A: Datasheet

Algorithm: microsoft_3

Developer: Microsoft

Submission Date: 2018_06_20

Template size: 1024 bytes

Template time (2.5 percentile): 379 msec

Template time (median): 399 msec

Template time (97.5 percentile): 449 msec

Investigation:

Frontal mugshot ranking 20 (out of 279) -- FNIR(1600000, 0, 1) = 0.0016 vs. lowest 0.0009 from sensetime_005

Mugshot webcam ranking 33 (out of 241) -- FNIR(1600000, 0, 1) = 0.0121 vs. lowest 0.0062 from sensetime_005

Immigration visa-border ranking 30 (out of 168) -- FNIR(1600000, 0, 1) = 0.0038 vs. lowest 0.0013 from visionlabs_010

Immigration visa-kiosk ranking 43 (out of 165) -- FNIR(1600000, 0, 1) = 0.1091 vs. lowest 0.0568 from cloudwalk_hr_000

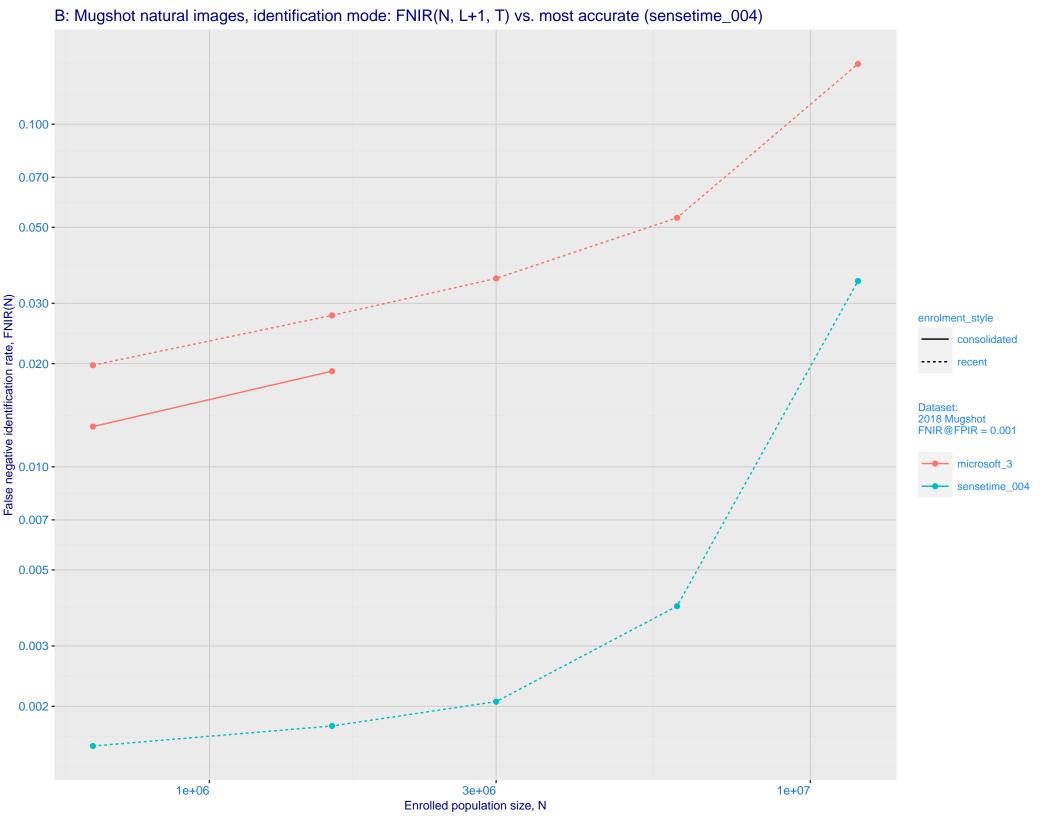
Identification:

