## A: Datasheet

Algorithm: cogent\_2

Developer: Thales

Submission Date: 2018\_10\_30

Template size: 1043 bytes

Template time (2.5 percentile): 941 msec

Template time (median): 946 msec

Template time (97.5 percentile): 1485 msec

Investigation:

Frontal mugshot ranking 73 (out of 279) -- FNIR(1600000, 0, 1) = 0.0036 vs. lowest 0.0009 from sensetime\_005

Mugshot webcam ranking 85 (out of 241) -- FNIR(1600000, 0, 1) = 0.0203 vs. lowest 0.0062 from sensetime\_005

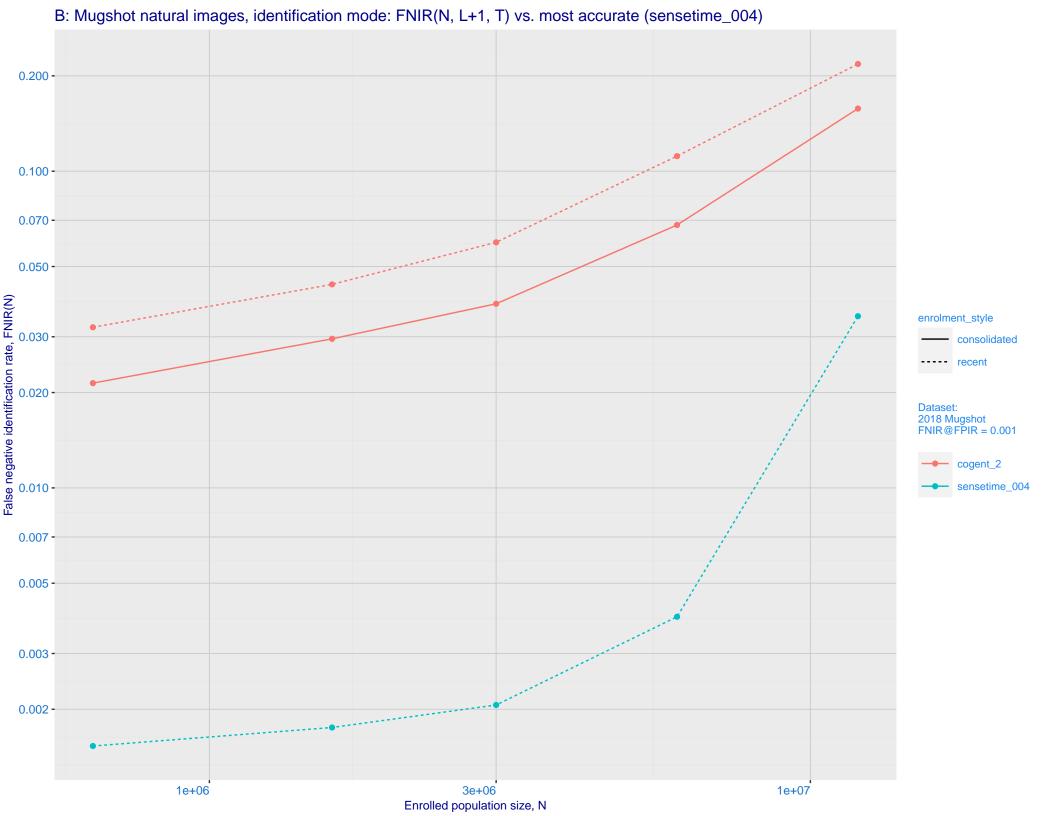
Mugshot profile ranking 132 (out of 210) -- FNIR(1600000, 0, 1) = 0.9251 vs. lowest 0.0587 from xforwardai\_002

