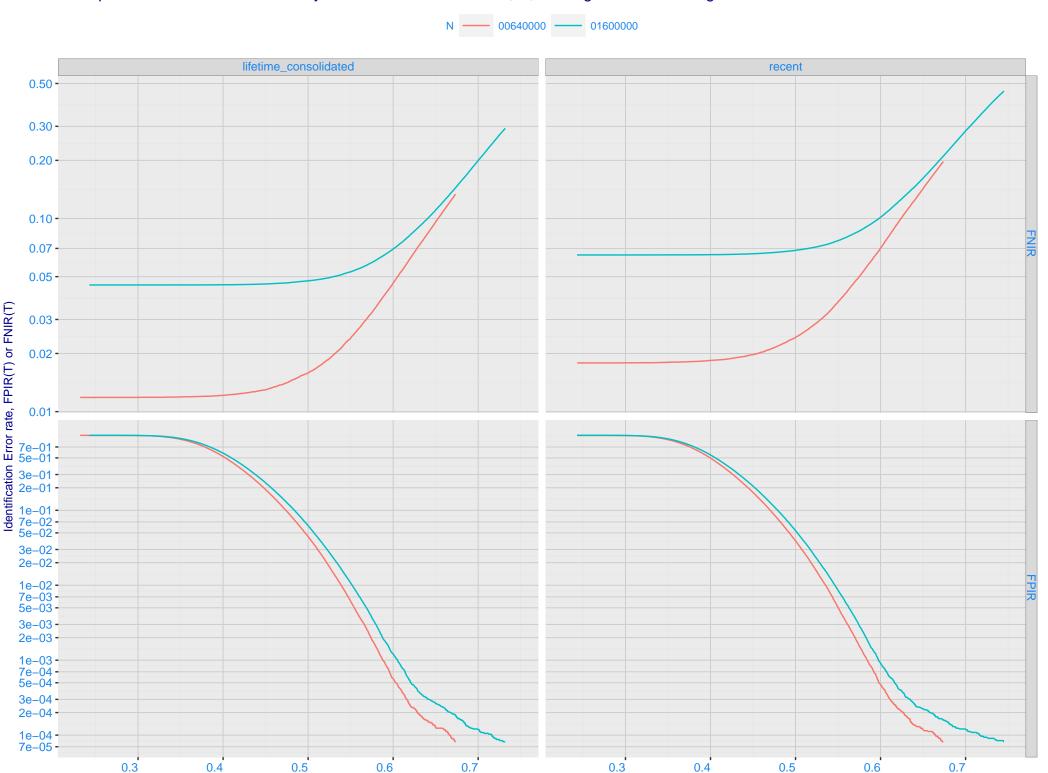
C: Evolution of accuracy for CAMVI algorithms on three datasets 2018 – present



