A: Datasheet

Algorithm: remarkai_000

Developer: Remark Holdings

Submission Date: 2019_06_12

Template size: 2048 bytes

Template time (2.5 percentile): 632 msec

Template time (median): 650 msec

Template time (97.5 percentile): 883 msec

Investigation:

Frontal mugshot ranking 108 (out of 329) -- FNIR(1600000, 0, 1) = 0.0034 vs. lowest 0.0009 from sensetime_006

Mugshot webcam ranking 116 (out of 291) -- FNIR(1600000, 0, 1) = 0.0183 vs. lowest 0.0057 from sensetime_006

Mugshot profile ranking 122 (out of 260) — FNIR(1600000, 0, 1) = 0.6602 vs. lowest 0.0550 from sensetime_006

Immigration visa-border ranking 101 (out of 218) -- FNIR(1600000, 0, 1) = 0.0076 vs. lowest 0.0009 from sensetime_006

Immigration visa-kiosk ranking 118 (out of 215) -- FNIR(1600000, 0, 1) = 0.1484 vs. lowest 0.0487 from cubox_000

Identification:

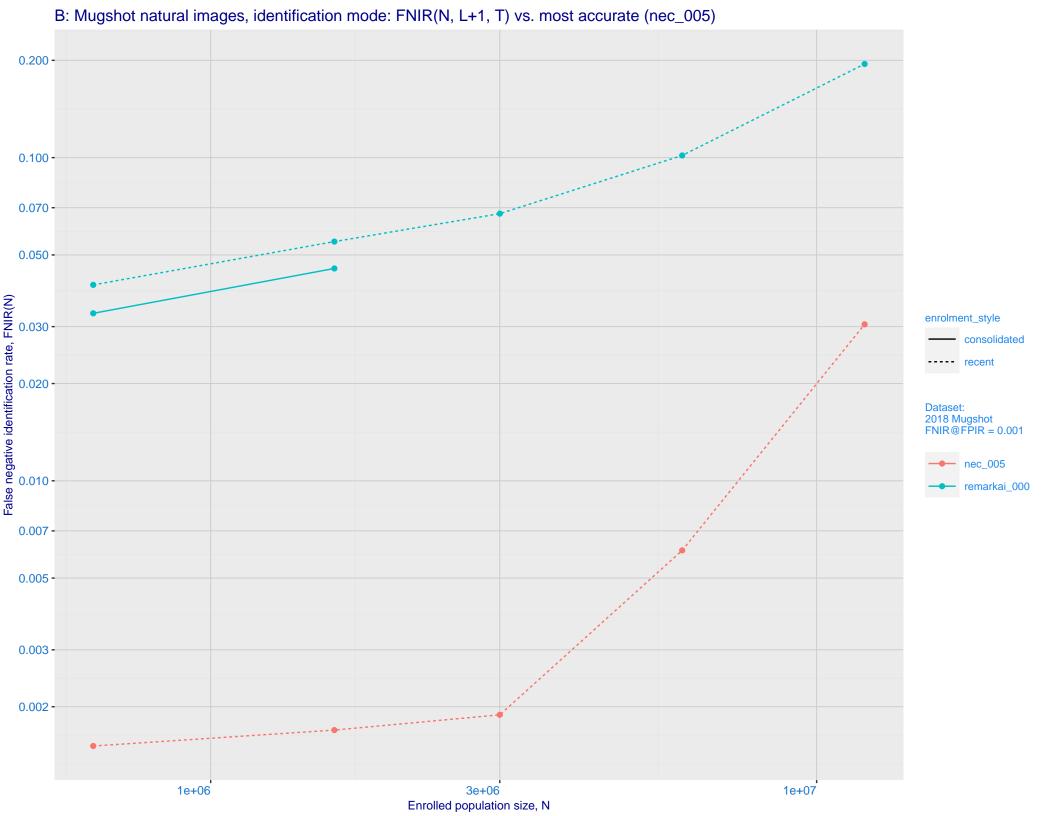
Frontal mugshot ranking 148 (out of 329) -- FNIR(1600000, T, L+1) = 0.0550, FPIR=0.001000 vs. lowest 0.0017 from nec_005

