A: Datasheet

Algorithm: aware_5

Developer: Aware

Submission Date: 2018_10_30

Template size: 3100 bytes

Template time (2.5 percentile): 765 msec

Template time (median): 793 msec

Template time (97.5 percentile): 1280 msec

Investigation:

Frontal mugshot ranking 194 (out of 279) -- FNIR(1600000, 0, 1) = 0.0311 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 173 (out of 241) -- FNIR(1600000, 0, 1) = 0.0671 vs. lowest 0.0062 from sensetime_005

Mugshot profile ranking 194 (out of 210) — FNIR(1600000, 0, 1) = 0.9780 vs. lowest 0.0587 from xforwardai_002

Immigration visa-border ranking 109 (out of 168) -- FNIR(1600000, 0, 1) = 0.0481 vs. lowest 0.0013 from visionlabs_010

Immigration visa-kiosk ranking 119 (out of 165) -- FNIR(1600000, 0, 1) = 0.3081 vs. lowest 0.0568 from cloudwalk_hr_000

Identification:

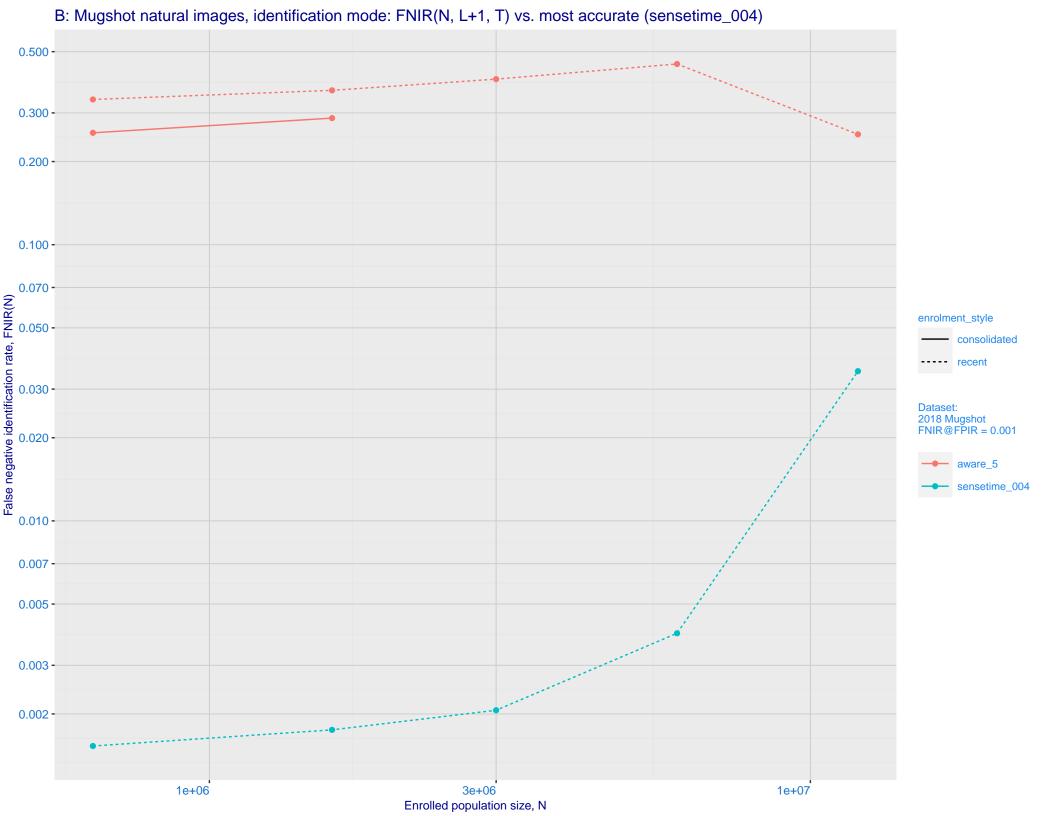
Frontal mugshot ranking 215 (out of 279) -- FNIR(1600000, T, L+1) = 0.3622, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

Mugshot webcam ranking 154 (out of 236) -- FNIR(1600000, T, L+1) = 0.2531, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

