A: Datasheet

Algorithm: ntechlab_008

Developer: N-Tech Lab

Submission Date: 2020_01_06

Template size: 1300 bytes

Template time (2.5 percentile): 552 msec

Template time (median): 554 msec

Template time (97.5 percentile): 603 msec

Investigation:

Frontal mugshot ranking 22 (out of 279) -- FNIR(1600000, 0, 1) = 0.0017 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 15 (out of 241) -- FNIR(1600000, 0, 1) = 0.0096 vs. lowest 0.0062 from sensetime_005

Mugshot profile ranking 20 (out of 210) -- FNIR(1600000, 0, 1) = 0.1570 vs. lowest 0.0587 from xforwardai_002

Immigration visa-border ranking 22 (out of 168) — FNIR(1600000, 0, 1) = 0.0034 vs. lowest 0.0013 from visionlabs_010

Immigration visa-kiosk ranking 17 (out of 165) -- FNIR(1600000, 0, 1) = 0.0837 vs. lowest 0.0568 from cloudwalk_hr_000

Identification:

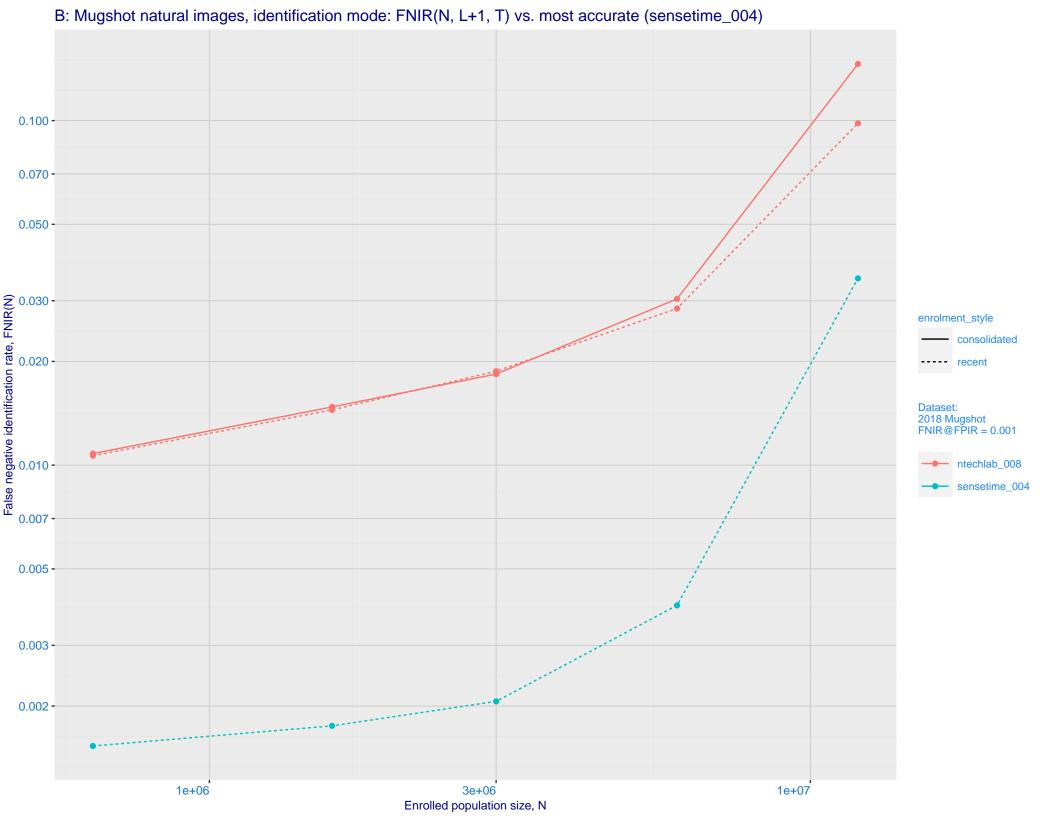
Frontal mugshot ranking 28 (out of 279) -- FNIR(1600000, T, L+1) = 0.0145, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