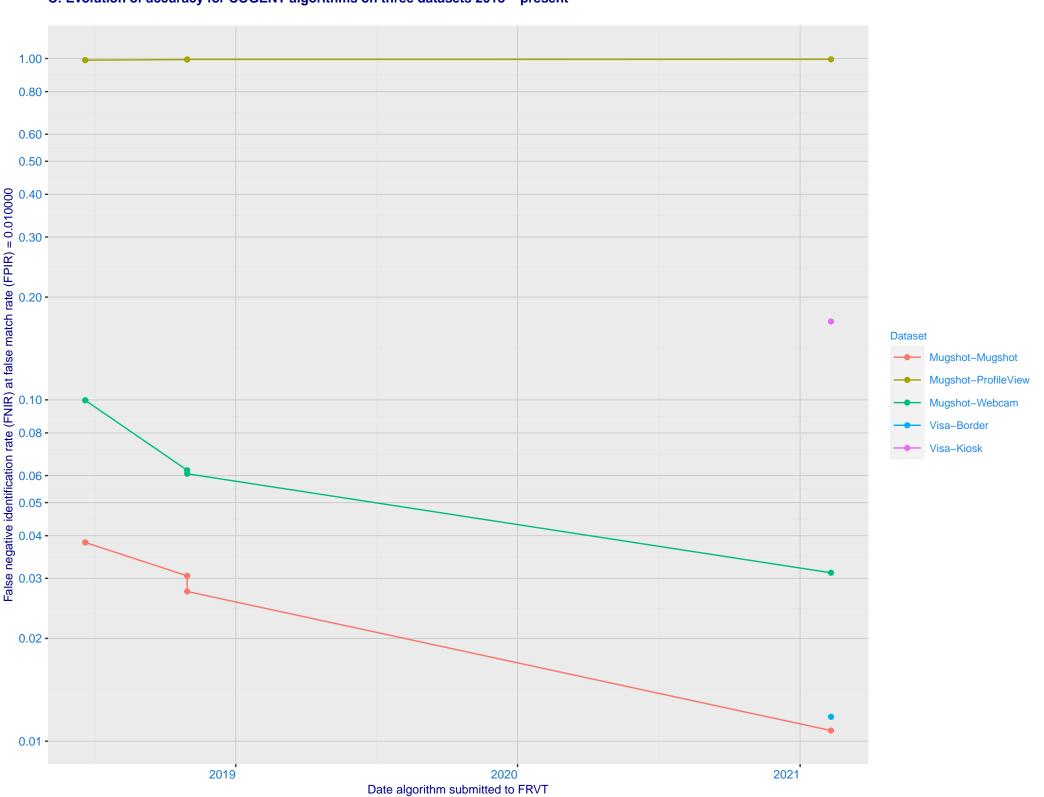
Identification:

Frontal mugshot ranking 79 (out of 279) -- FNIR(1600000, T, L+1) = 0.0439, FPIR=0.001000 vs. lowest 0.0018 from sensetime\_004

Mugshot webcam ranking 74 (out of 236) -- FNIR(1600000, T, L+1) = 0.0976, FPIR=0.001000 vs. lowest 0.0122 from sensetime\_003

