## A: Datasheet

Algorithm: remarkai\_2

Developer: Remark Holdings

Submission Date: 2018\_10\_30

Template size: 2048 bytes

Template time (2.5 percentile): 411 msec

Template time (median): 427 msec

Template time (97.5 percentile): 512 msec

Investigation:

Frontal mugshot ranking 107 (out of 259) -- FNIR(1600000, 0, 1) = 0.0081 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 103 (out of 221) -- FNIR(1600000, 0, 1) = 0.0293 vs. lowest 0.0062 from sensetime\_005

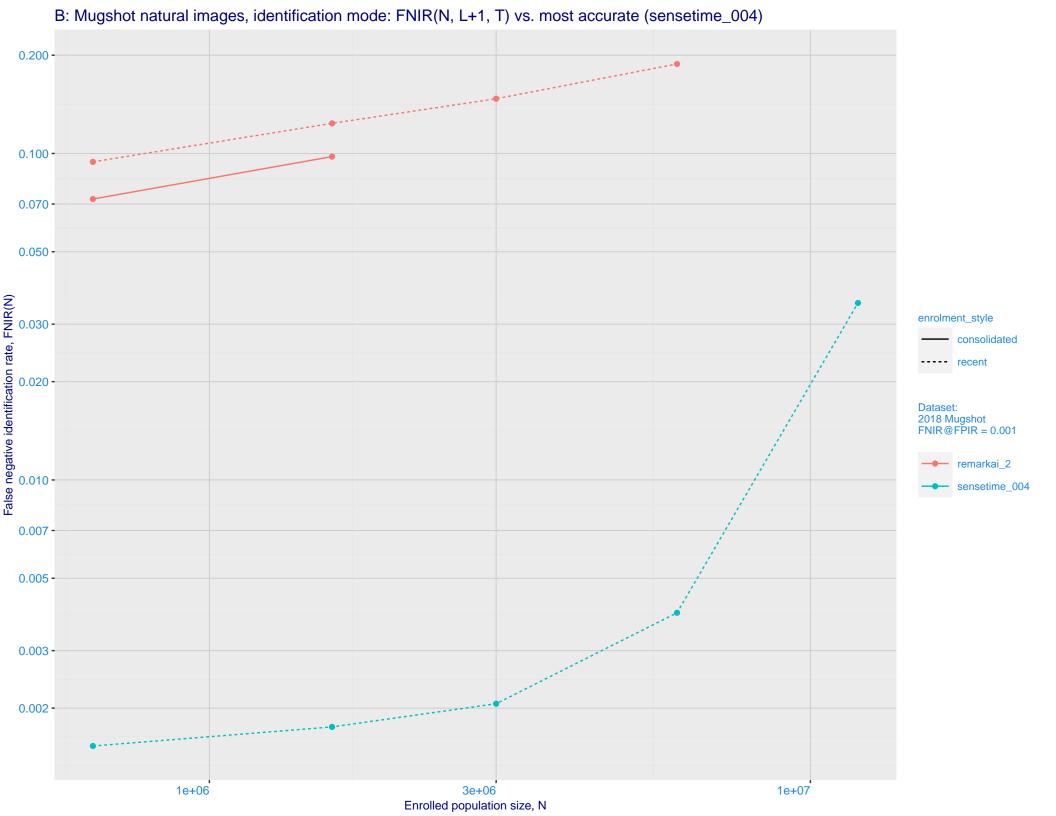
Mugshot profile ranking 91 (out of 190) -- FNIR(1600000, 0, 1) = 0.8020 vs. lowest 0.0591 from sensetime\_005

Identification:

