A: Datasheet

Algorithm: synesis_003

Developer: Synesis

Submission Date: 2019_07_04

Template size: 2048 bytes

Template time (2.5 percentile): 200 msec

Template time (median): 212 msec

Template time (97.5 percentile): 244 msec

Investigation:

Frontal mugshot ranking 215 (out of 329) -- FNIR(1600000, 0, 1) = 0.0162 vs. lowest 0.0009 from sensetime_006

Mugshot webcam ranking 149 (out of 291) -- FNIR(1600000, 0, 1) = 0.0231 vs. lowest 0.0057 from sensetime_006

Mugshot profile ranking 164 (out of 260) — FNIR(1600000, 0, 1) = 0.8270 vs. lowest 0.0550 from sensetime_006

Immigration visa-border ranking 121 (out of 218) -- FNIR(1600000, 0, 1) = 0.0125 vs. lowest 0.0009 from sensetime_006

Immigration visa-kiosk ranking 109 (out of 215) -- FNIR(1600000, 0, 1) = 0.1359 vs. lowest 0.0487 from cubox_000

Identification:

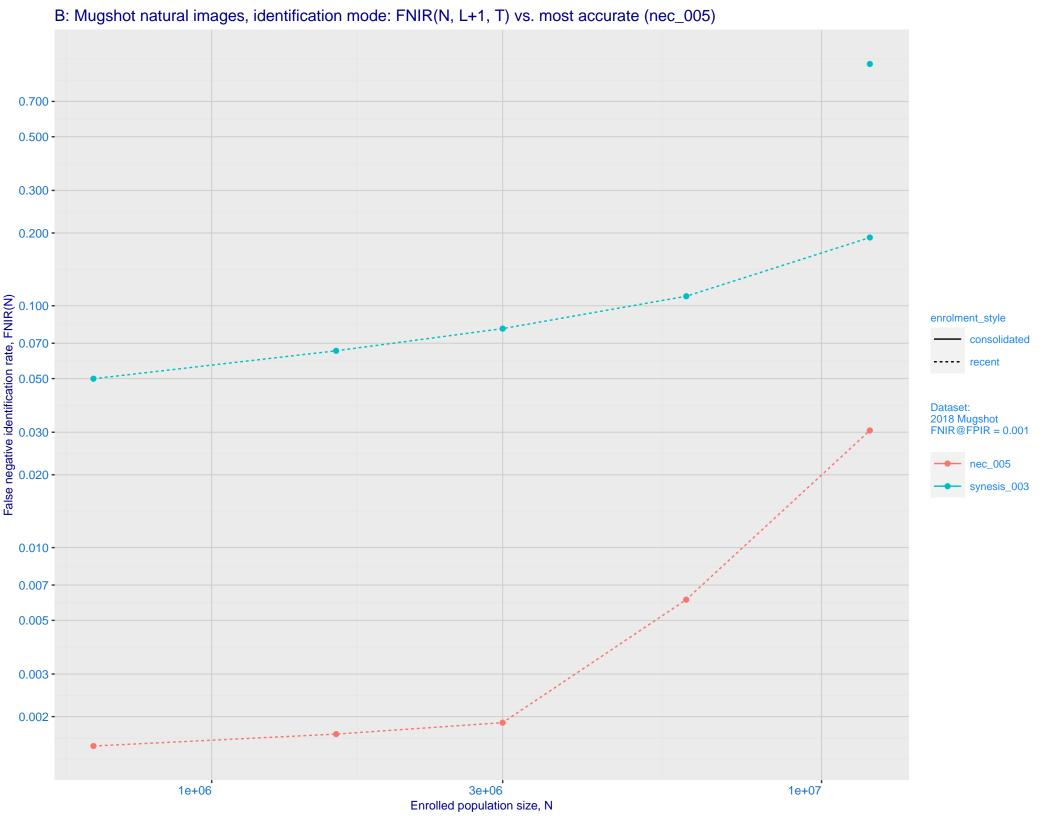
Frontal mugshot ranking 161 (out of 329) -- FNIR(1600000, T, L+1) = 0.0651, FPIR=0.001000 vs. lowest 0.0017 from nec_005