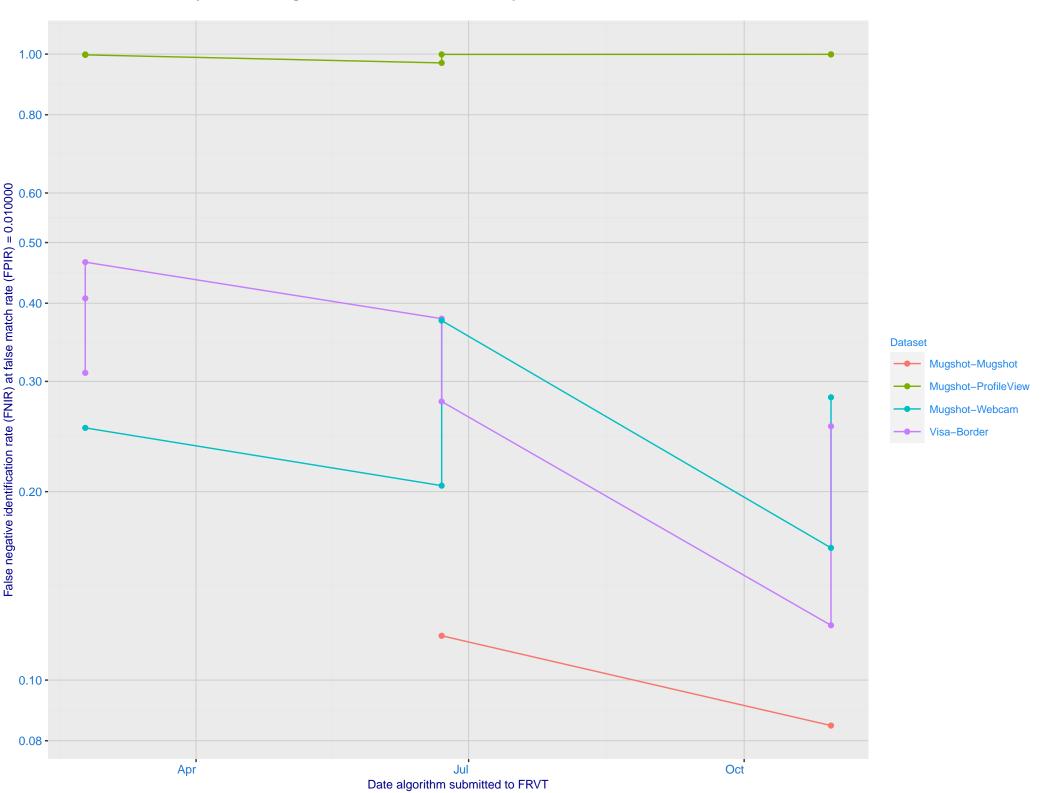
Mugshot profile ranking 165 (out of 209) -- FNIR(1600000, T, L+1) = 0.9997, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk_hr_000

Immigration visa-border ranking 106 (out of 167) -- FNIR(1600000, T, L+1) = 0.2549, FPIR=0.001000 vs. lowest 0.0047 from idemia_008

Immigration visa-kiosk ranking 117 (out of 162) -- FNIR(1600000, T, L+1) = 0.9202, FPIR=0.001000 vs. lowest 0.0996 from cloudwalk_hr_000