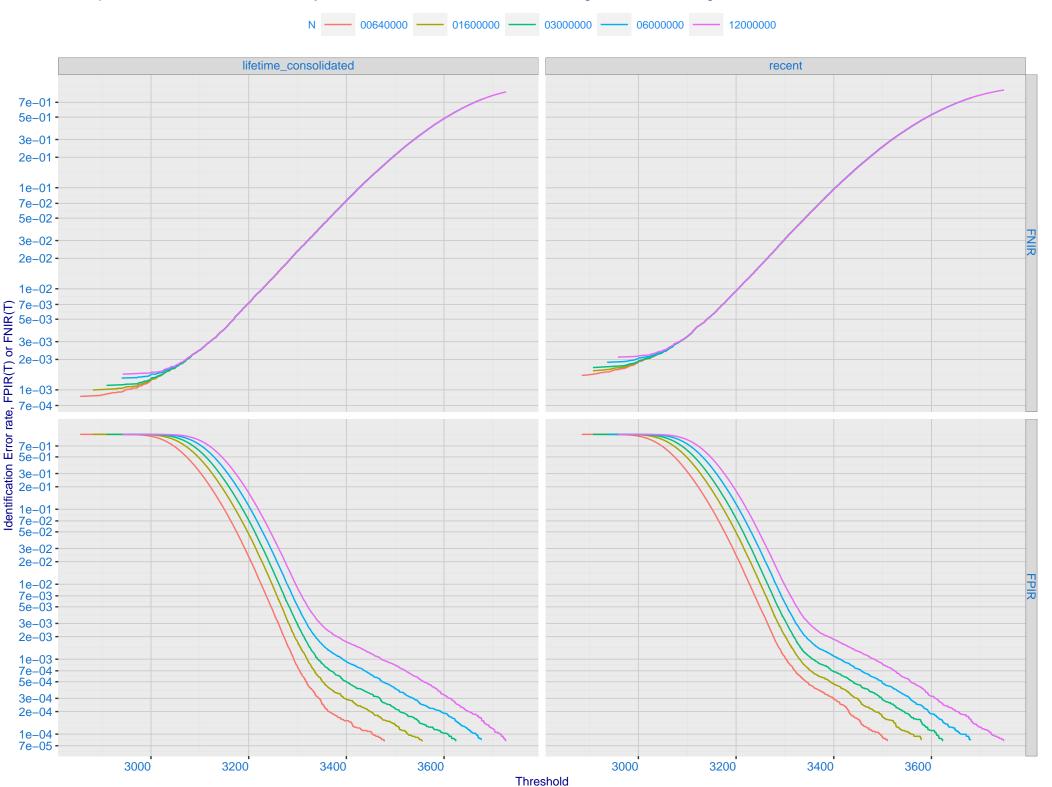
Mugshot profile ranking 121 (out of 209) -- FNIR(1600000, T, L+1) = 0.9977, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk\_hr\_000