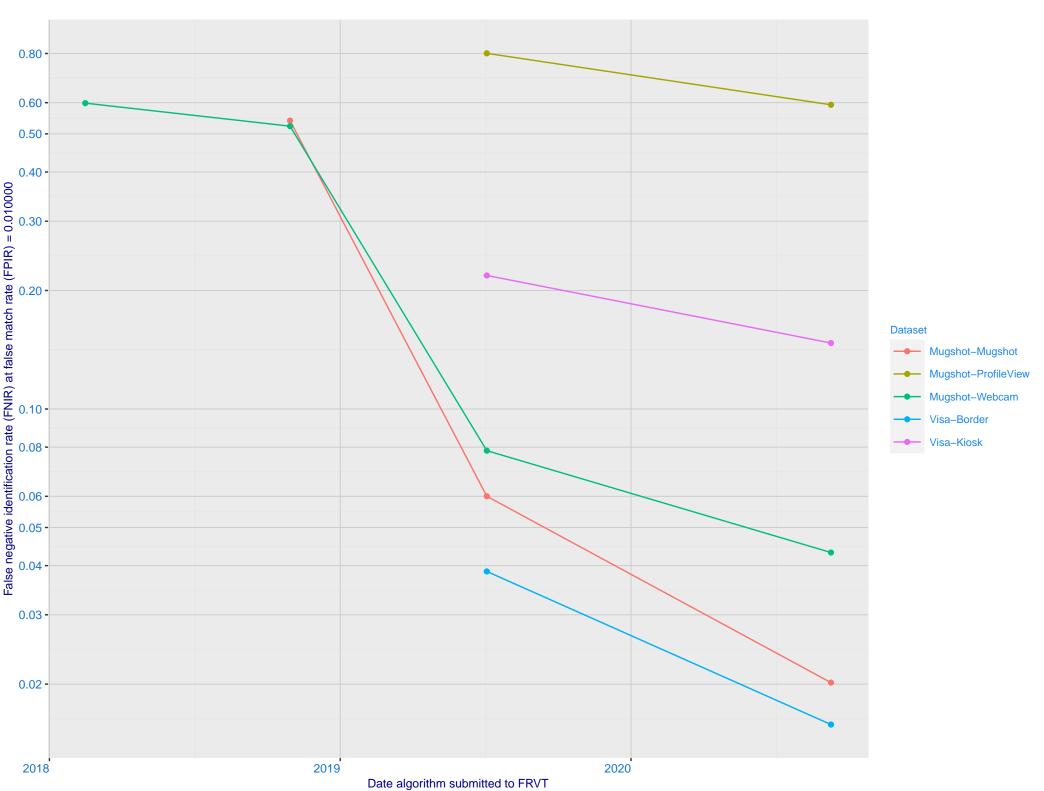
Mugshot webcam ranking 141 (out of 289) -- FNIR(1600000, T, L+1) = 0.1227, FPIR=0.001000 vs. lowest 0.0120 from nec_005

Mugshot profile ranking 64 (out of 259) — FNIR(1600000, T, L+1) = 0.9603, FPIR=0.001000 vs. lowest 0.1331 from cloudwalk_hr_000

Immigration visa-border ranking 114 (out of 217) -- FNIR(1600000, T, L+1) = 0.0754, FPIR=0.001000 vs. lowest 0.0032 from paravision_009

Immigration visa-kiosk ranking 81 (out of 212) -- FNIR(1600000, T, L+1) = 0.3185, FPIR=0.001000 vs. lowest 0.0728 from paravision_009

