A: Datasheet

Algorithm: deepglint_001

Developer: Deepglint

Submission Date: 2019_11_15

Template size: 4096 bytes

Template time (2.5 percentile): 675 msec

Template time (median): 676 msec

Template time (97.5 percentile): 736 msec

Investigation:

Frontal mugshot ranking 30 (out of 329) -- FNIR(1600000, 0, 1) = 0.0014 vs. lowest 0.0009 from sensetime_006

Mugshot webcam ranking 8 (out of 291) -- FNIR(1600000, 0, 1) = 0.0070 vs. lowest 0.0057 from sensetime_006

Mugshot profile ranking 43 (out of 260) -- FNIR(1600000, 0, 1) = 0.1995 vs. lowest 0.0550 from sensetime_006

Immigration visa-border ranking 30 (out of 218) -- FNIR(1600000, 0, 1) = 0.0024 vs. lowest 0.0009 from sensetime_006

Immigration visa-kiosk ranking 20 (out of 215) -- FNIR(1600000, 0, 1) = 0.0728 vs. lowest 0.0487 from cubox_000

Identification:

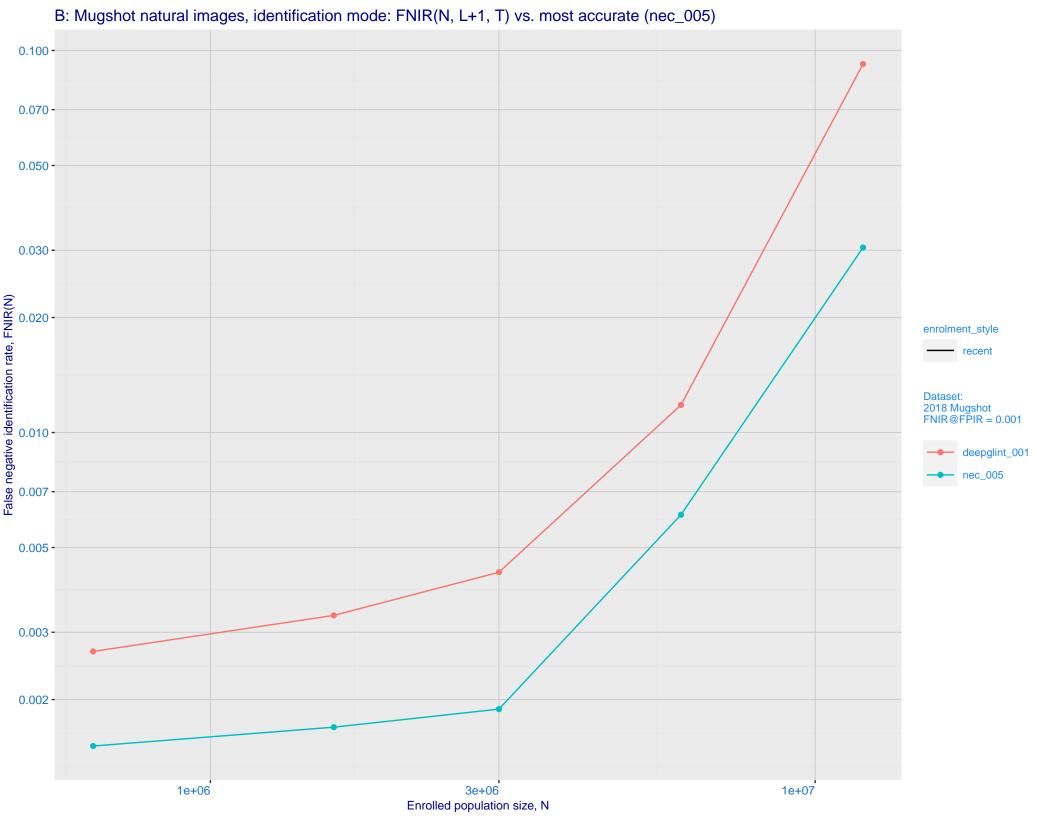
Frontal mugshot ranking 16 (out of 329) -- FNIR(1600000, T, L+1) = 0.0033, FPIR=0.001000 vs. lowest 0.0017 from nec_005

Mugshot webcam ranking 8 (out of 289) -- FNIR(1600000, T, L+1) = 0.0138, FPIR=0.001000 vs. lowest 0.0120 from nec_005