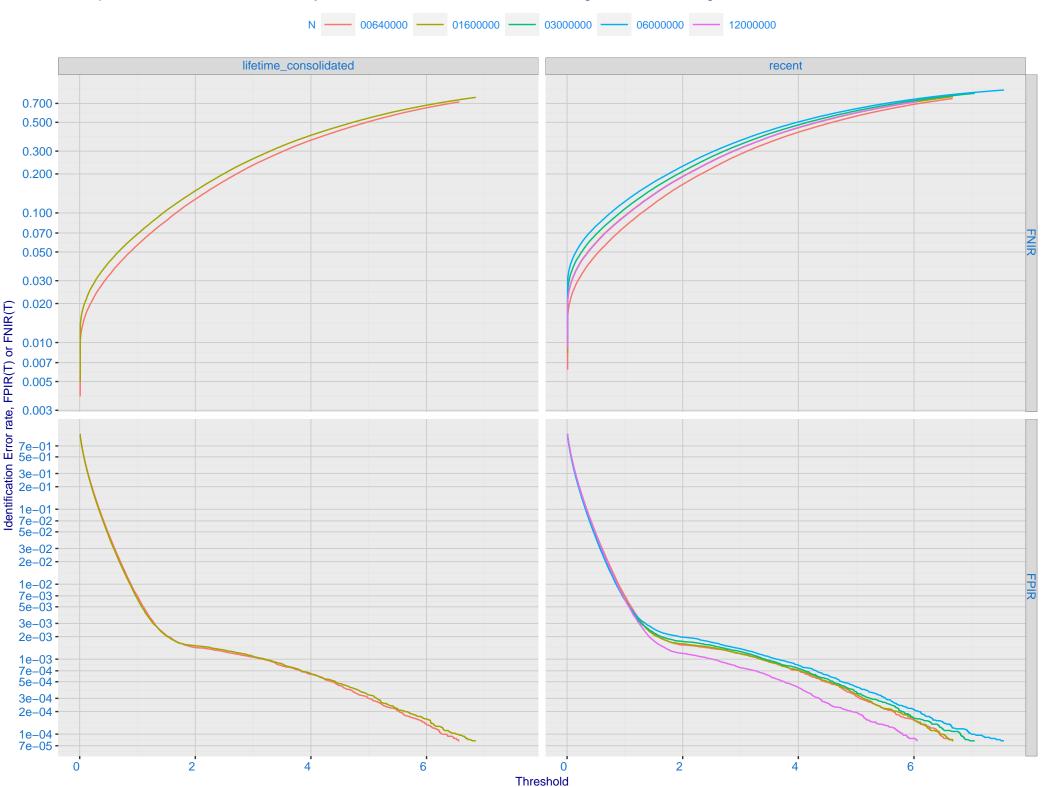


C: Evolution of accuracy for AWARE algorithms on three datasets 2018 – present

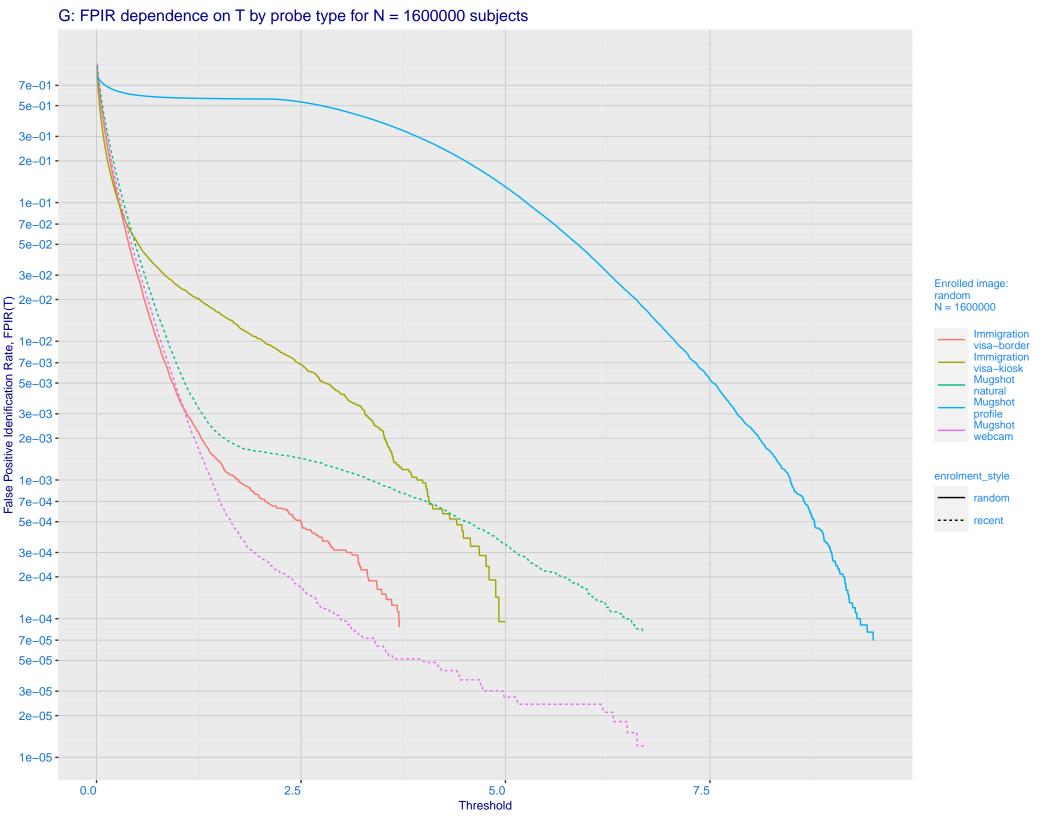


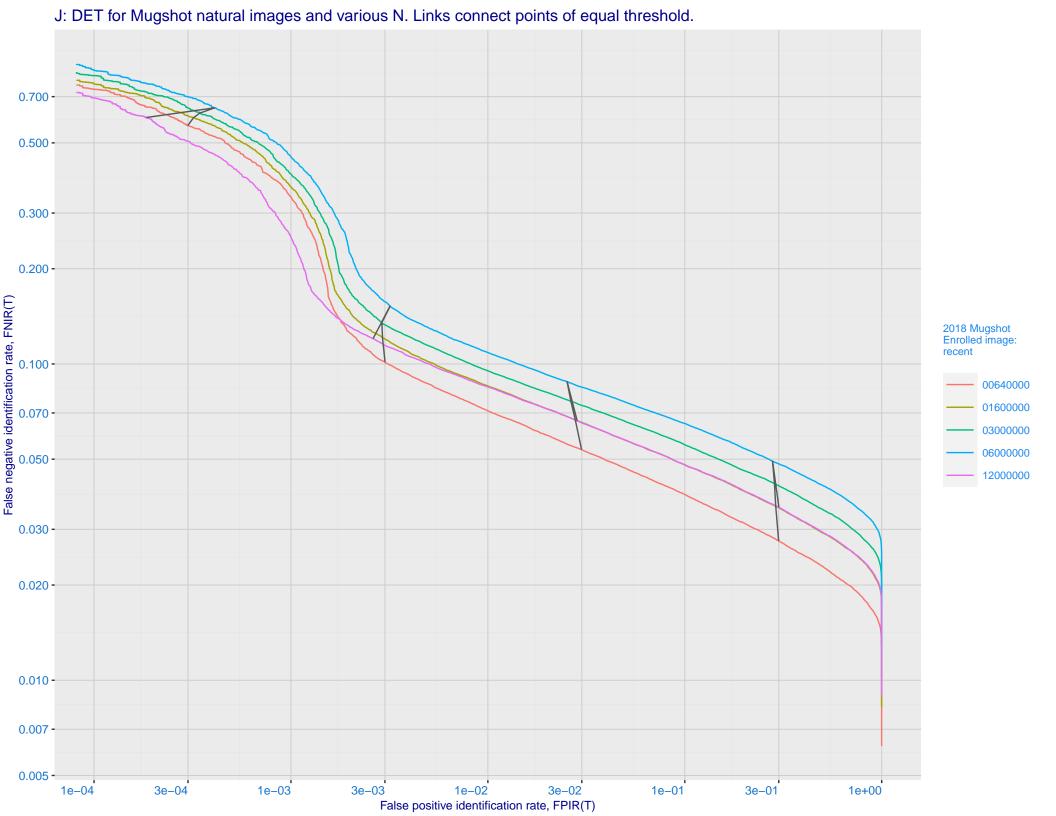
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration **Immigration** Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 - 0.005 - 0.005 - 0.002 - 0.001 - 0.001 - 0.700 - 0.500 - 0.200 enrolment_style consolidated-ONE-MATE random-ONE-MATE recent-ONE-MATE unconsolidated-ALL-MATES unconsolidated-ANY-MATE 0.100 -0.070 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

