## A: Datasheet

Algorithm: camvi\_3

Developer: Camvi Technologies

Submission Date: 2018\_06\_30

Template size: 1024 bytes

Template time (2.5 percentile): 666 msec

Template time (median): 712 msec

Template time (97.5 percentile): 746 msec

Investigation:

Frontal mugshot ranking 204 (out of 265) -- FNIR(1600000, 0, 1) = 0.0520 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 176 (out of 227) -- FNIR(1600000, 0, 1) = 0.0900 vs. lowest 0.0062 from sensetime\_005

Mugshot profile ranking 113 (out of 196) — FNIR(1600000, 0, 1) = 0.9110 vs. lowest 0.0591 from sensetime\_005

Immigration visa-border ranking 101 (out of 148) -- FNIR(1600000, 0, 1) = 0.0932 vs. lowest 0.0013 from visionlabs\_010

Immigration visa-kiosk ranking 106 (out of 145) — FNIR(1600000, 0, 1) = 0.3603 vs. lowest 0.0568 from hr\_000

Identification:

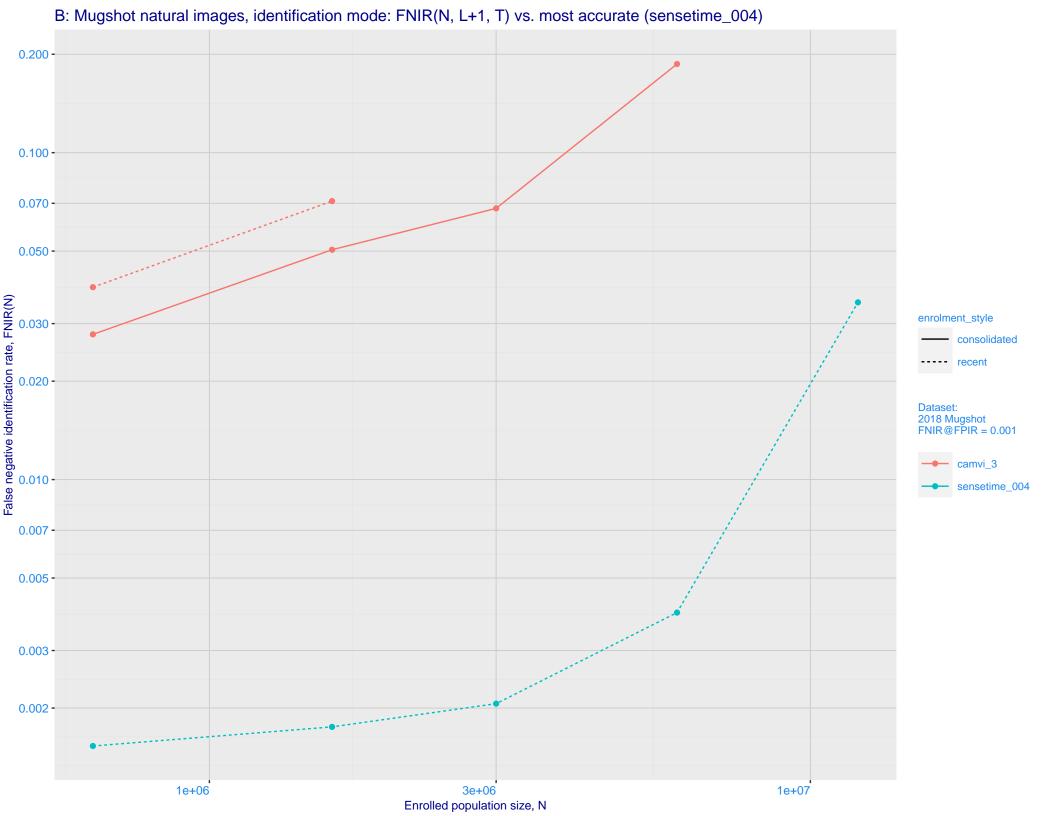
Frontal mugshot ranking 109 (out of 265) -- FNIR(1600000, T, L+1) = 0.0711, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Mugshot webcam ranking 94 (out of 225) -- FNIR(1600000, T, L+1) = 0.1323, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