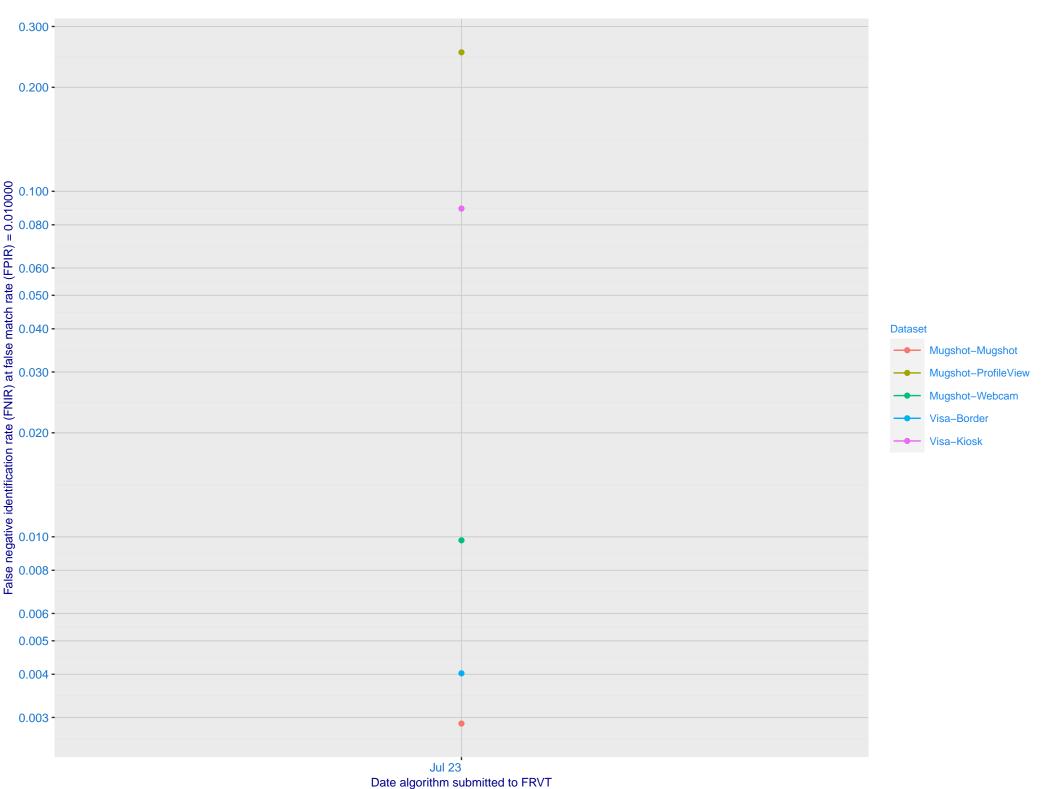
Mugshot profile ranking 191 (out of 259) -- FNIR(1600000, T, L+1) = 0.9995, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk_hr_000

Immigration visa-border ranking 11 (out of 217) -- FNIR(1600000, T, L+1) = 0.0064, FPIR=0.001000 vs. lowest 0.0032 from paravision_009

Immigration visa-kiosk ranking 34 (out of 212) -- FNIR(1600000, T, L+1) = 0.1646, FPIR=0.001000 vs. lowest 0.0728 from paravision_009