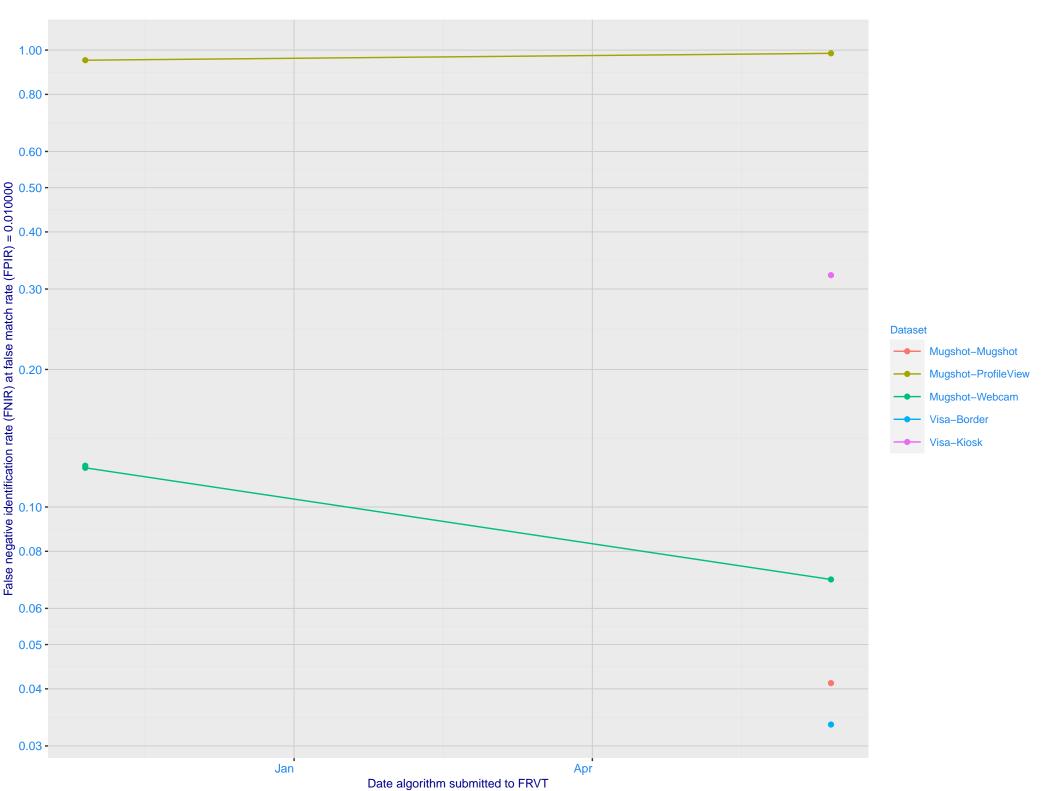
Frontal mugshot ranking 144 (out of 259) -- FNIR(1600000, T, L+1) = 0.1237, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Mugshot webcam ranking 121 (out of 219) -- FNIR(1600000, T, L+1) = 0.1963, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

Mugshot profile ranking 78 (out of 189) -- FNIR(1600000, T, L+1) = 0.9909, FPIR=0.001000 vs. lowest 0.1733 from sensetime\_005