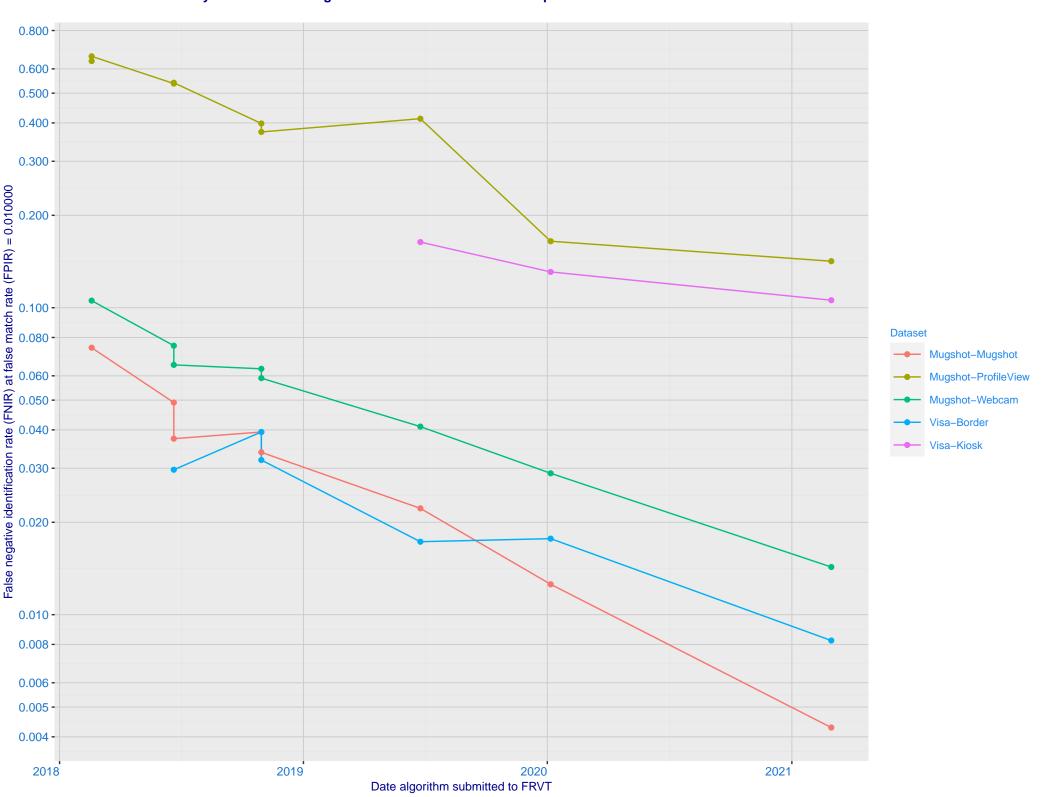
Mugshot webcam ranking 25 (out of 236) -- FNIR(1600000, T, L+1) = 0.0454, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

Mugshot profile ranking 13 (out of 209) — FNIR(1600000, T, L+1) = 0.5290, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk_hr_000

Immigration visa-border ranking 39 (out of 167) -- FNIR(1600000, T, L+1) = 0.0333, FPIR=0.001000 vs. lowest 0.0047 from idemia_008

Immigration visa-kiosk ranking 20 (out of 162) — FNIR(1600000, T, L+1) = 0.1833, FPIR=0.001000 vs. lowest 0.0996 from cloudwalk_hr_000