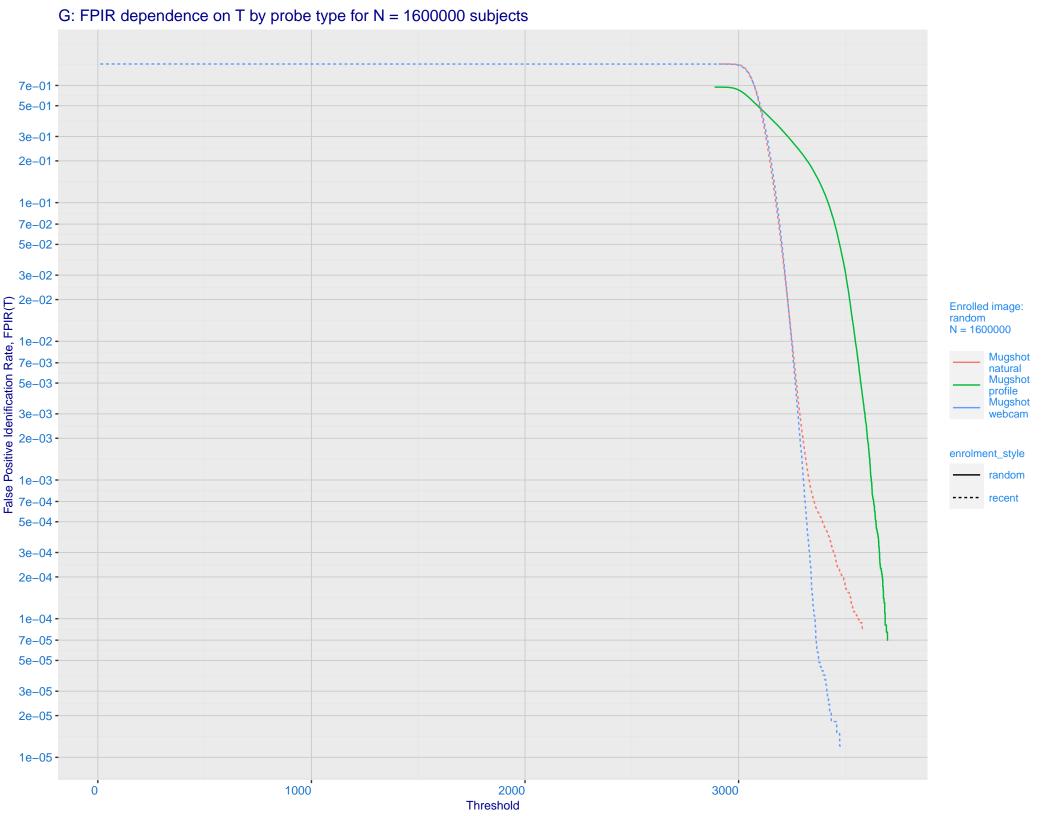


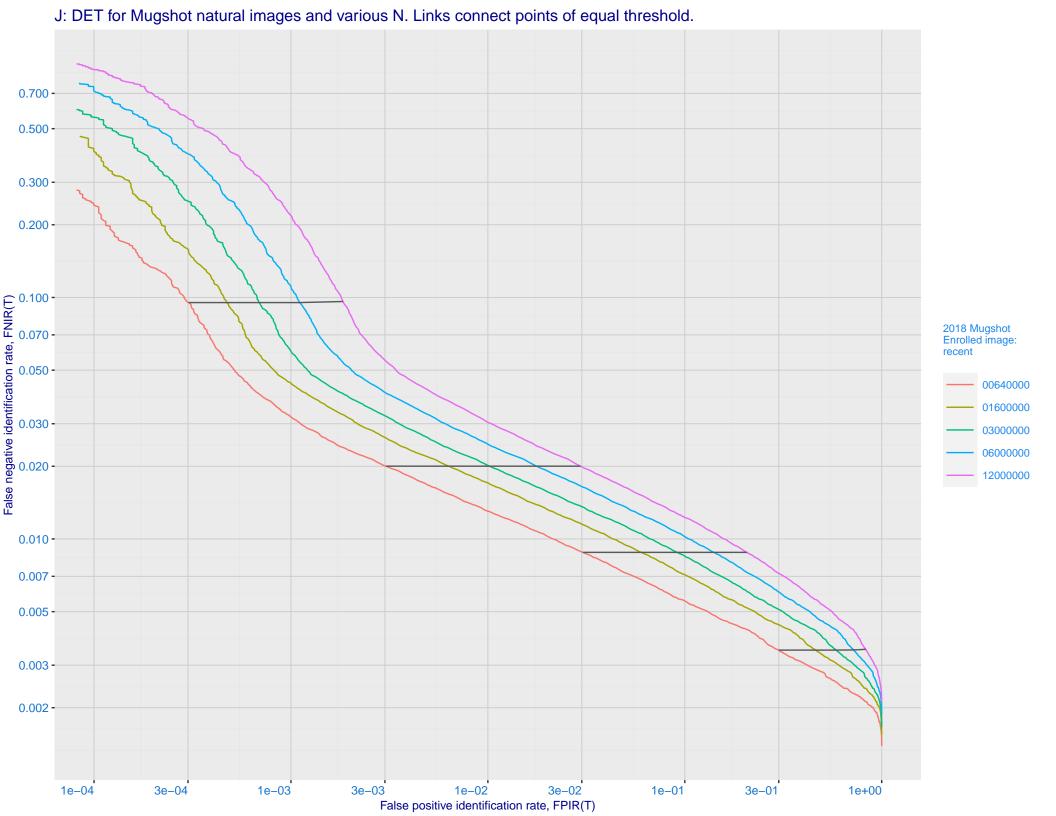
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration **Immigration** Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.002 - 0.001 - 0.500 - 0.200 - 0. enrolment\_style consolidated-ONE-MATE random-ONE-MATE recent-ONE-MATE unconsolidated-ALL-MATES unconsolidated-ANY-MATE 0.100 -0.070 sensetime 004 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