Mugshot webcam ranking 137 (out of 289) -- FNIR(1600000, T, L+1) = 0.1193, FPIR=0.001000 vs. lowest 0.0120 from nec_005

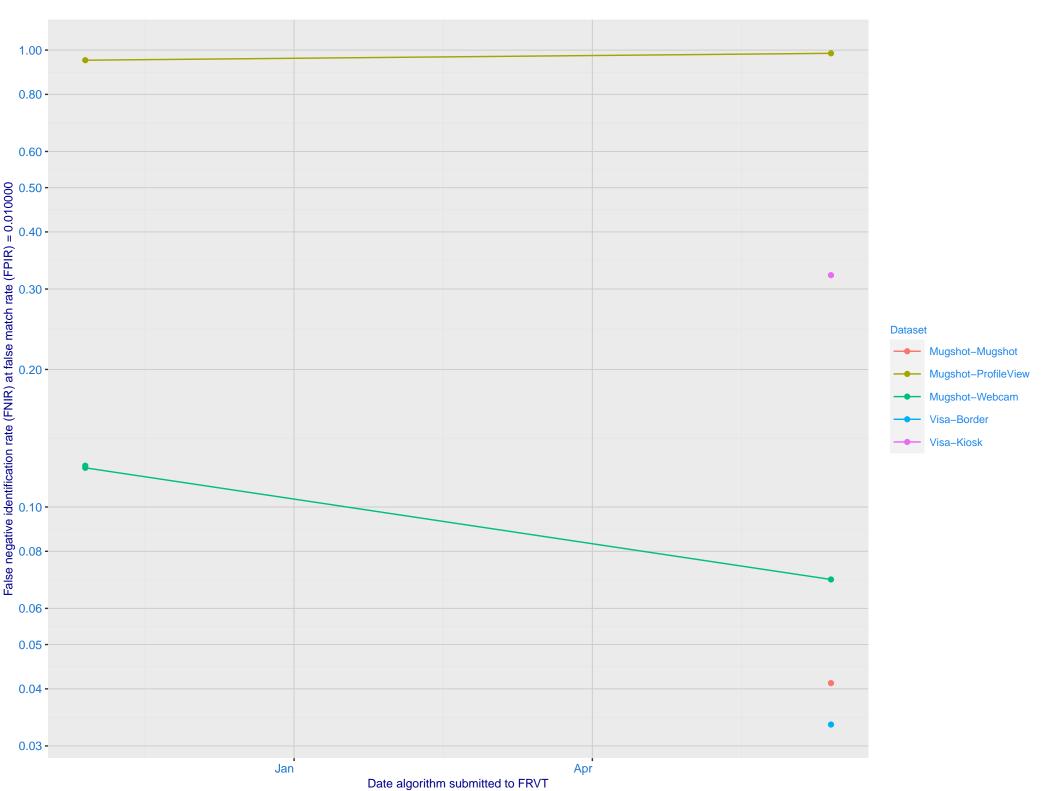
Mugshot profile ranking 177 (out of 259) -- FNIR(1600000, T, L+1) = 0.9991, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk_hr_000

Immigration visa-border ranking 111 (out of 217) -- FNIR(1600000, T, L+1) = 0.0690, FPIR=0.001000 vs. lowest 0.0032 from paravision_009

Immigration visa-kiosk ranking 129 (out of 212) -- FNIR(1600000, T, L+1) = 0.7303, FPIR=0.001000 vs. lowest 0.0728 from paravision_009