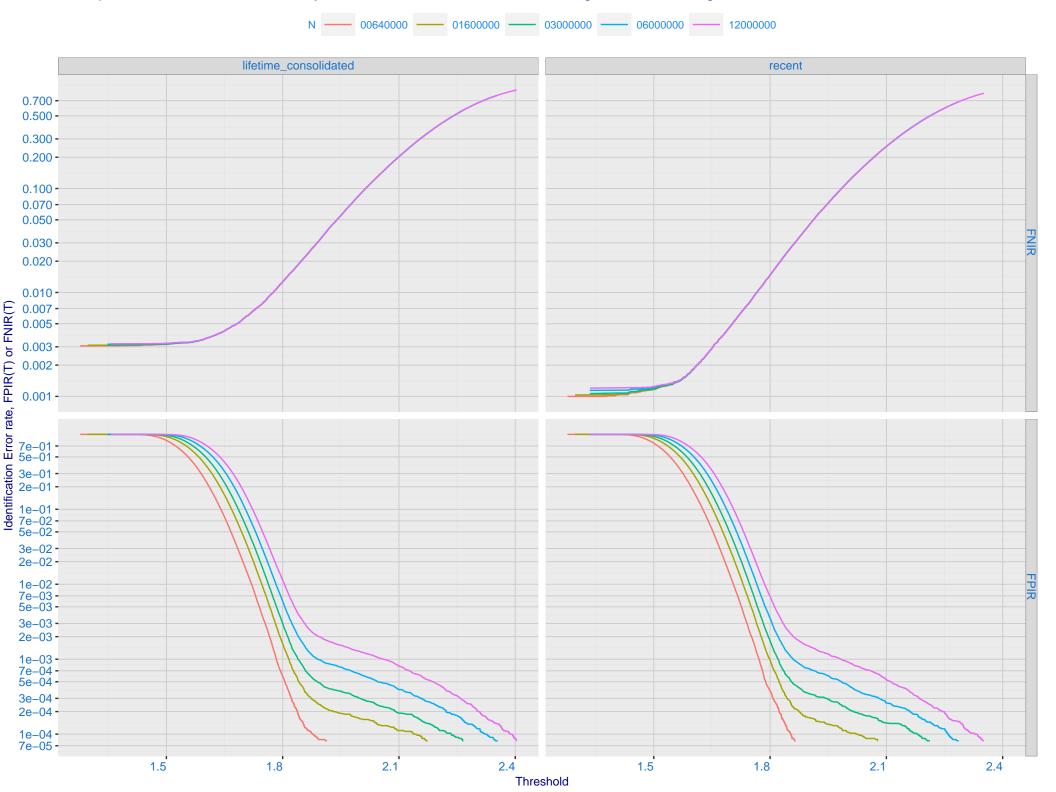




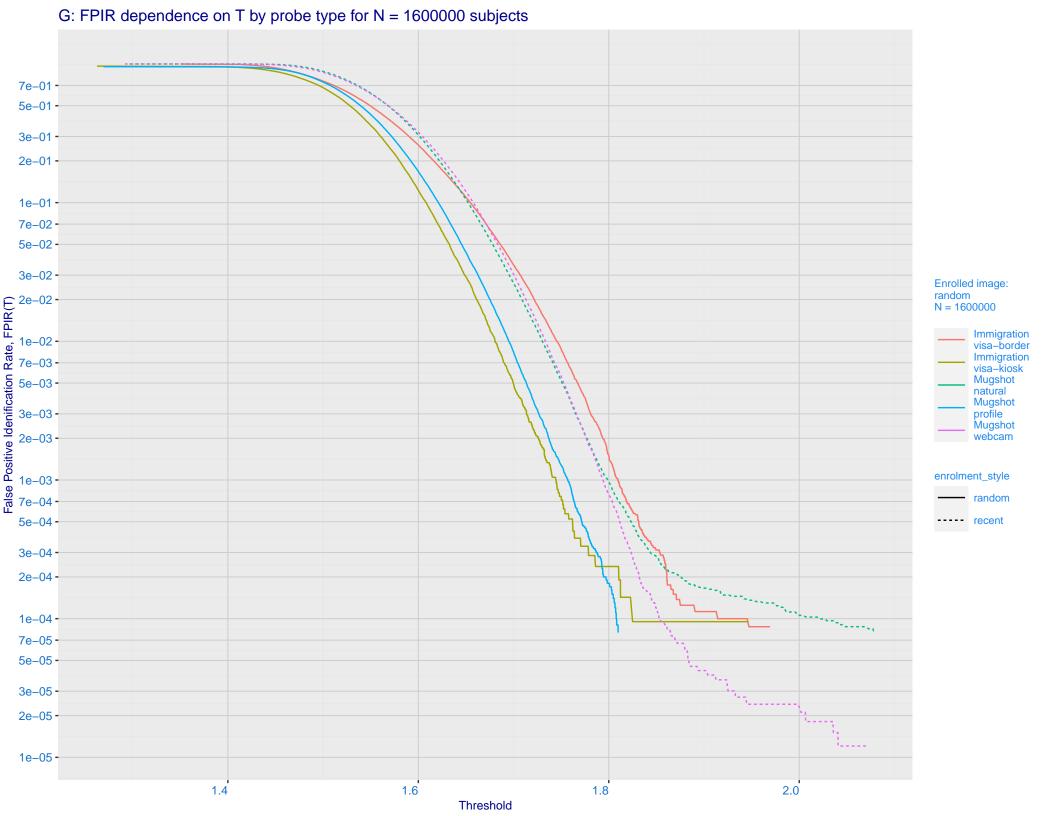
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration **Immigration** Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 0.050 ntechlab 008 0.030 -0.020 -0.010 -0.007 -Ealse negative identification rate, FNIR(T) 0.003 - 0.000 - 0.500 - 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 sensetime 004 0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -0.002 -0.001 -