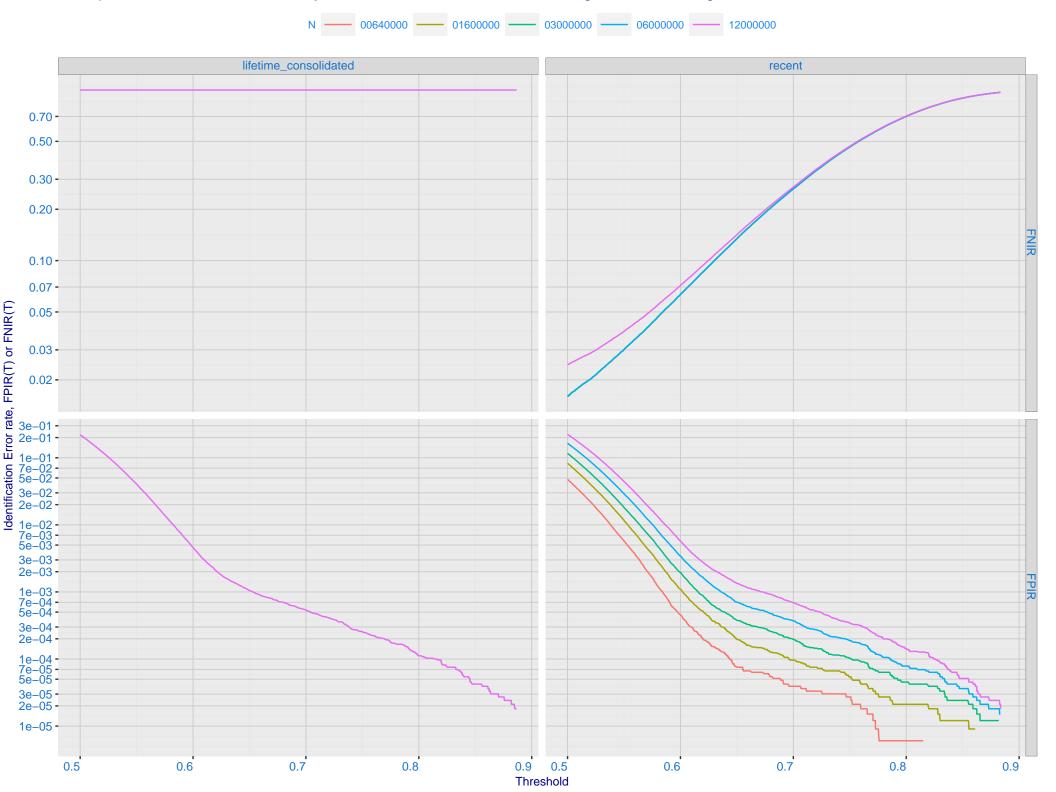




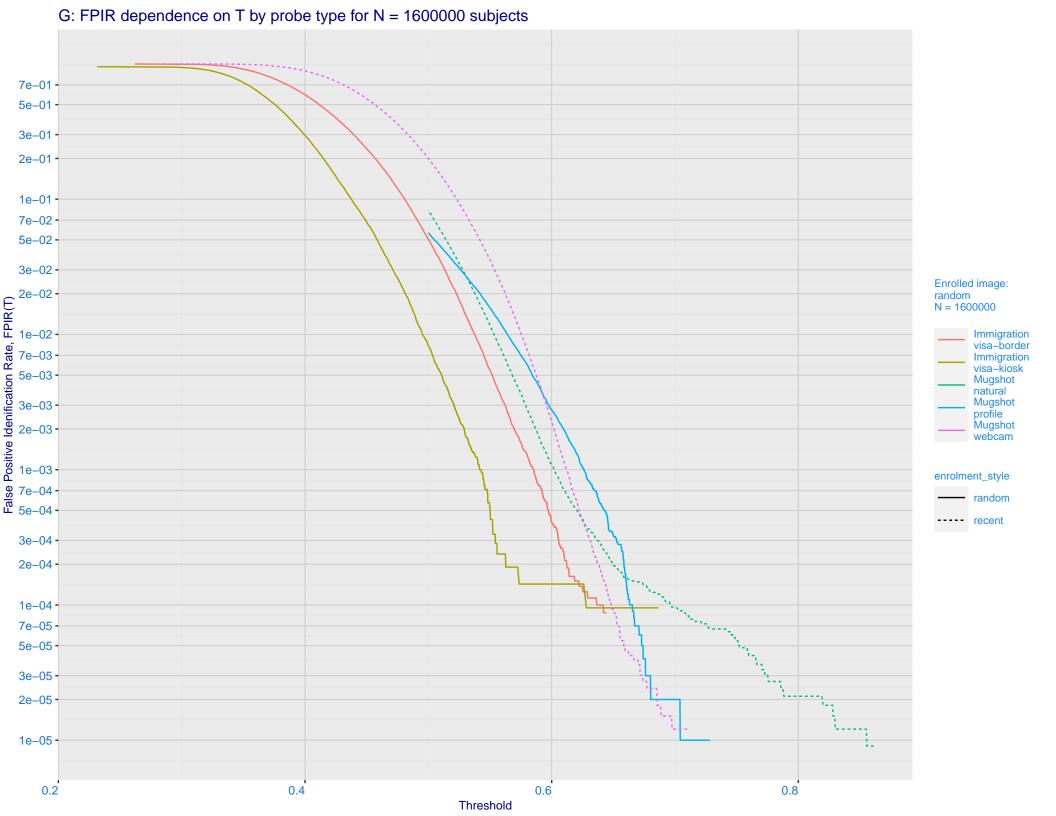
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration **Immigration** Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -Ealse negative identification rate, FNIR(T) 0.003 - 0.002 - 0.001 - 0.700 - 0.500 - 0.200 - 0. enrolment_style random-ONE-MATE recent-ONE-MATE unconsolidated-ALL-MATES unconsolidated-ANY-MATE 0.100 -0.070 synesis 003 0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -0.002 -