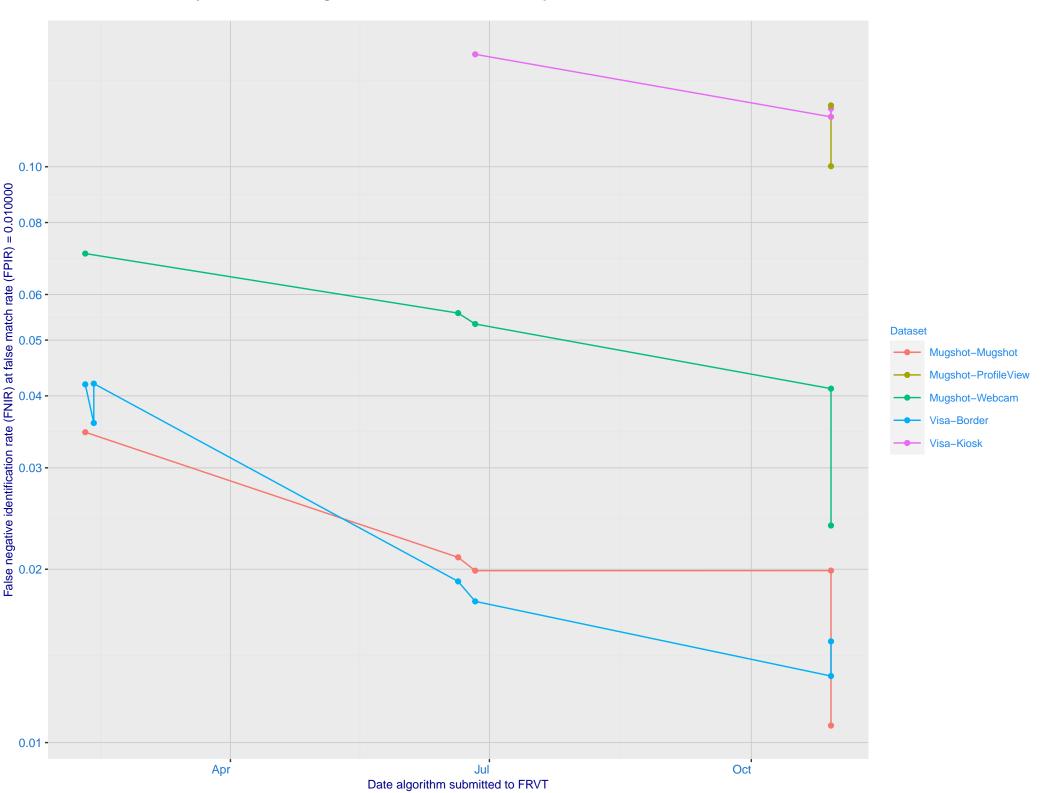
Frontal mugshot ranking 56 (out of 279) -- FNIR(1600000, T, L+1) = 0.0277, FPIR=0.001000 vs. lowest 0.0018 from sensetime_004

Mugshot webcam ranking 64 (out of 236) -- FNIR(1600000, T, L+1) = 0.0907, FPIR=0.001000 vs. lowest 0.0122 from sensetime_003

Immigration visa-border ranking 42 (out of 167) -- FNIR(1600000, T, L+1) = 0.0365, FPIR=0.001000 vs. lowest 0.0047 from idemia_008

Immigration visa-kiosk ranking 30 (out of 162) -- FNIR(1600000, T, L+1) = 0.2336, FPIR=0.001000 vs. lowest 0.0996 from cloudwalk_hr_000