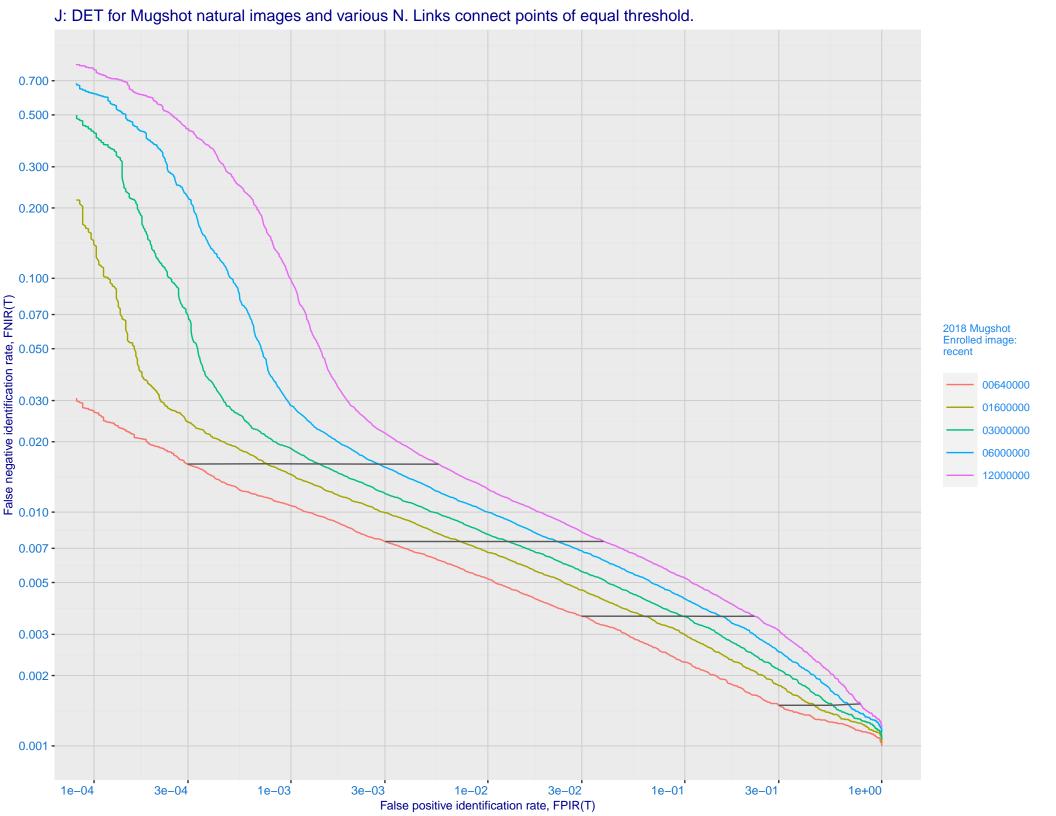
False positive identification rate, FPIR(T)

E: Dependence of error rates on T by number enrolled identities, N, for Mugshot natural images