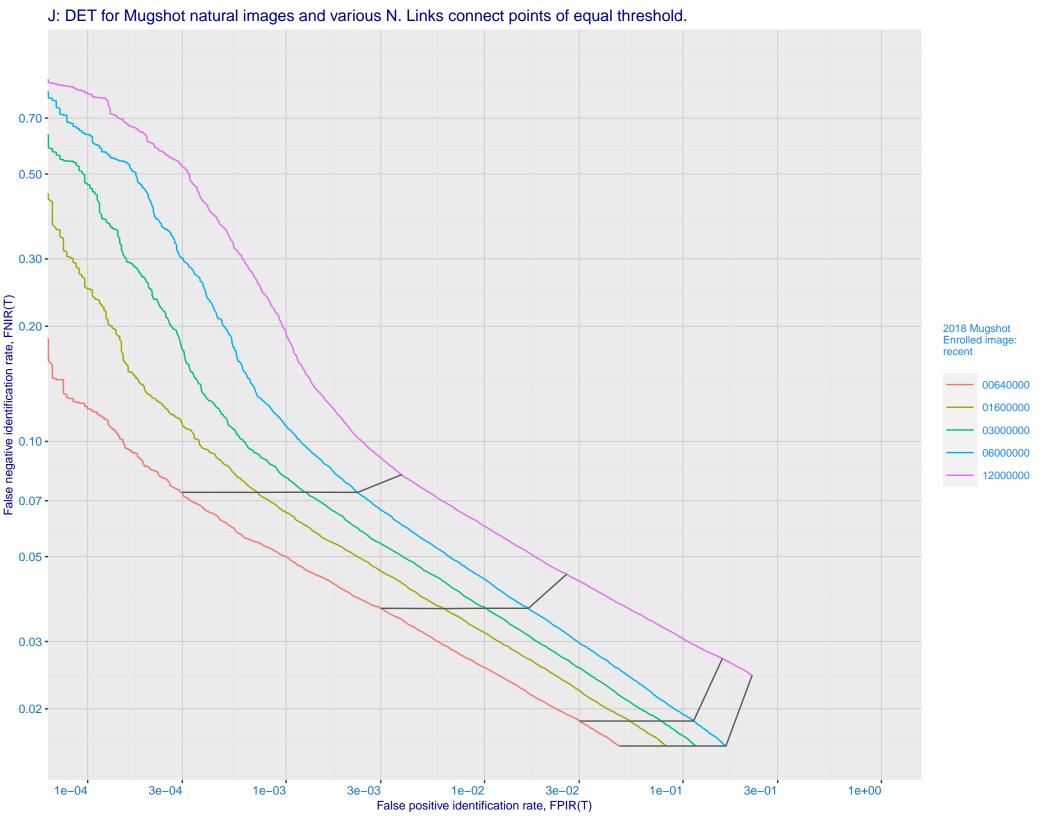
0.001 -

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

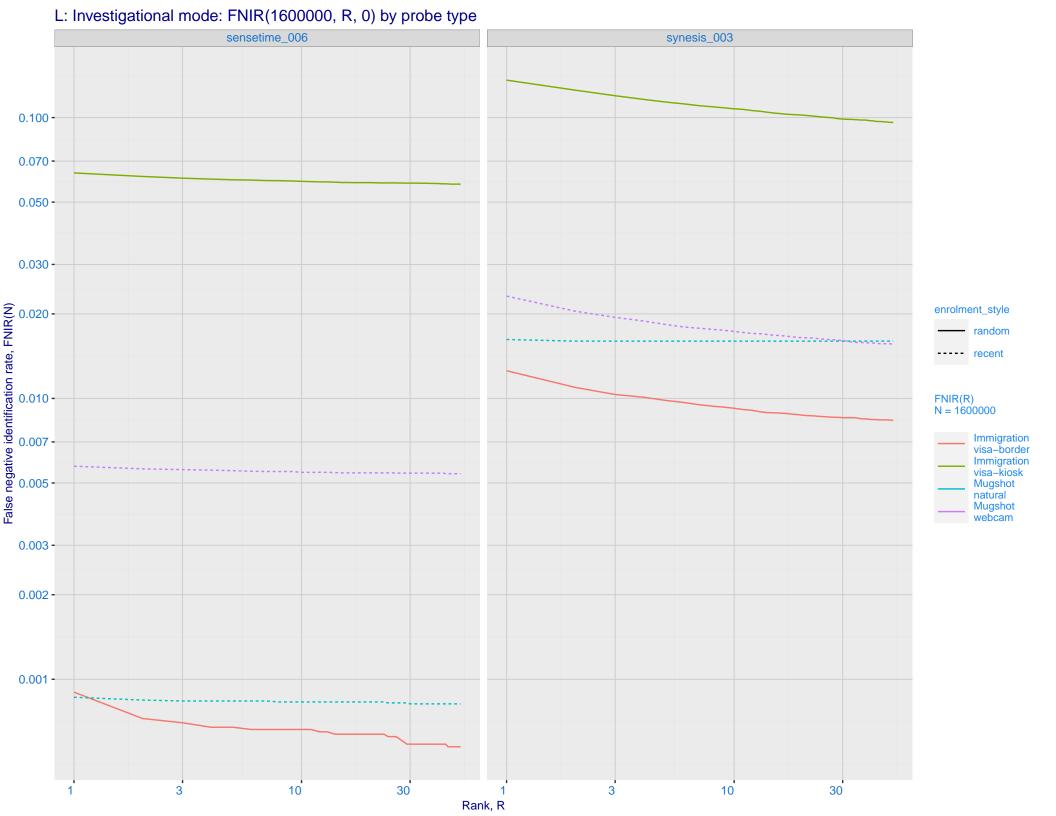


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 -7e-02 -5e-02 -5e-02 -3e-02 -2e-02 -1e-02 -7e-03 -**Enrolled images:** recent N = 1600000 Mugshot natural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