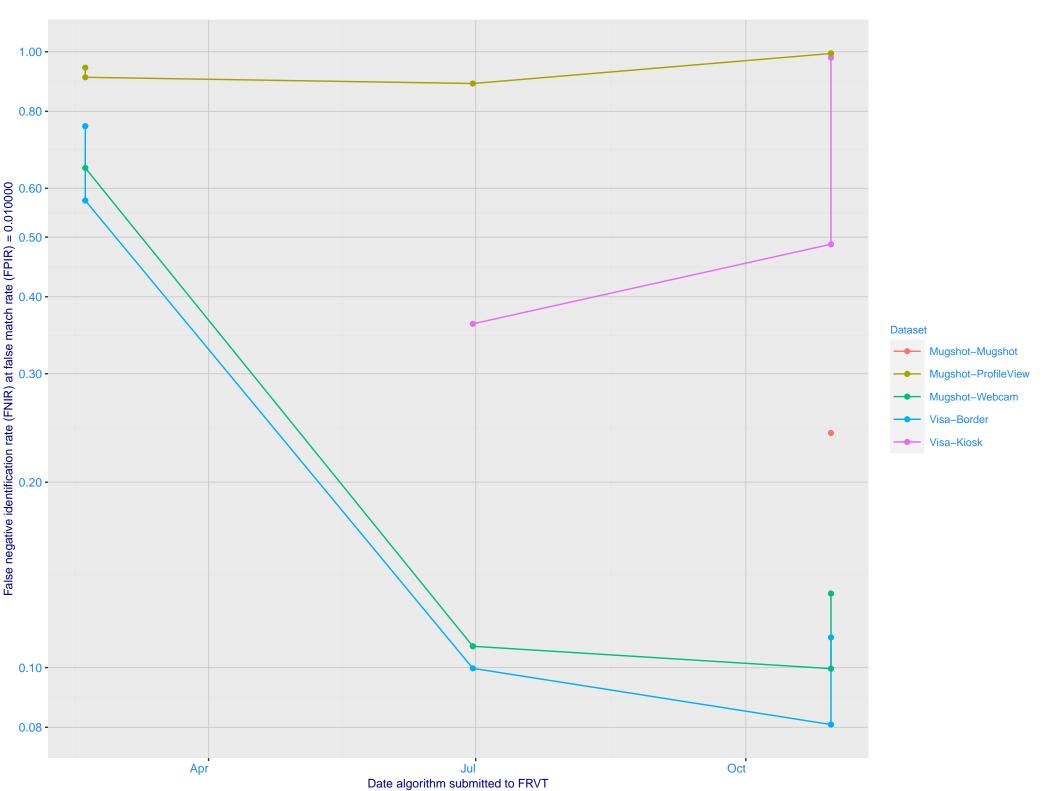
Mugshot profile ranking 45 (out of 195) -- FNIR(1600000, T, L+1) = 0.9704, FPIR=0.001000 vs. lowest 0.1331 from hr\_000

Immigration visa-border ranking 69 (out of 146) -- FNIR(1600000, T, L+1) = 0.1142, FPIR=0.001000 vs. lowest 0.0049 from hr\_000

Immigration visa-kiosk ranking 53 (out of 141) -- FNIR(1600000, T, L+1) = 0.4019, FPIR=0.001000 vs. lowest 0.0996 from hr\_000