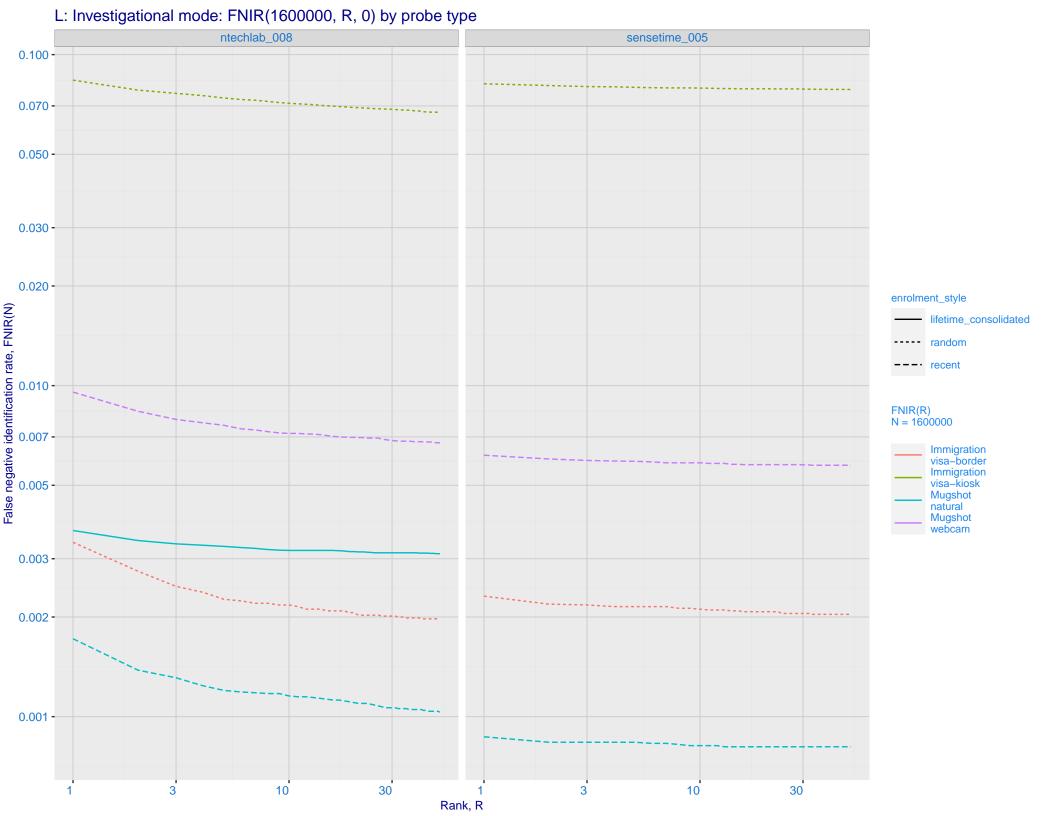


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 -5e-02 -3e-02 -3e-02 -1e-02 -**Enrolled images:** recent N = 1600000 Mugshot natural Mugshot webcam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