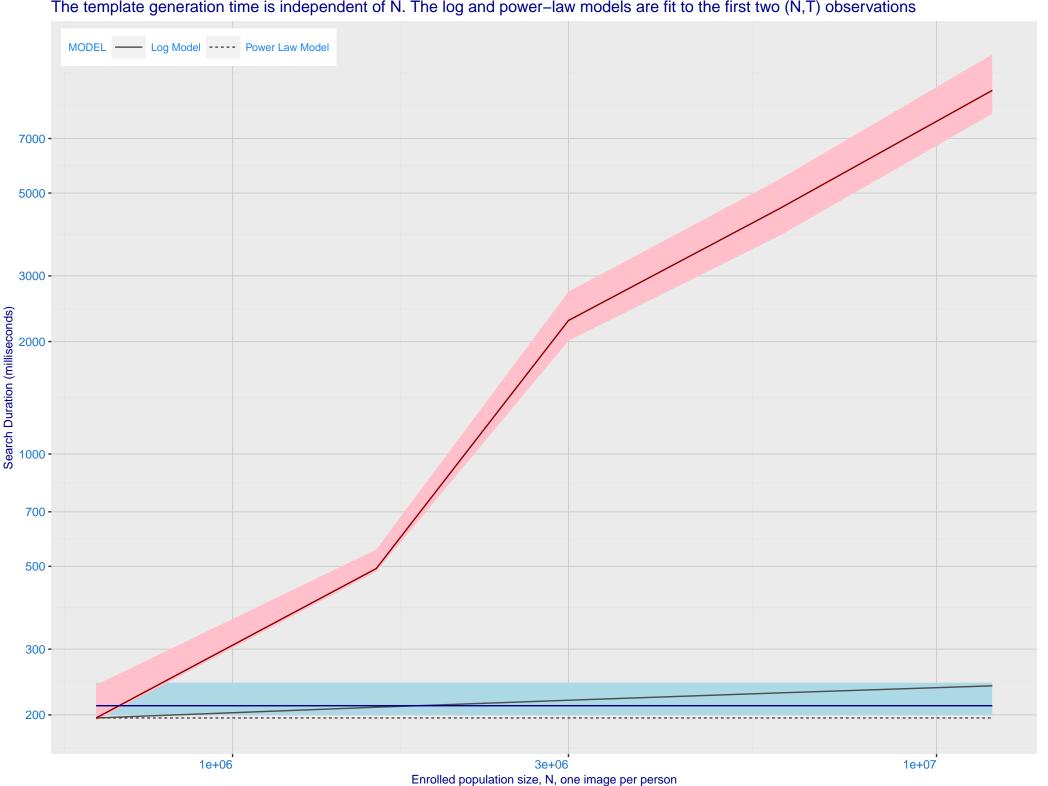




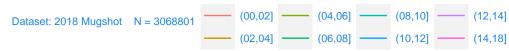
K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_006) Immigration **Immigration** visa-border visa-kiosk 0.700 -0.500 -0.300 -0.200 -0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 - 0.003 - 0.002 - 0.001 - 0.001 - 0.000 - 0.300 - 0.200 enrolment_style consolidated ---- random • --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 sensetime_006 synesis_003 0.100 -0.070 -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