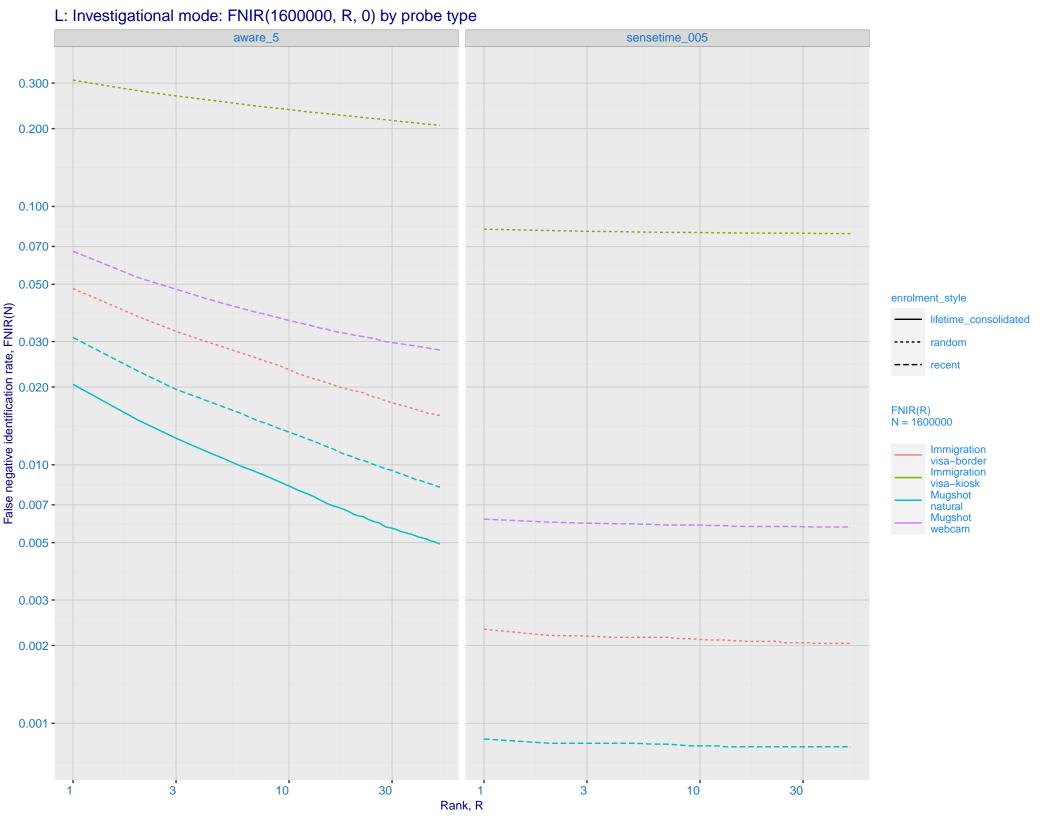


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 - 7e-02 **Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam 1e-02 -7e-03 -5e-03 -3e-03 -2e-03 -1e-03 -7e-04 -5e-04 -3e-04 -2e-04 -1e-04 -7e-05 -5e-05 -3e-05 -2e-05 -3e-02 1e-05 3e-05 1e-04 3e-04 1e-03 3e-03 1e-02 1e-01 3e-01 False Positive Idenification Rate, FPIR(T)