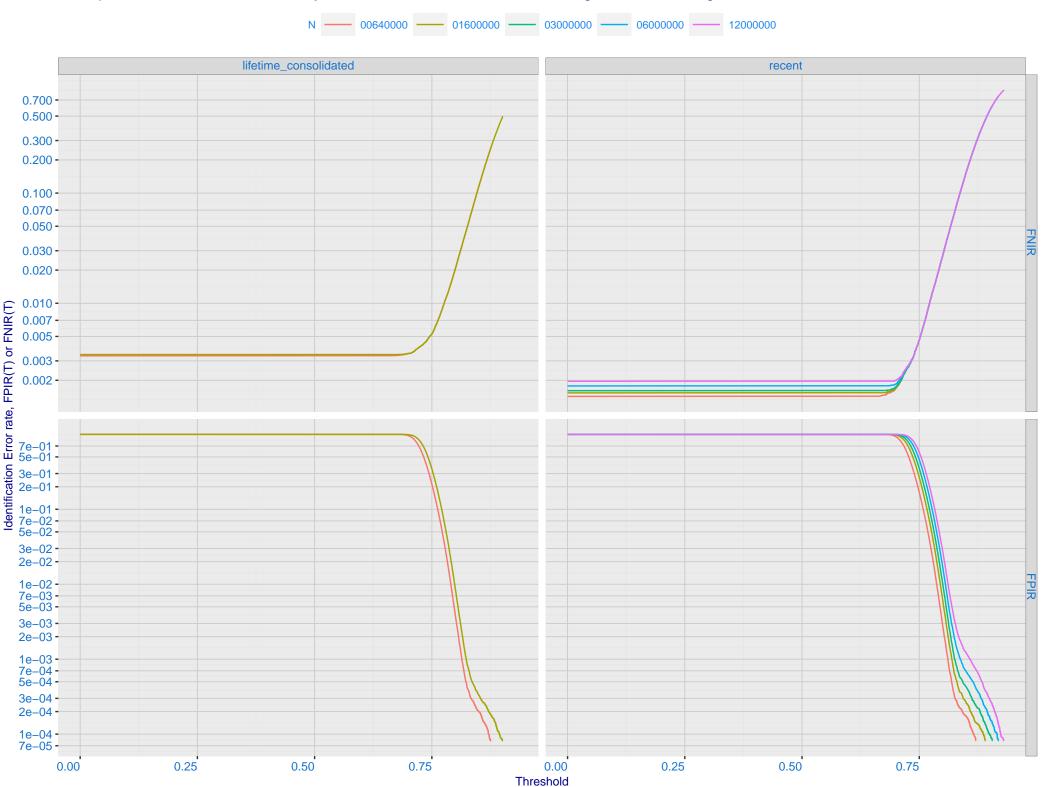


C: Evolution of accuracy for REMARKAI algorithms on three datasets 2018 – present