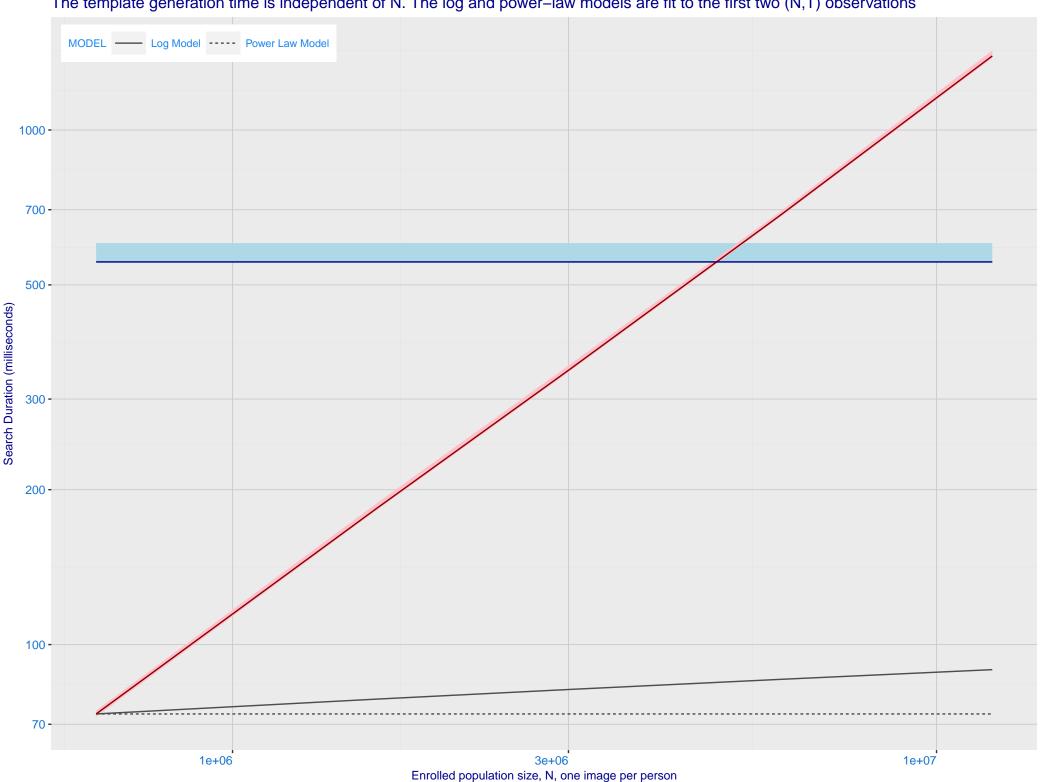




K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_005) Immigration **Immigration** visa-border visa-kiosk 0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -• 0.003 -Ealse negative identification rate, FNIR(N) 0.002 - 0.001 - 0.000 - 0.050 - 0.050 - 0.030 - 0. enrolment_style consolidated ---- random --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 ntechlab_008 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

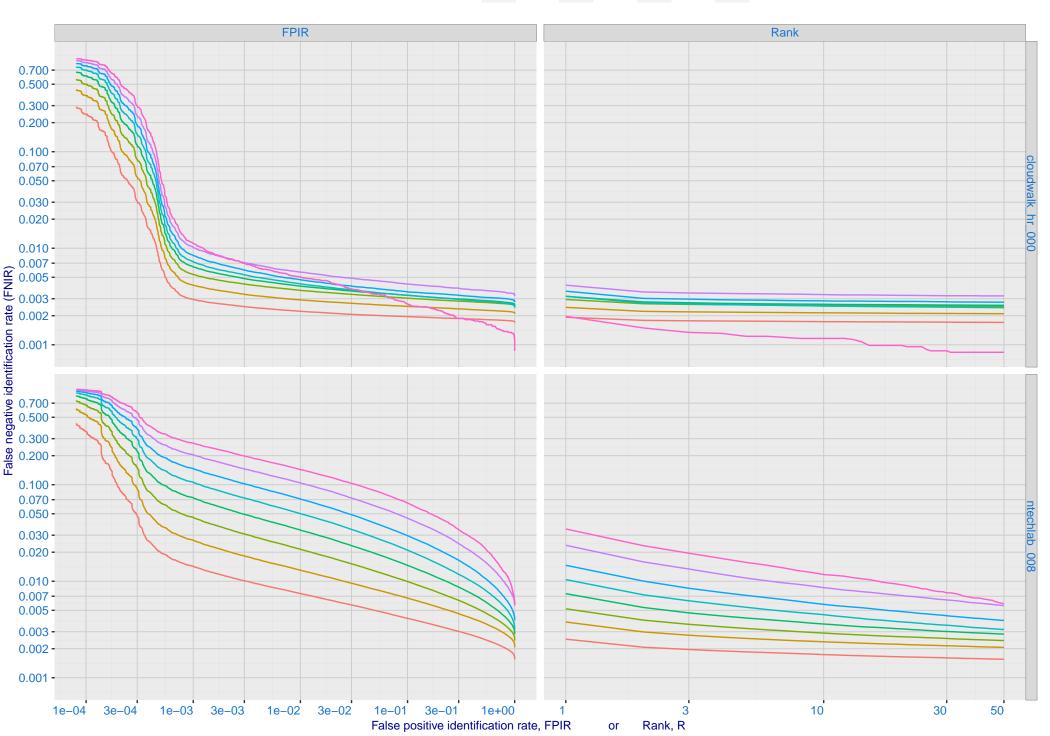


M: Template duration; search duration vs. N. The blue and pink ribbon covers 95 percent of observed measurements. The template generation time is independent of N. The log and power–law models are fit to the first two (N,T) observations



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 Dataset: 2018 Mugshot N= 3.1M Color encodes FNIR (Rank = 1) 2.4 -0.15 0.10 0.05 0.00 **TVAL** - FPIR = 0.001 - FPIR = 0.003 FPIR = 0.010FPIR = 0.030 1.6 -(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)