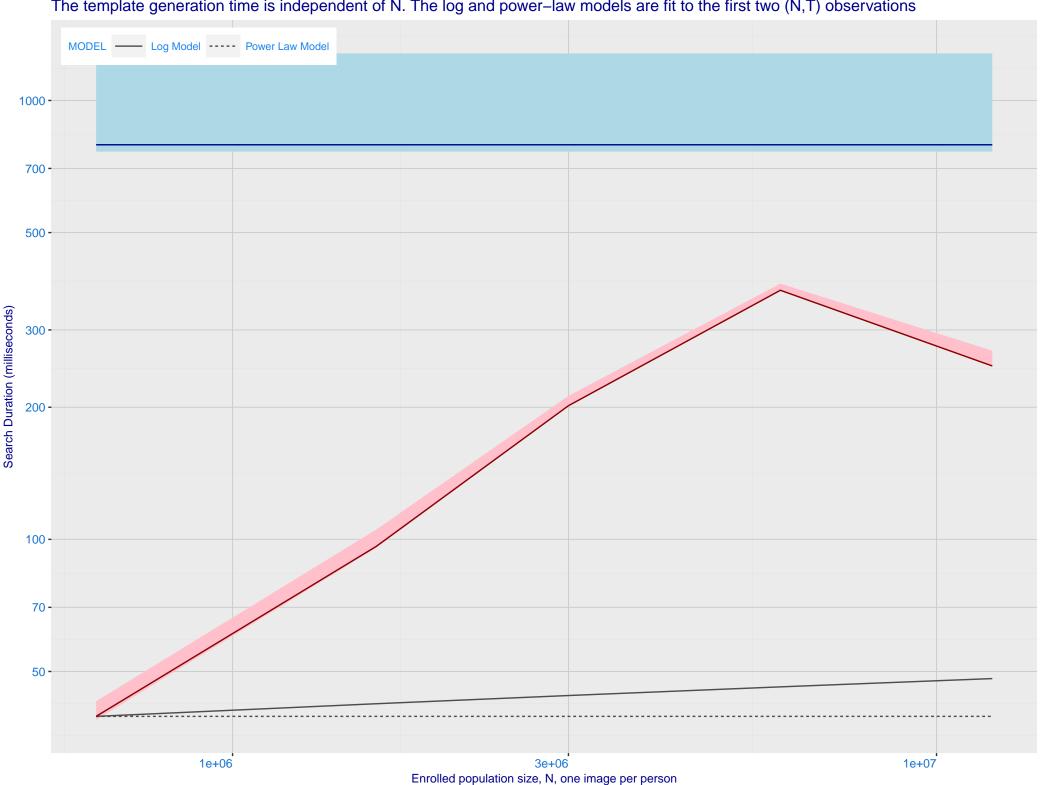




K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_005) Immigration **Immigration** visa-border visa-kiosk 0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -Ealse negative identification rate, FNIR(N) 0.003 - 0.001 - 0.001 - 0.300 - 0.100 - 0.070 - 0. FNIR@Rank = 1 aware_5 - sensetime_005 Mugshot Mugshot webcam natural enrolment_style consolidated ---- random --- recent 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

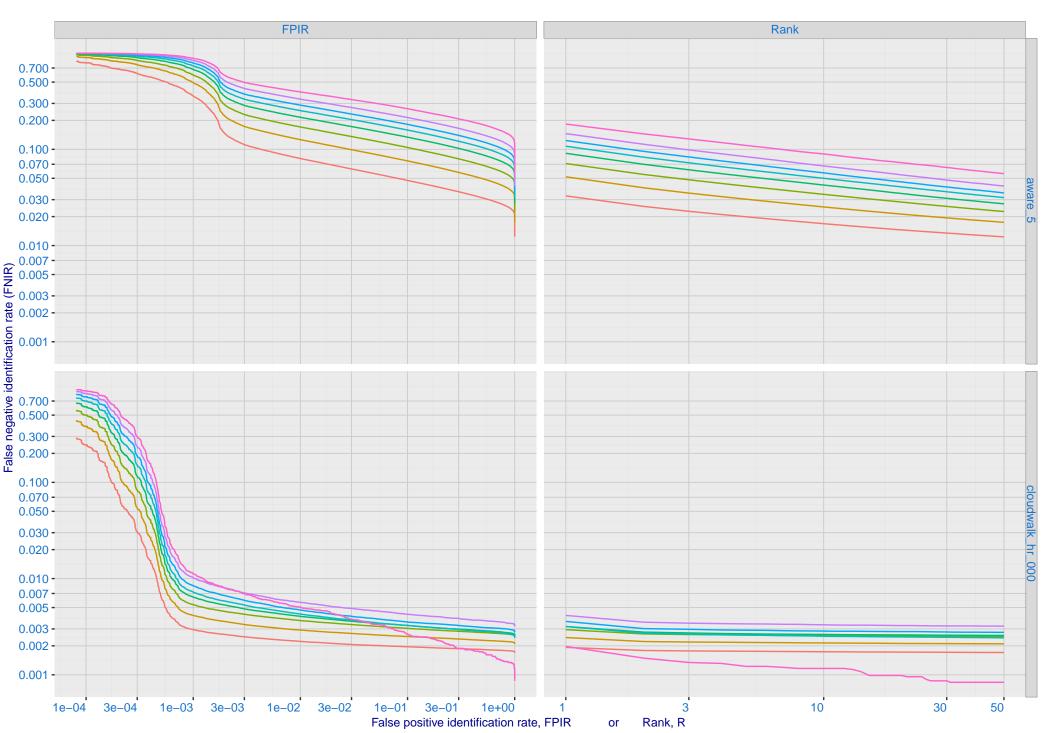


M: Template duration; search duration vs. N. The blue and pink ribbon covers 95 percent of observed measurements. The template generation time is independent of N. The log and power–law models are fit to the first two (N,T) observations



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 15 -Dataset: 2018 Mugshot N= 3.1M Color encodes FNIR (Rank = 1) 0.15 0.10 10 -0.05 0.00 **TVAL** - FPIR = 0.001 FPIR = 0.003 5 -FPIR = 0.010FPIR = 0.030 (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)