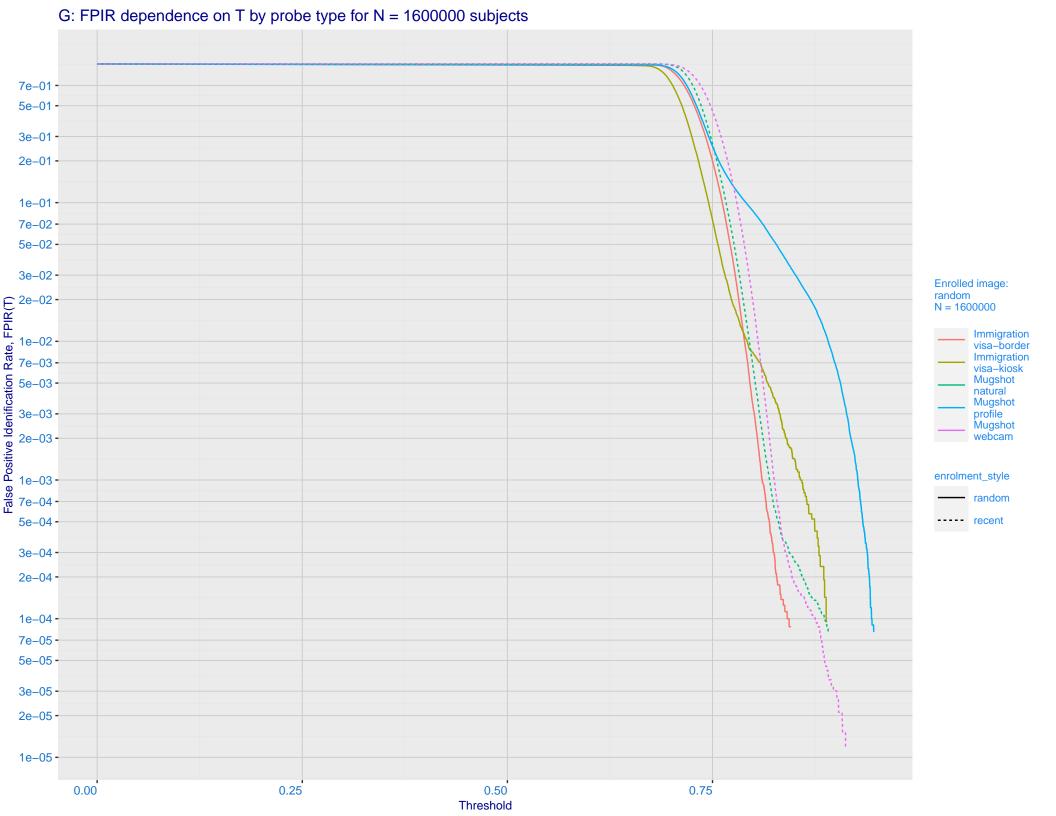


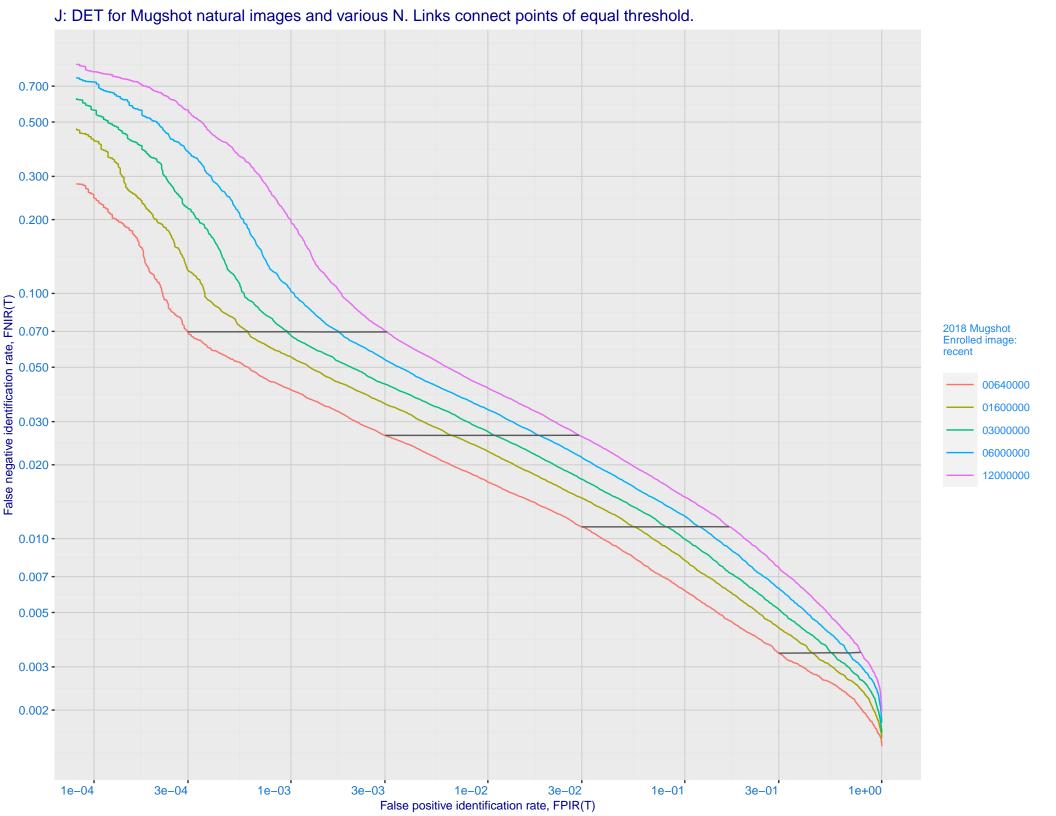
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration **Immigration** Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -Ealse negative identification rate, FNIR(T) 0.003 - 0.002 - 0.001 - 0.500 - 0.200 - 0.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