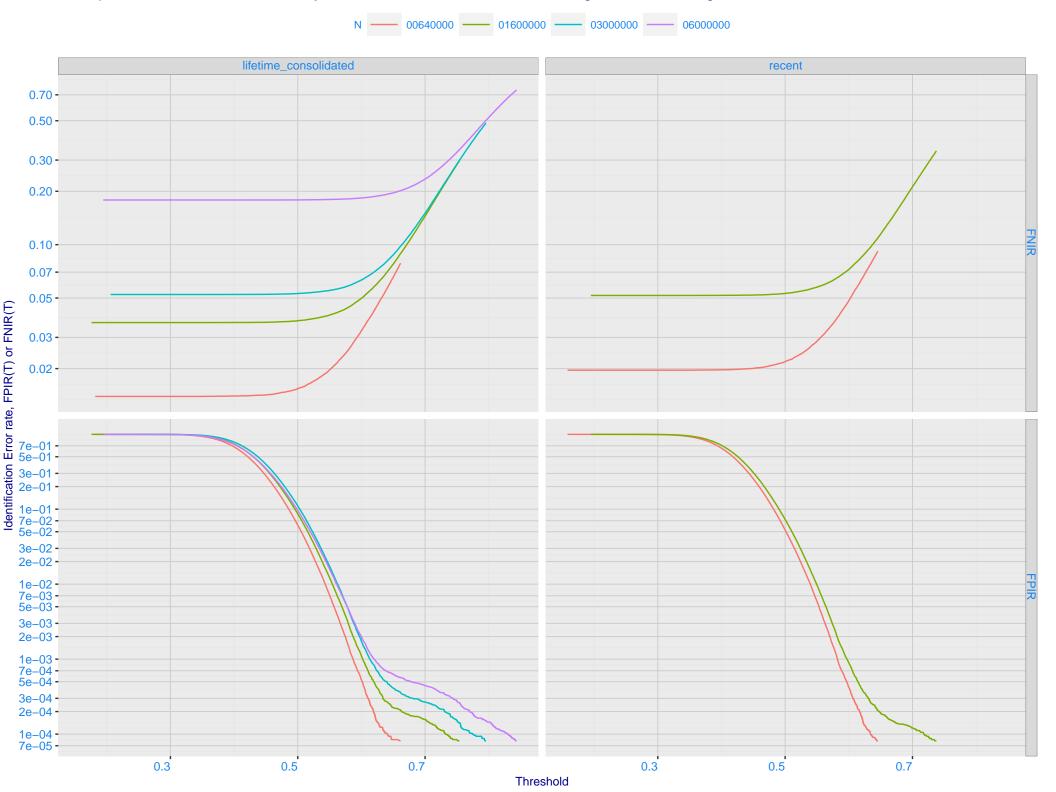
C: Evolution of accuracy for CAMVI algorithms on three datasets 2018 – present



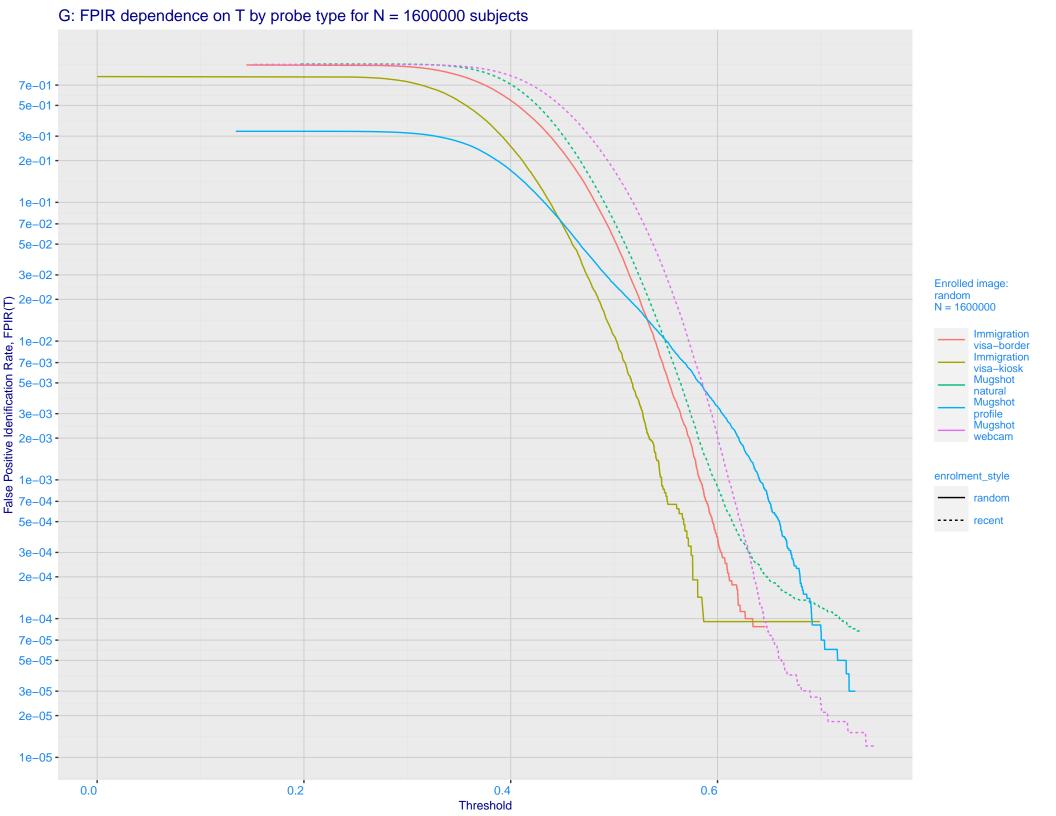
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration** Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.0001 - 0.700 - 0.500 - 0.200 - 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 -