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 -

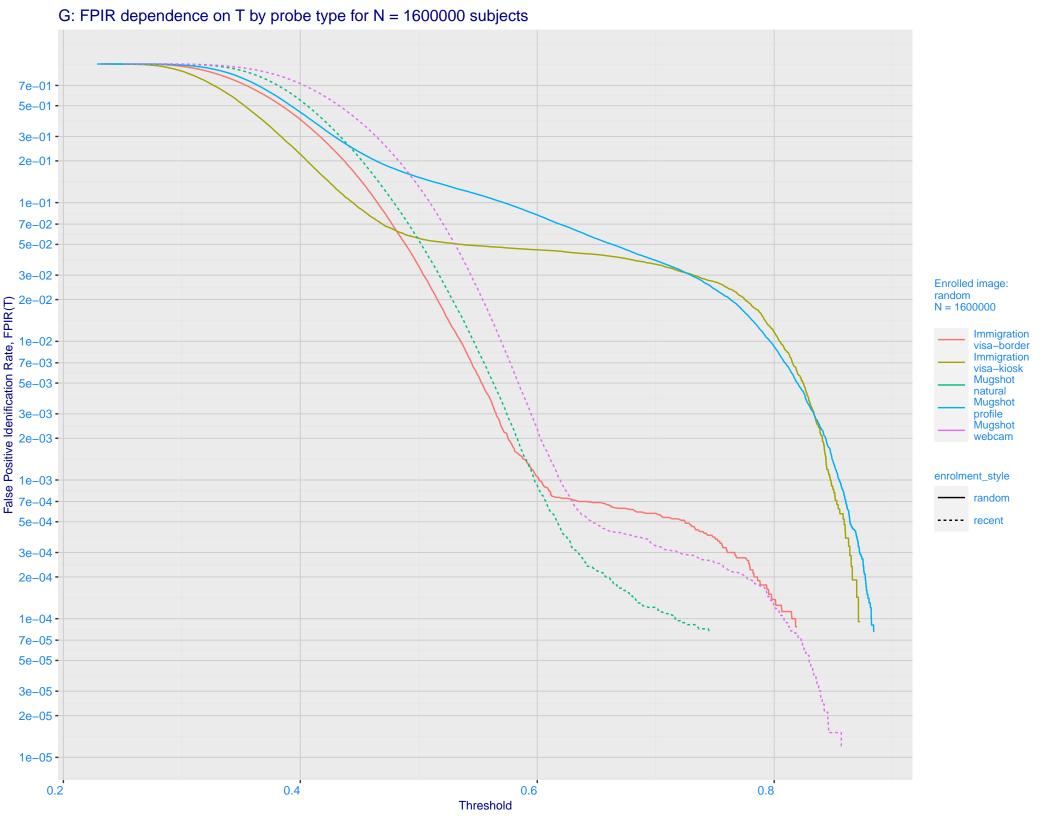
False positive identification rate, FPIR(T)

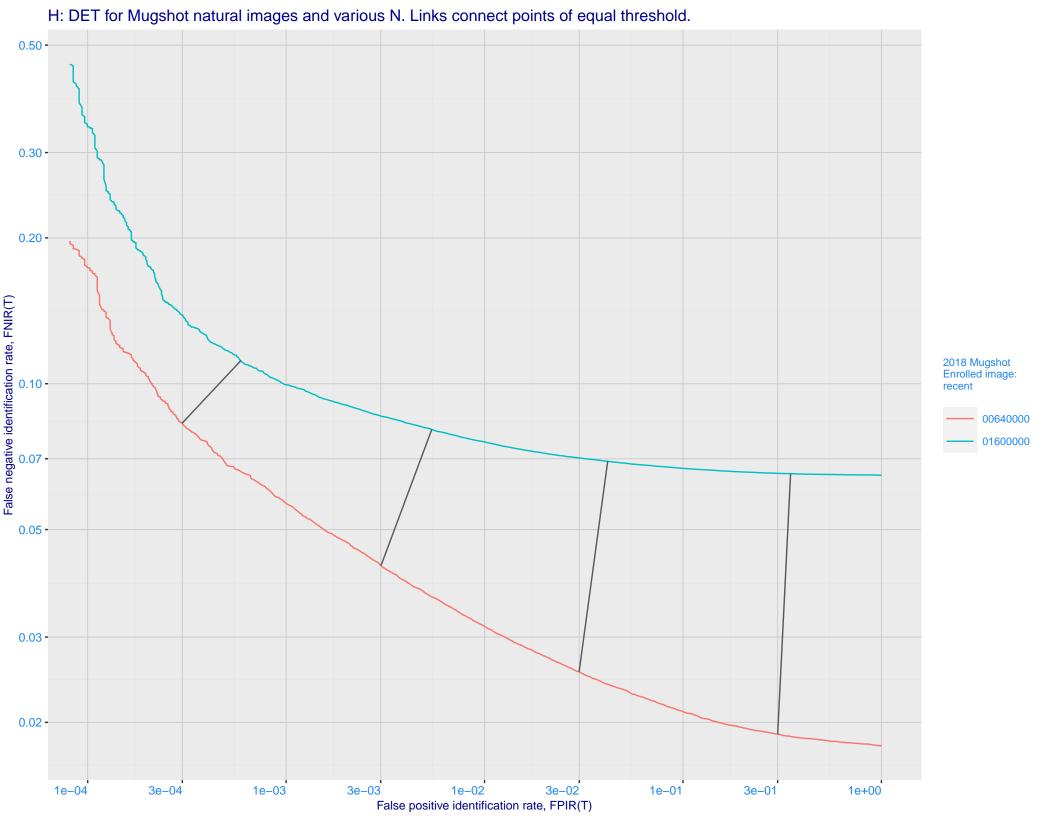
E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images