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

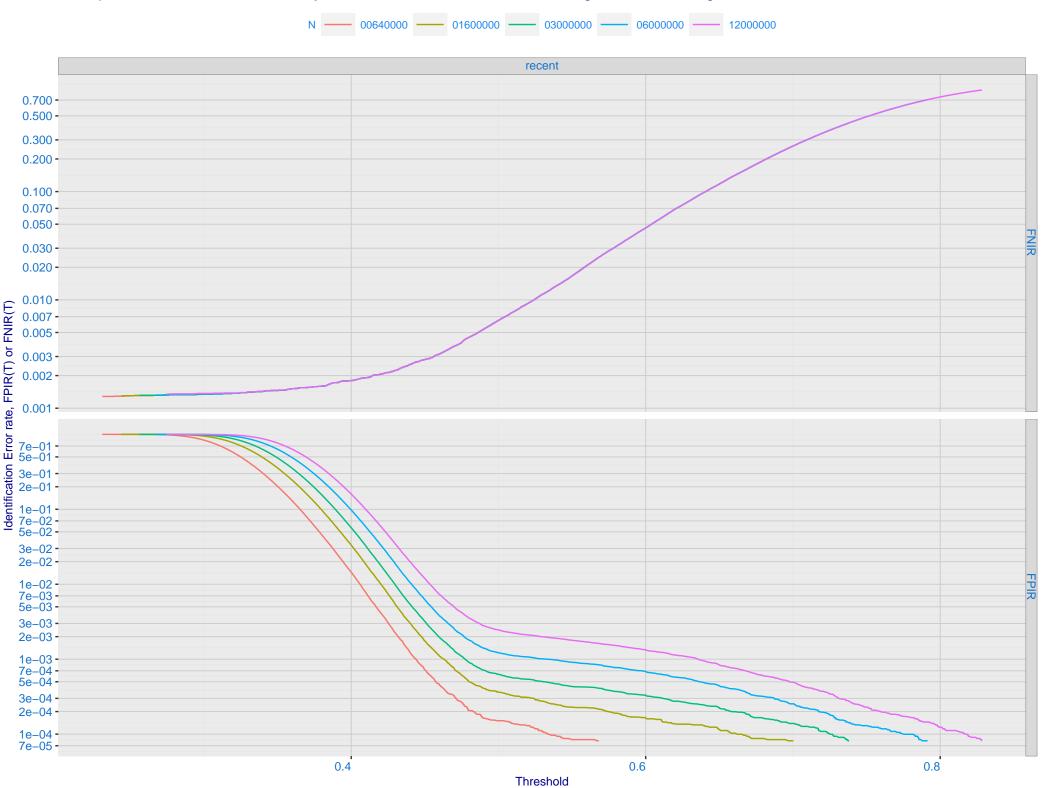


D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration **Immigration** Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -Co.007 - 0.005 - 0.005 - 0.002 - 0.001 - 0.001 - 0.500 - 0.500 - 0.200 enrolment_style 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 -

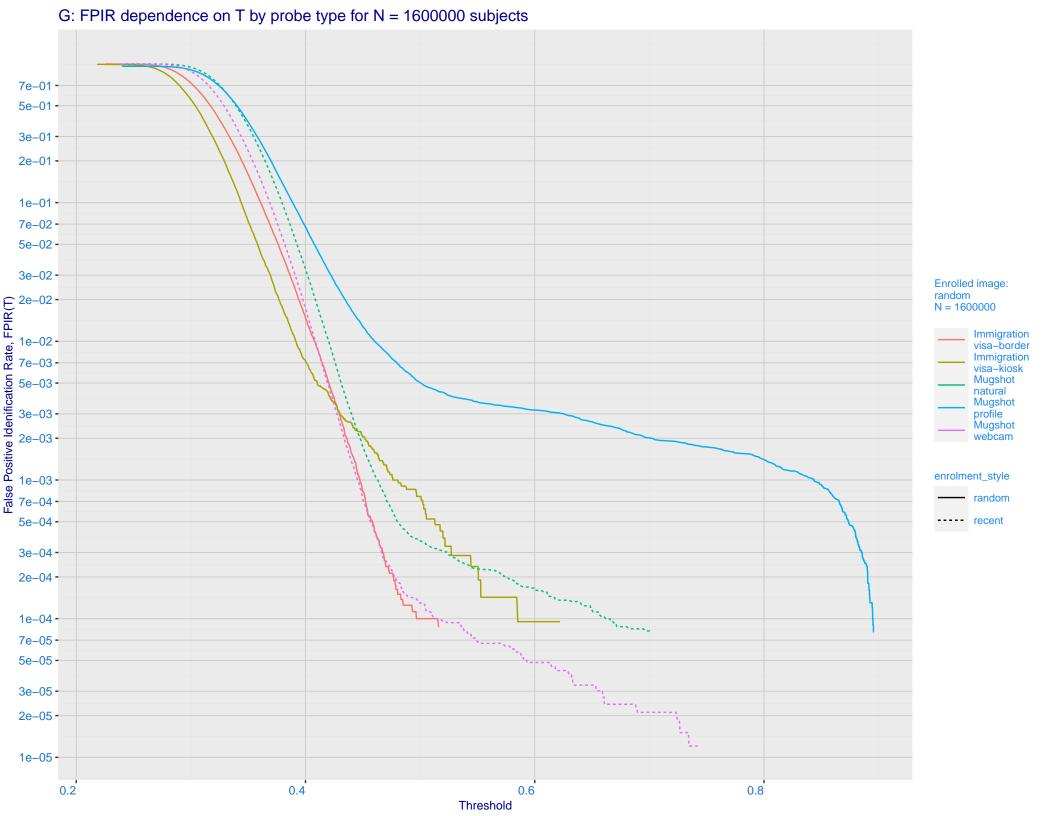
-03e-03e-03e-02e-02e-01e-01e+001e-03e-04e-03e-03e-03e-02e-02e-01e-00