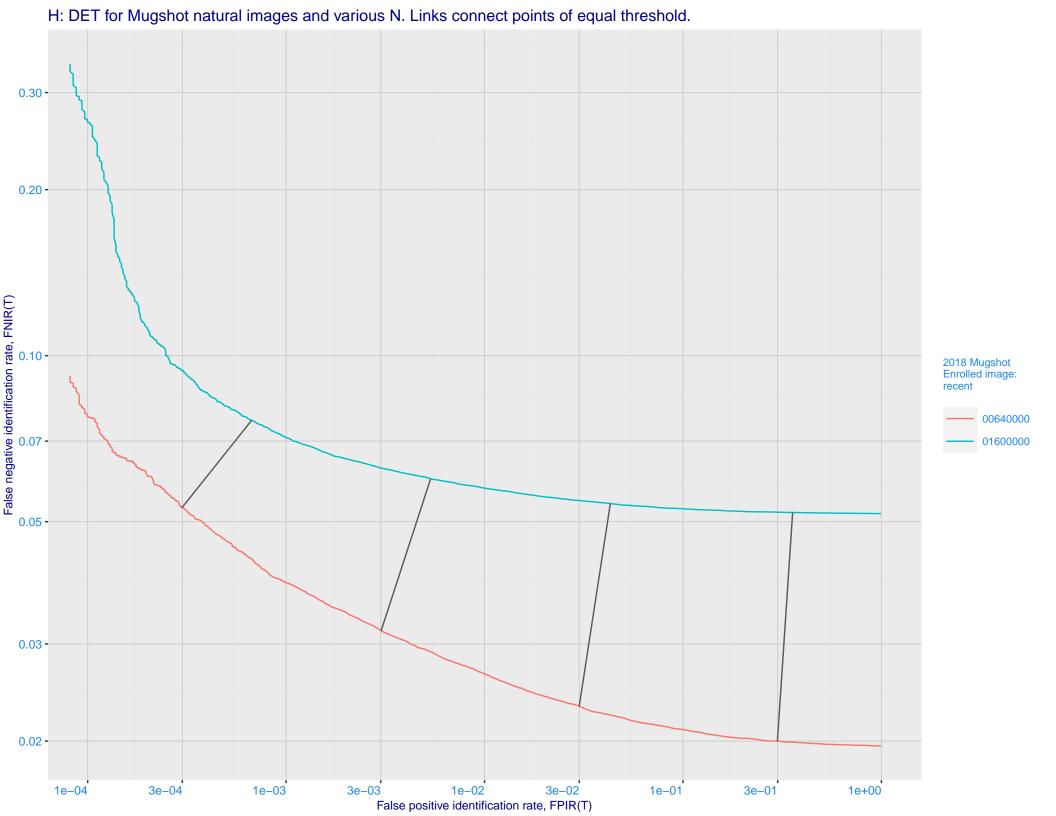
False positive identification rate, FPIR(T)

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 -1e-01 - 7e-02 **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 -2e-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 0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -Palse negative identification rate, FNIR(N) 0.002 - 0.001 - 0.300 - 0.300 - 0.100 - 0. enrolment\_style consolidated ---- random --- recent Mugshot webcam Mugshot natural FNIR@Rank = 1 - camvi\_3 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\_3 sensetime\_005 0.300 -0.200 -0.100 -0.070 -0.050 - 0.030 - 0.000 enrolment\_style 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 Log Model ---- Power Law Model 700 -500 -300 -200 -Search Duration (milliseconds) 30 -20 -10 -

1e+06

Enrolled population size, N, one image per person

7e+05

8e+05

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