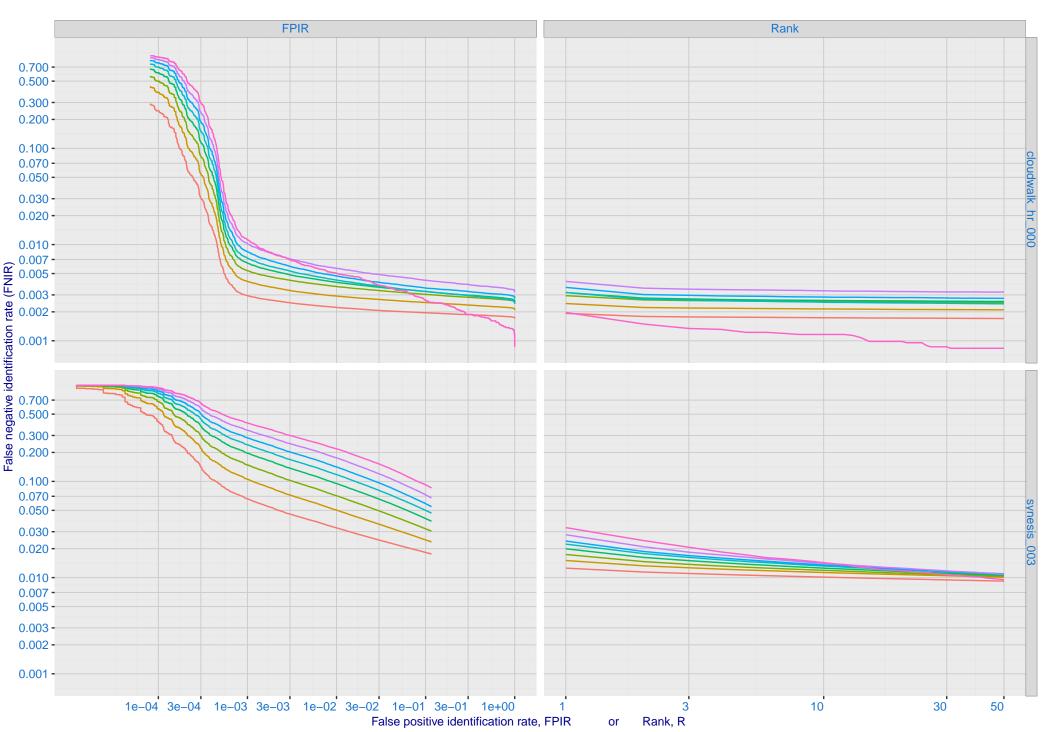


M: Template duration; search duration vs. N. The blue and pink ribbon covers 95 percent of observed measurements. The template generation time is independent of N. The log and power–law models are fit to the first two (N,T) observations



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 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 = 0.010FPIR = 0.030 0.4 -0.2 -(02,04](04,06](00,02](06,08](08,10](10,12](12,14](14,18]Time lapse between search and initial encounter enrollment (years)