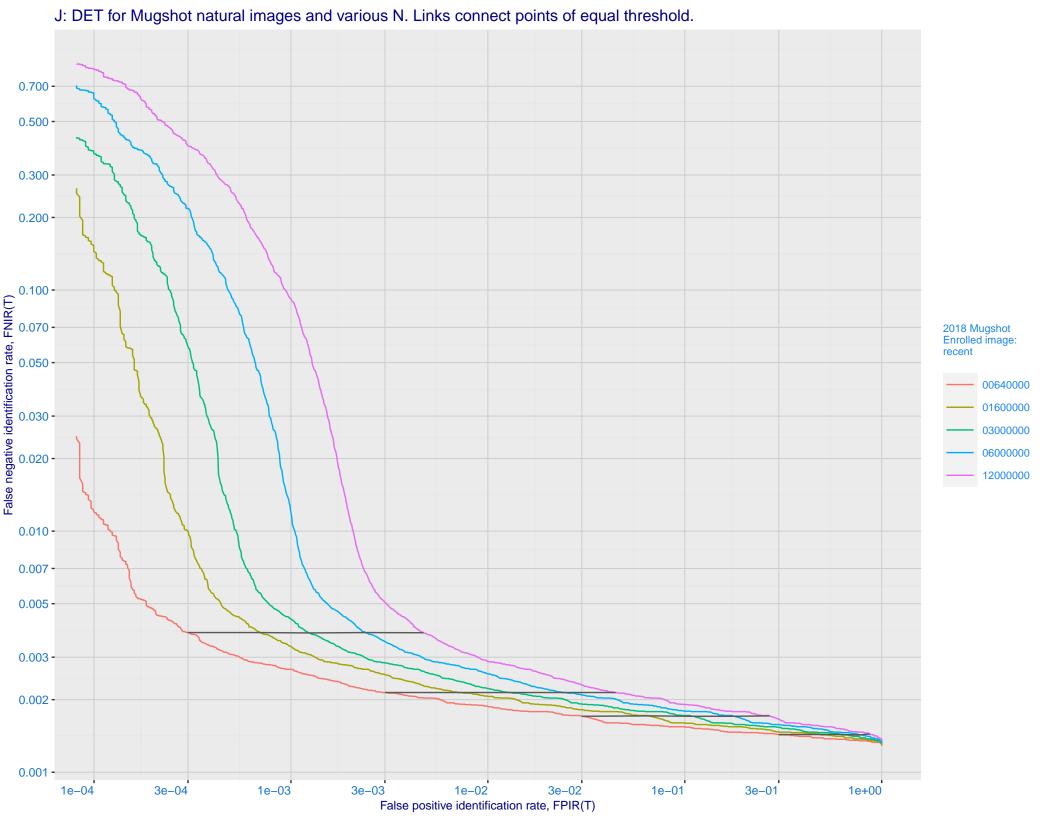
False positive identification rate, FPIR(T)