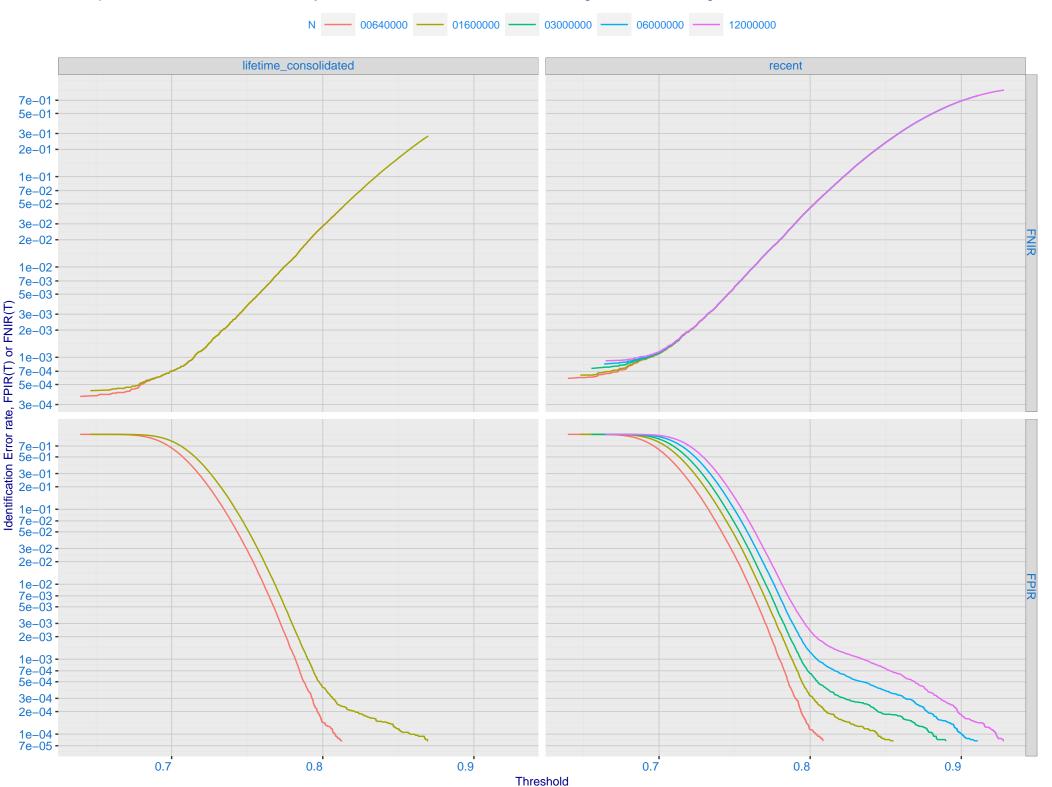




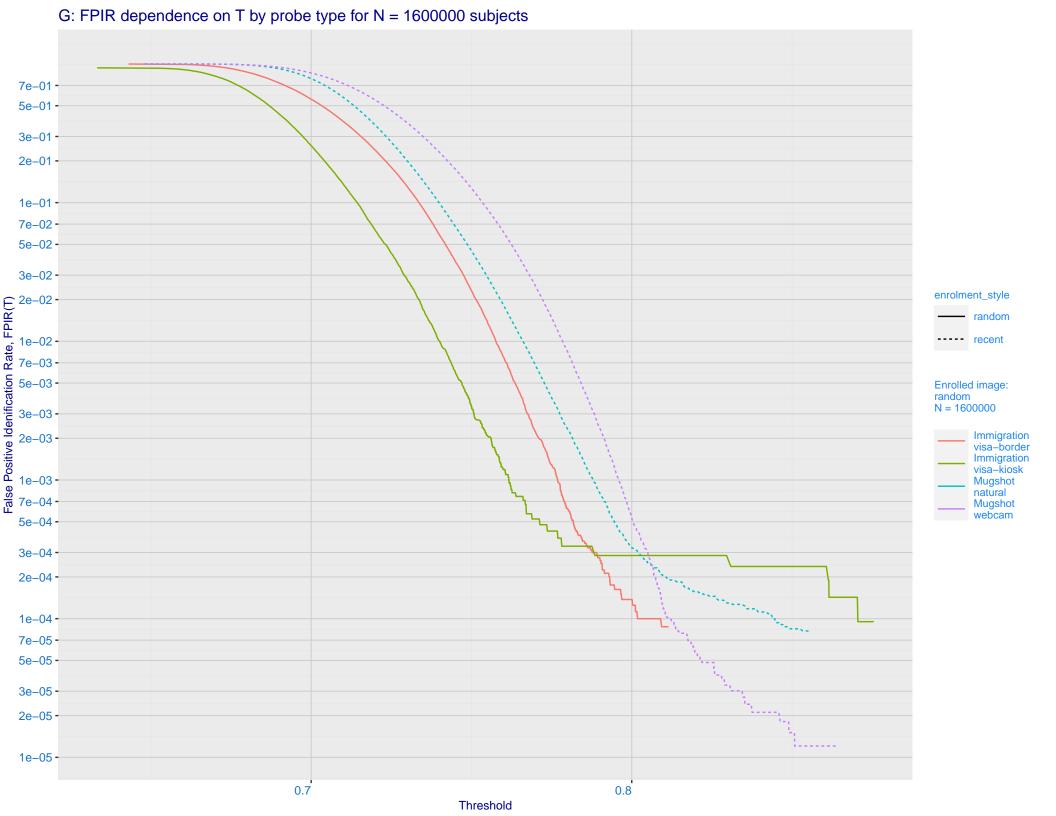
D: 1:N error tradeoff by dataset and enrollment type. N = 1600000 individuals Immigration Immigration Mugshot visa-border visa-kiosk natural 0.700 -0.500 -0.300 -0.200 -0.100 - ' 0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -Ealse negative identification rate, FNIR(T) 0.003 - 0.001 - 0.001 - 0.000 - 0. enrolment_style consolidated-ONE-MATE random-ONE-MATE recent-ONE-MATE 0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 -0.002 -0.001 -1e-04e-03e-04e-03e-03e-02e-02e-01e-01e-04e-04e-03e-04e-03e-04e-03e-04e-03e-01e+00