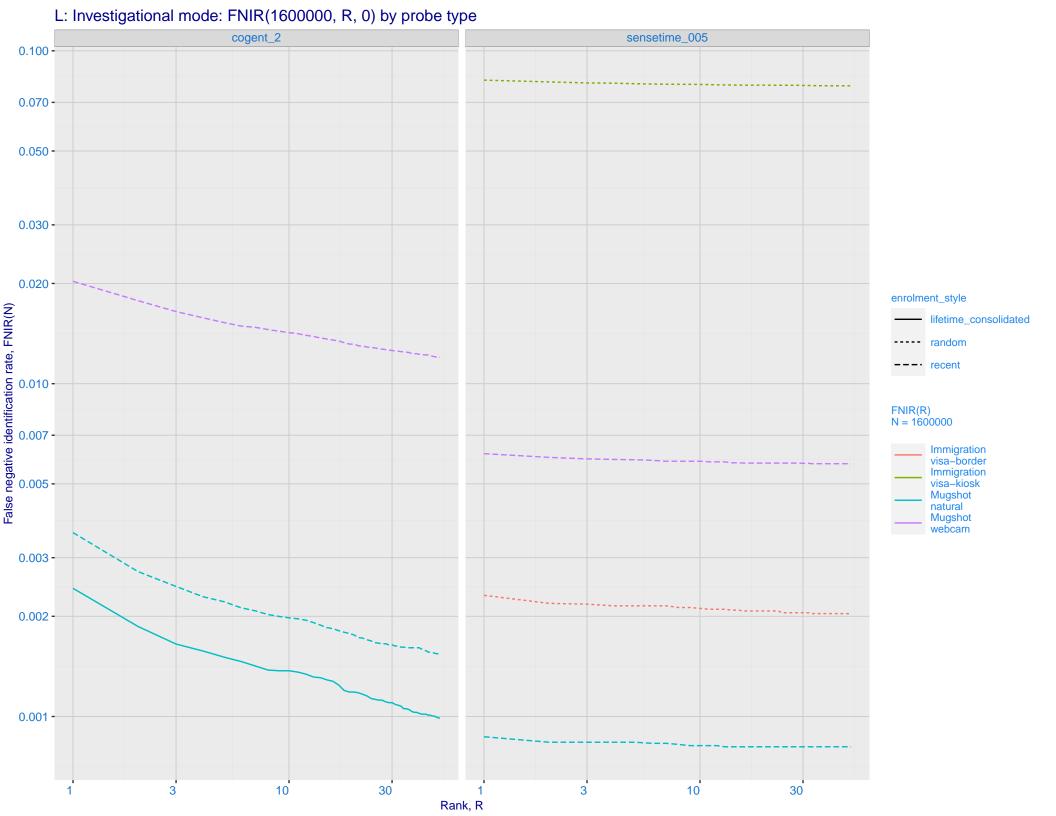


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 -5e-02 -3e-02 -3e-02 -1e-02 -**Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam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