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

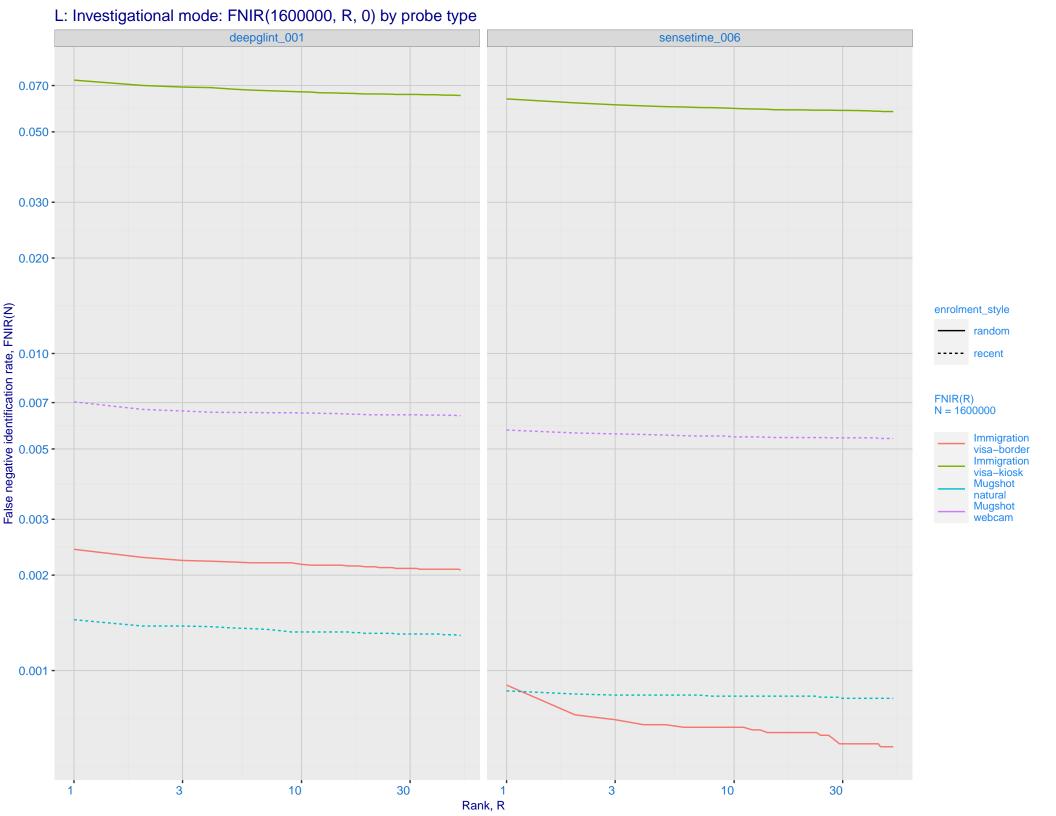


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 - 5e-02 - 3e-02 - 2e-02 - 1e-02 - 7-00 **Enrolled images:** recent N = 1600000 Mugshot natural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