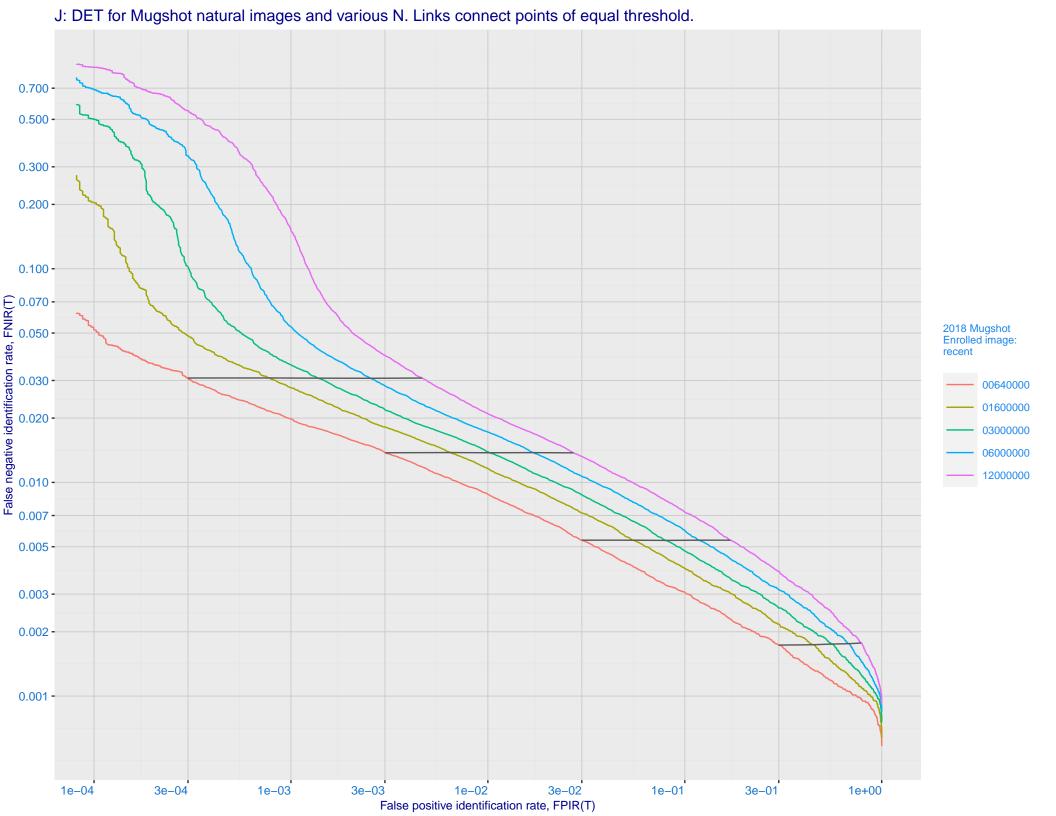
False positive identification rate, FPIR(T)