Threshold

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)

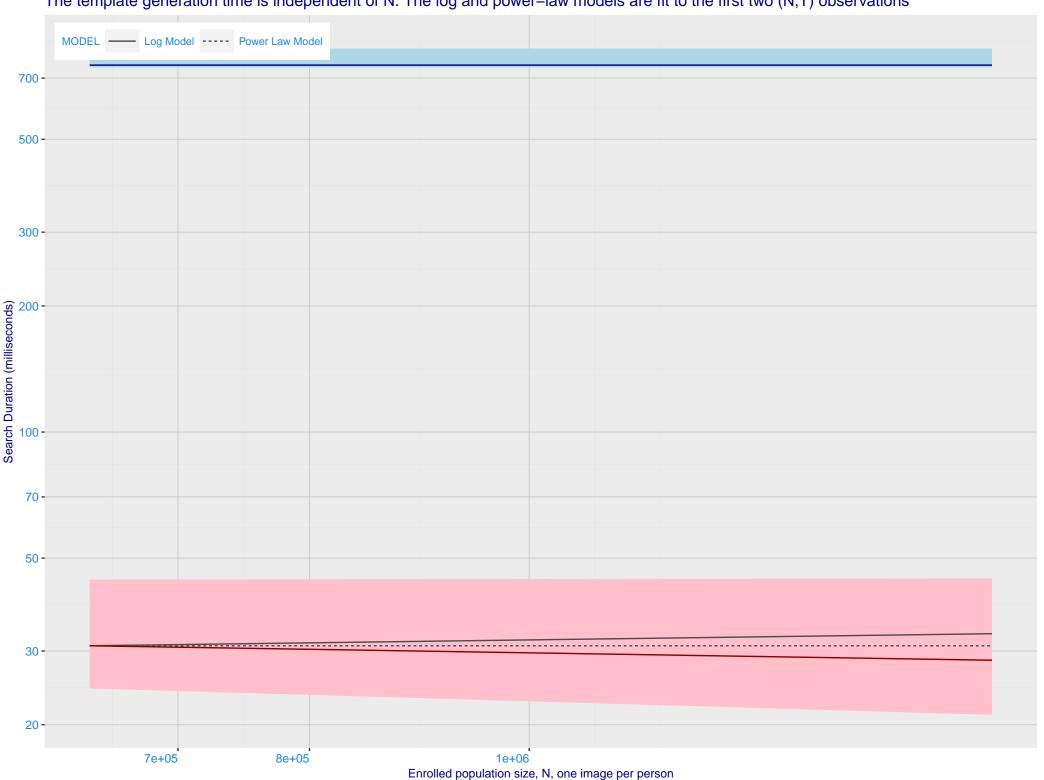




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -Ealse negative identification rate, FNIR(N) 0.002 - 0.001 - 0.300 - 0.200 - 0.100 - 0. enrolment\_style consolidated ---- random --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 -- camvi\_5 sensetime\_005 0.070 -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 camvi\_5 sensetime\_005 0.300 -0.200 -0.100 -0.070 -0.050 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 0.005 -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



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