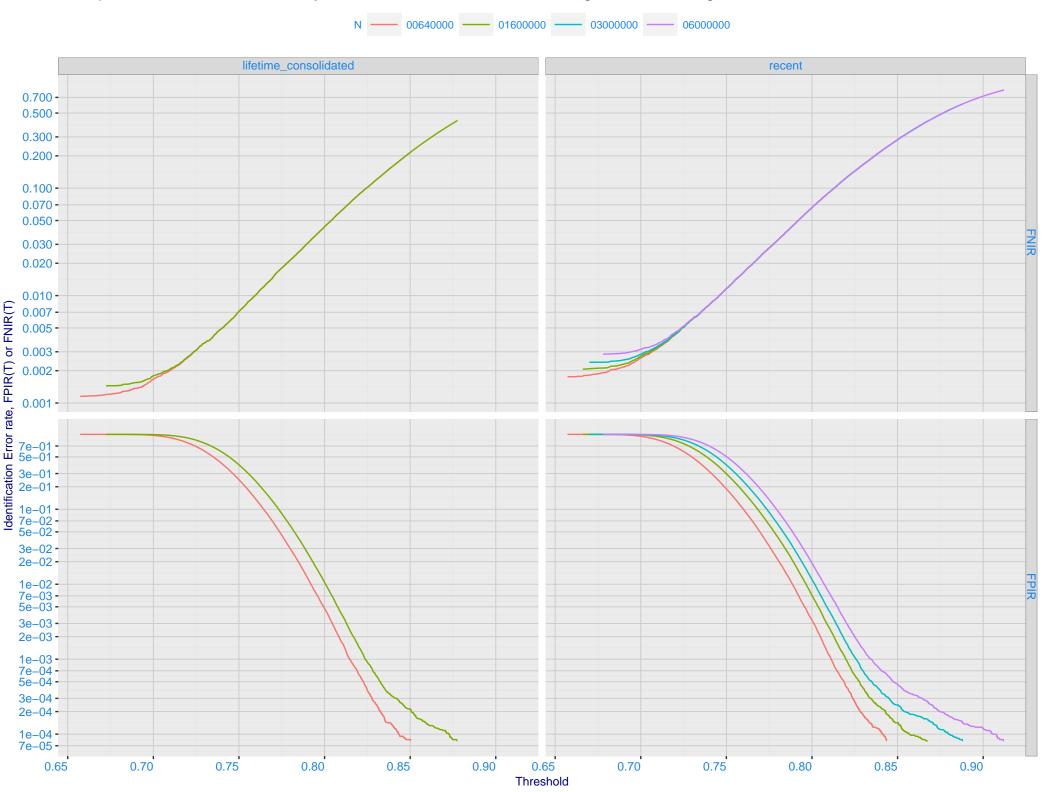


C: Evolution of accuracy for REMARKAI algorithms on three datasets 2018 – present