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 -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)

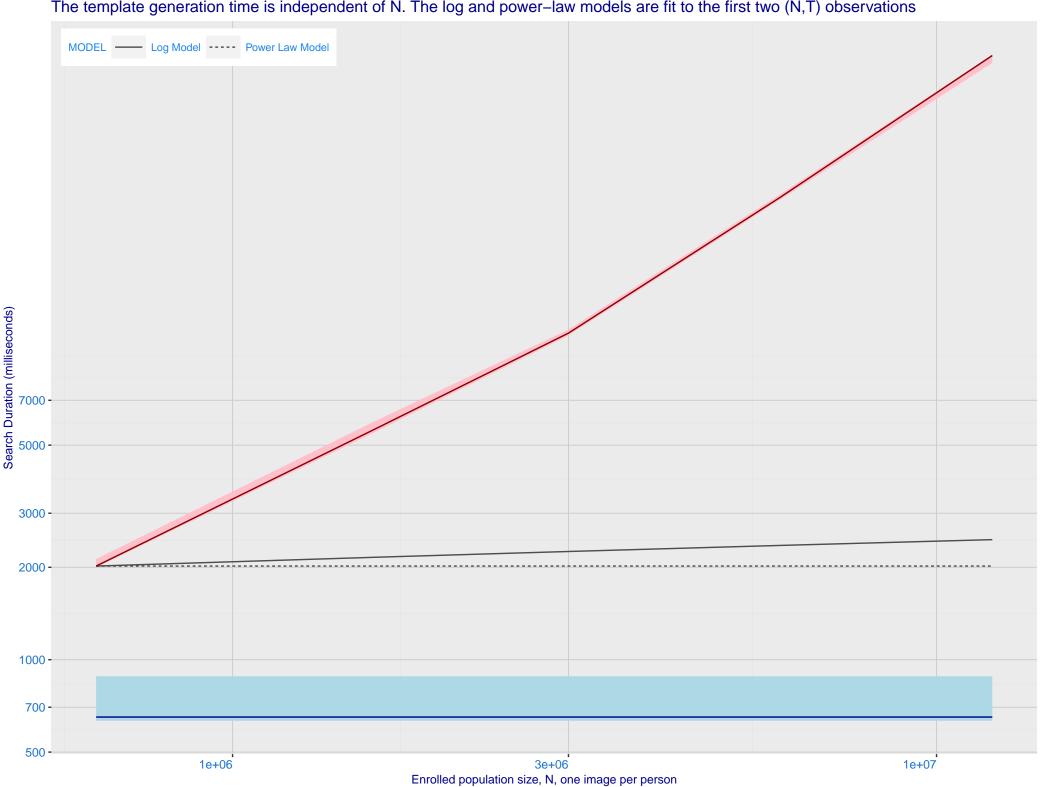




K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_006) Immigration **Immigration** visa-border visa-kiosk 0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -Palse negative identification rate, FNIR(N) 0.002 - 0.001 - 0.000 - 0. enrolment_style consolidated ---- random --- recent Mugshot webcam Mugshot natural FNIR@Rank = 1 remarkai_000 - sensetime_006 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

L: Investigational mode: FNIR(1600000, R, 0) by probe type remarkai_000 sensetime_006 0.100 -0.070 -0.050 -0.030 enrolment_style False negative identification rate, FNIR(N) 0.000 - 0.000 - 0.0007 - 0.0005 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

M: 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



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