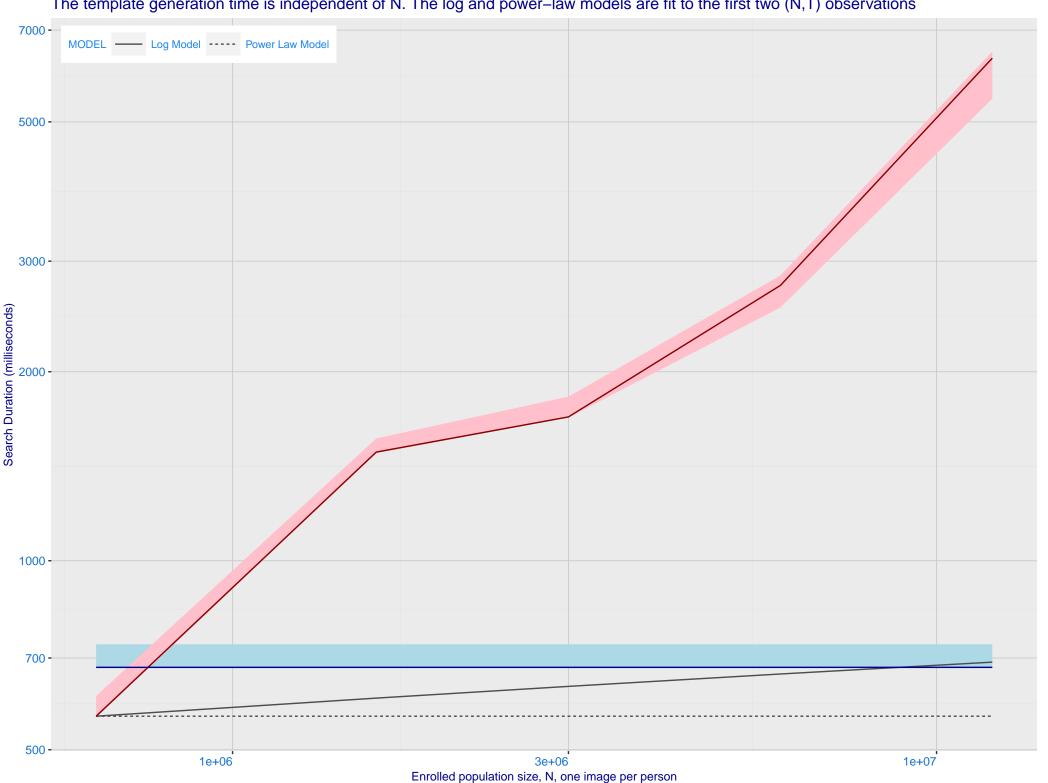




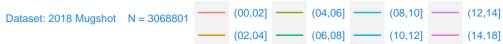
K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_006) Immigration **Immigration** visa-border visa-kiosk 0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -False negative identification rate, FNIR(N) 0.000 - 0. FNIR@Rank = 1 deepglint_001 sensetime_006 Mugshot Mugshot webcam natural enrolment_style random ---- recent 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

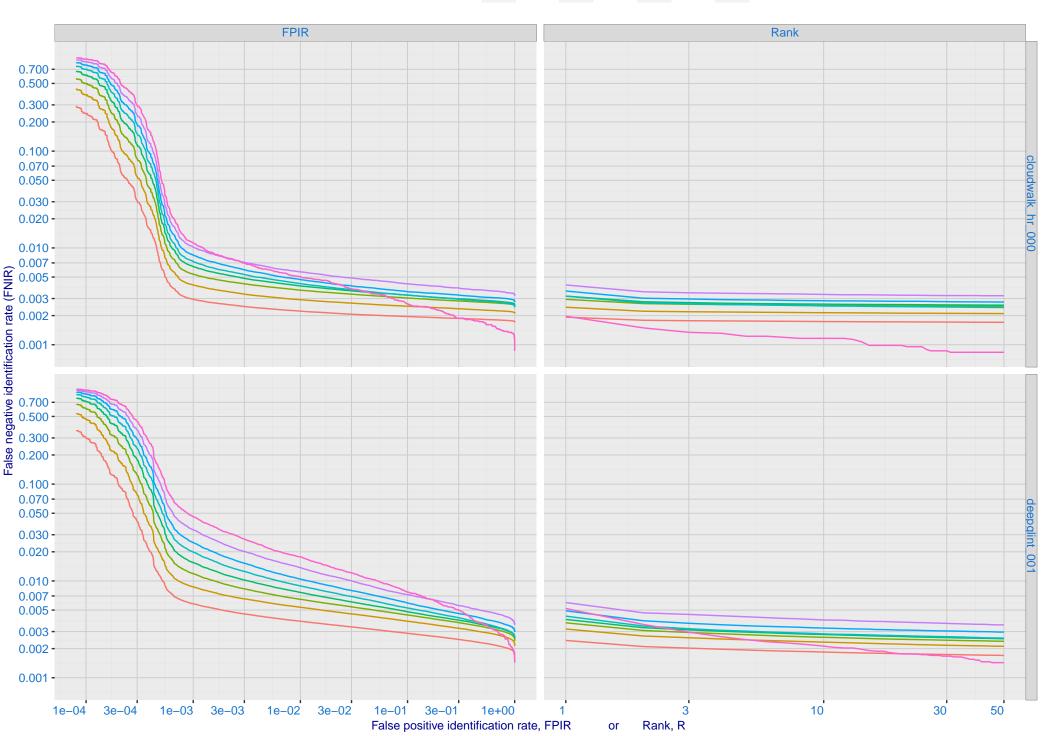


M: Template duration; search duration vs. N. The blue and pink ribbon covers 95 percent of observed measurements. The template generation time is independent of N. The log and power–law models are fit to the first two (N,T) observations



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 1.0 -Dataset: 2018 Mugshot N= 3.1M Color encodes FNIR (Rank = 1) 0.8 -0.15 0.10 0.05 0.00 TVAL - FPIR = 0.001 FPIR = 0.003 FPIR = 0.0100.4 FPIR = 0.030 0.2 -(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)