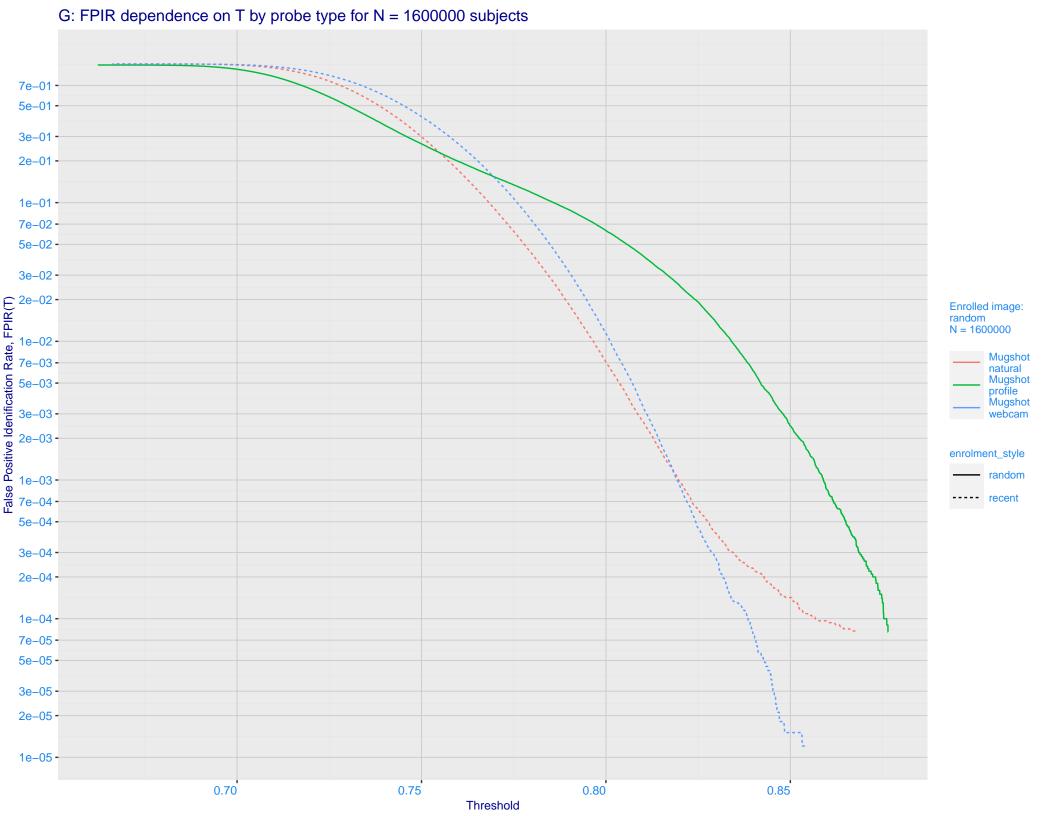


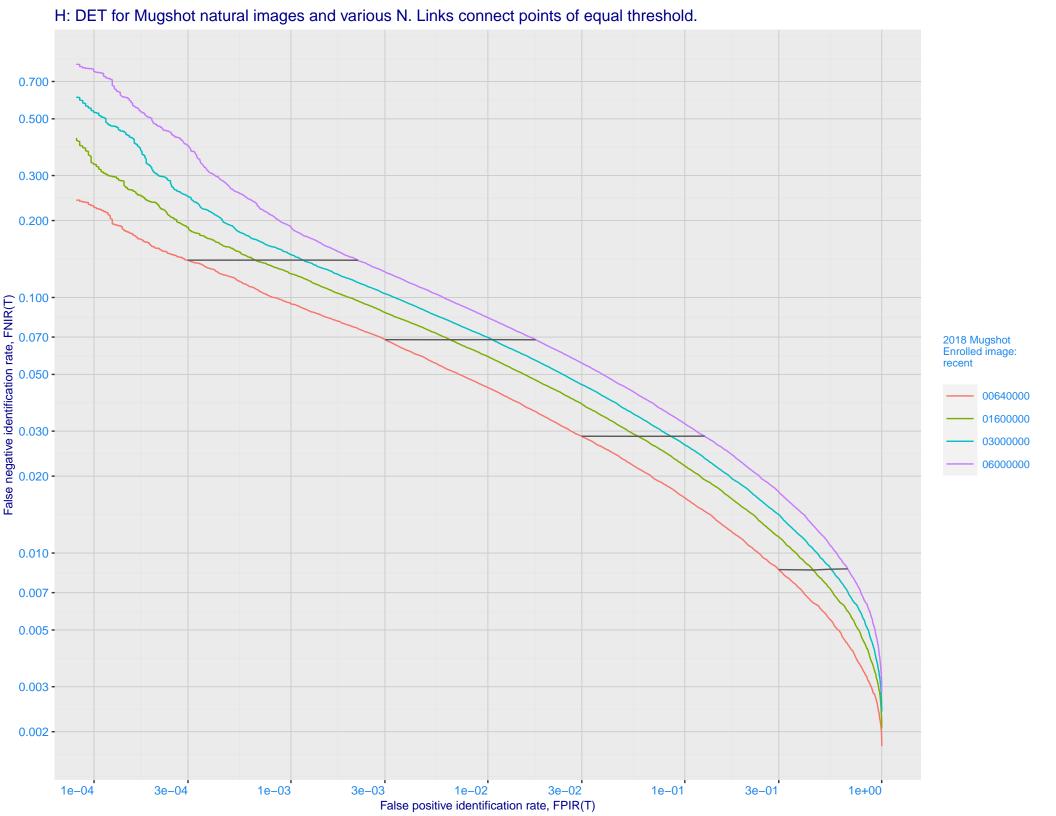
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals **Immigration Immigration** Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.0001 - 0.700 - 0.500 - 0.200 - 0.100 - 0 enrolment\_style consolidated-ONE-MATE random-ONE-MATE recent-ONE-MATE unconsolidated-ALL-MATES unconsolidated-ANY-MATE 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