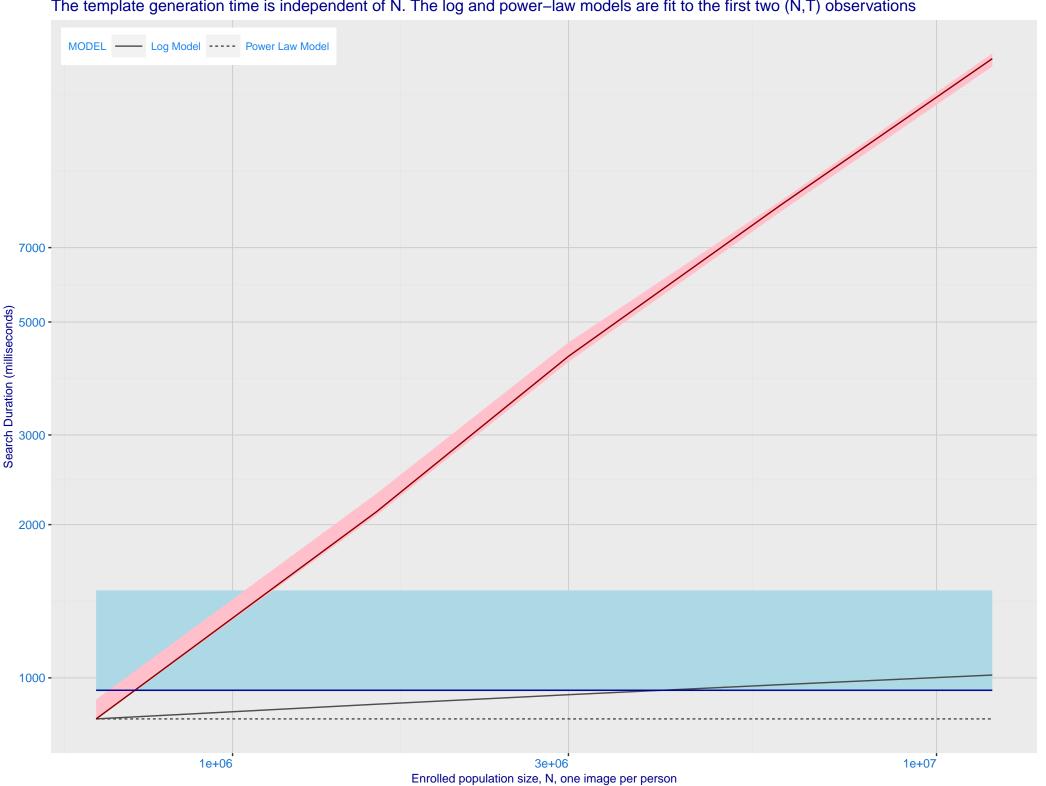


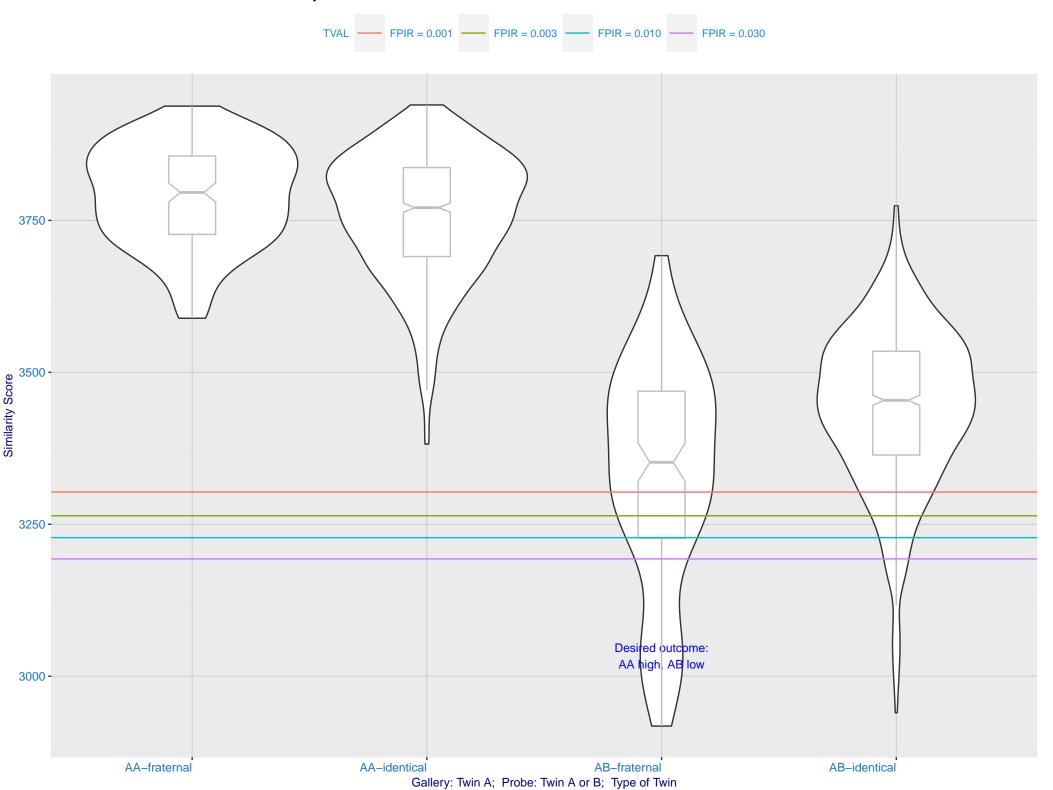


K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime\_005) Immigration **Immigration** visa-border visa-kiosk 0.100 0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -Ealse negative identification rate, FNIR(N) 0.002 - 0.001 - 0.000 - 0.050 - 0.050 - 0.030 - 0. enrolment\_style consolidated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