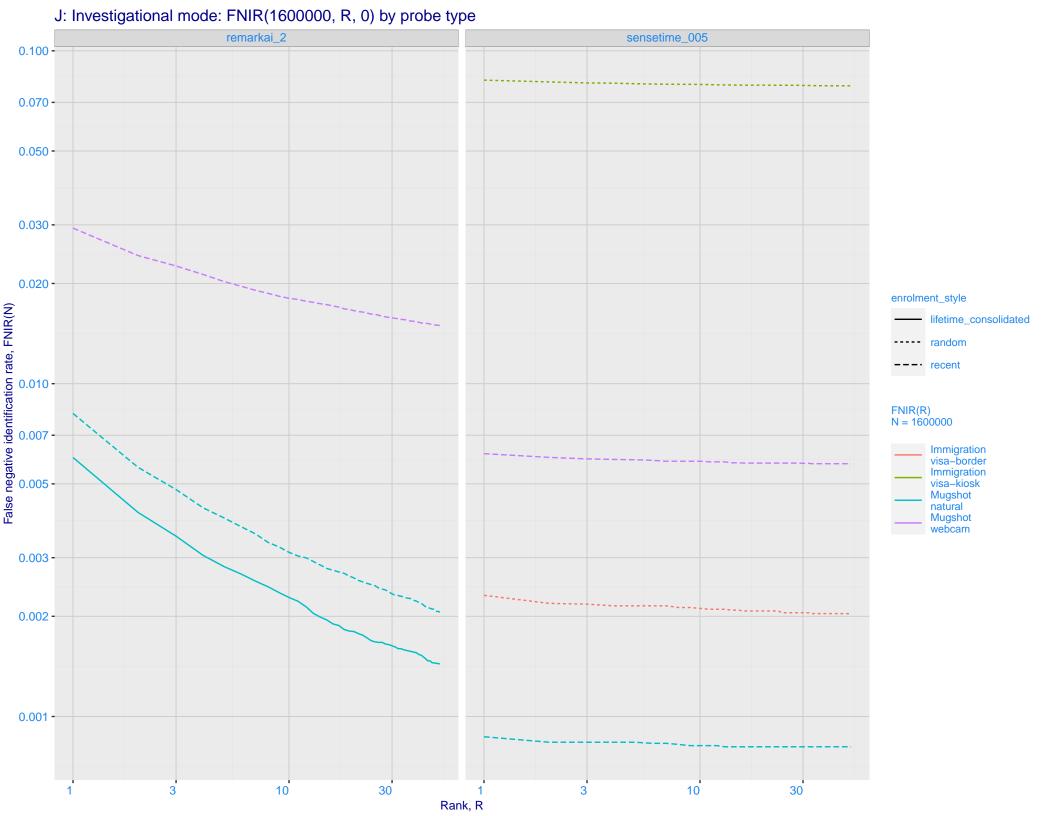


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 - 7e-02 - 7e-02 - 2e-02 **Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam 1e-02 -7e-03 -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-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)

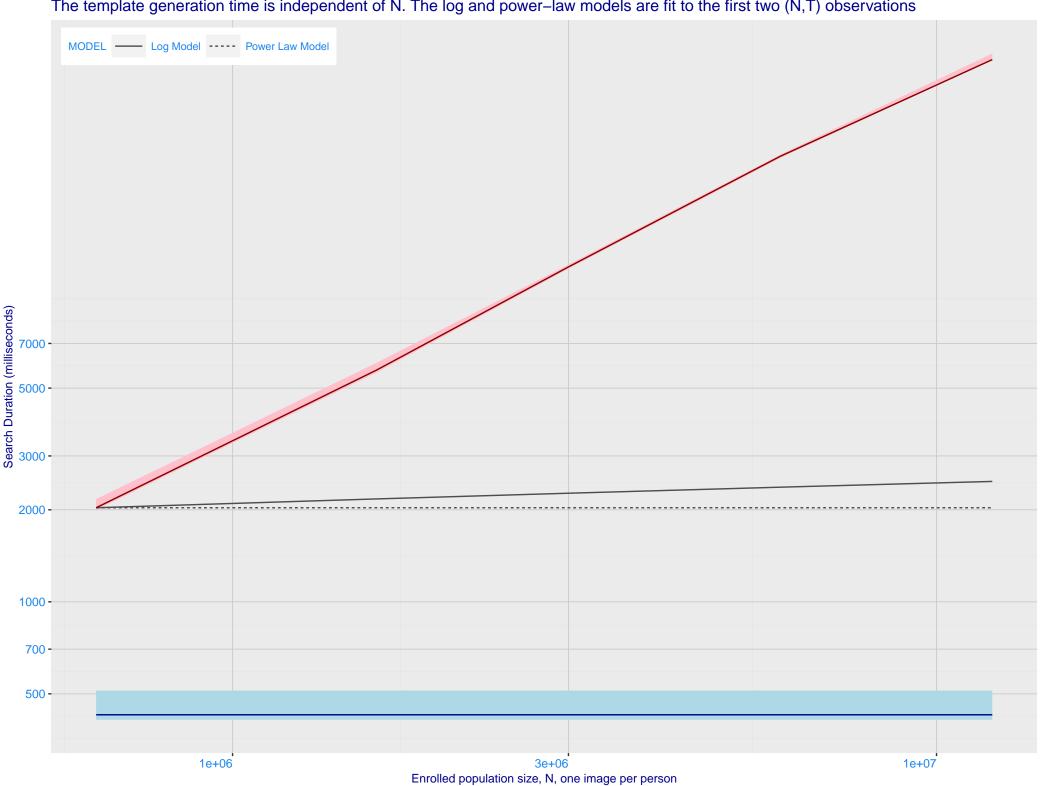




I: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.100 0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -Palse negative identification rate, FNIR(N) 0.002 - 0.001 - 0.000 - 0.050 - 0.050 - 0.030 - 0. enrolment\_style consolidated ---- random --- recent Mugshot webcam Mugshot natural FNIR@Rank = 1 remarkai\_2 sensetime\_005 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



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