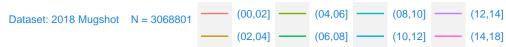


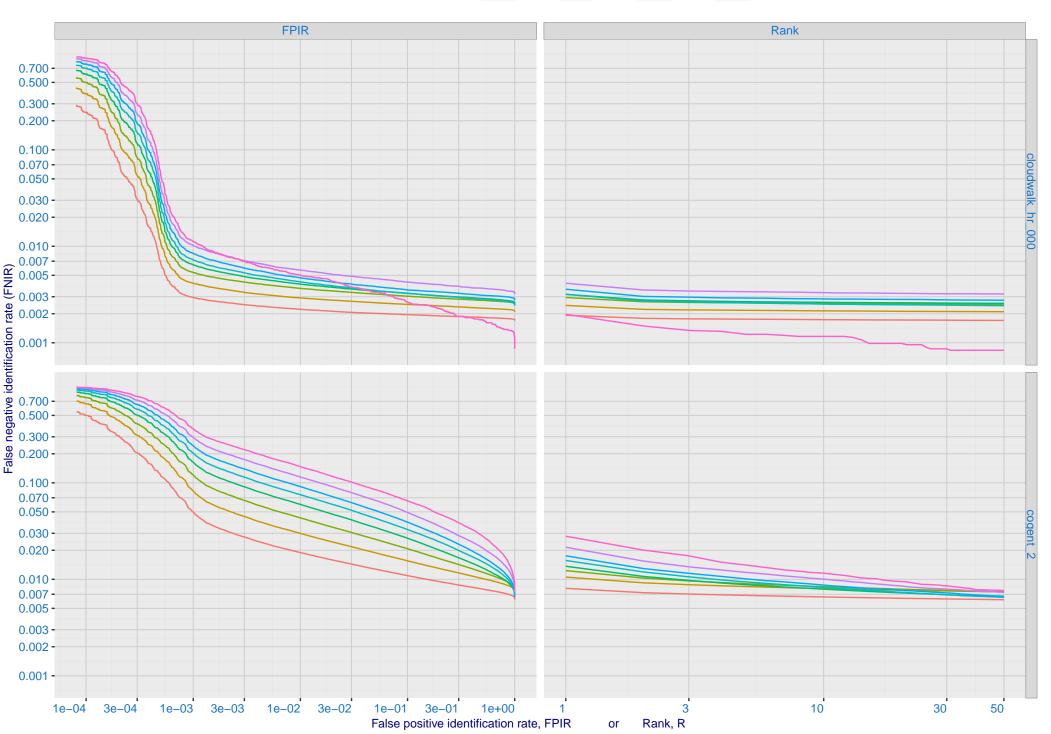
M: Template duration; search duration vs. N. The blue and pink ribbon covers 95 percent of observed measurements. The template generation time is independent of N. The log and power–law models are fit to the first two (N,T) observations





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





R: Decline of genuine scores with ageing, with some eventually dropping below typical thresholds shown by the horizontal lines 4000 -3750 Dataset: 2018 Mugshot N= 3.1M Color encodes FNIR (Rank = 1) 0.15 0.10 3500 -0.05 0.00 TVAL - FPIR = 0.001 3250 -FPIR = 0.003 FPIR = 0.010FPIR = 0.030 3000 -(00,02](02,04](04,06](06,08](08,10](10,12](12,14](14,18]

Time lapse between search and initial encounter enrollment (years)