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

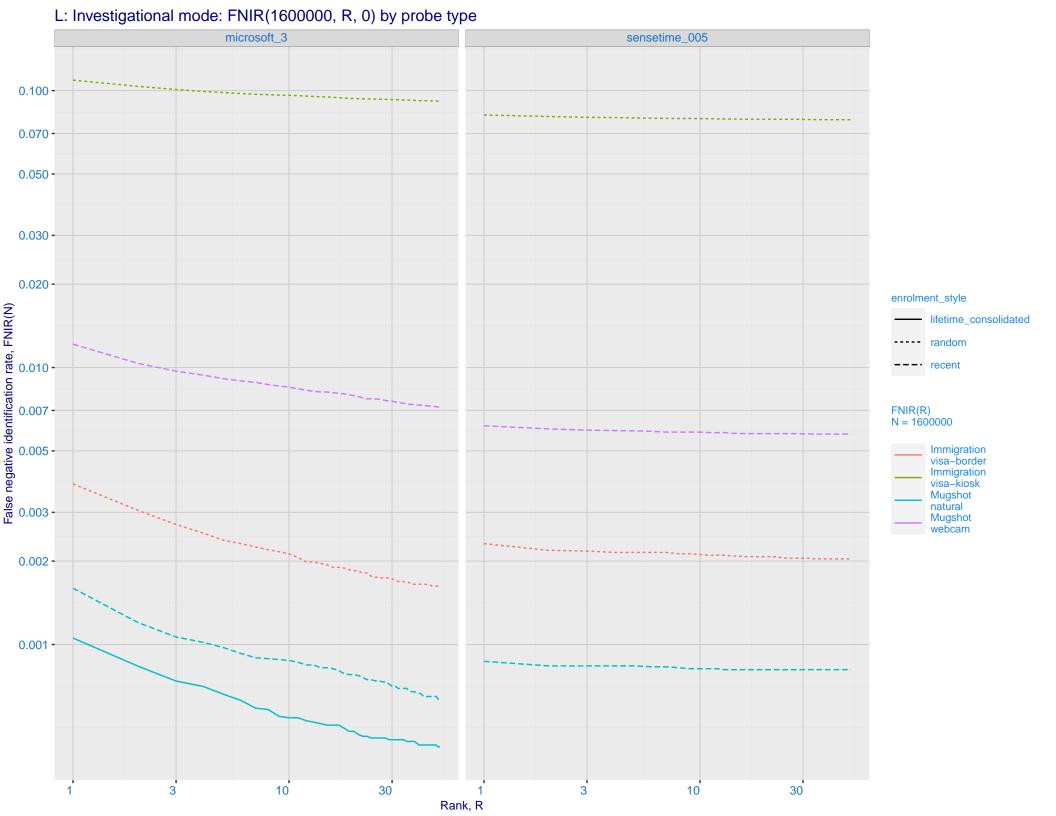


F: FPIR vs. Selectivity for mugshot images, N = 1600000 subjects enrolled with one recent mate 7e+01 -5e+01 -3e+01 -2e+01 -1e+01 -7e+00 -5e+00 -3e+00 -2e+00 -1e+00 -7e-01 -5e-01 -3e-01 -2e-01 -1e-01 - 7e-02 - 7e-02 - 3e-02 - 2e-02 - 2e-02 - 7e-02 **Enrolled images:** recent N = 1600000 Mugshot natural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

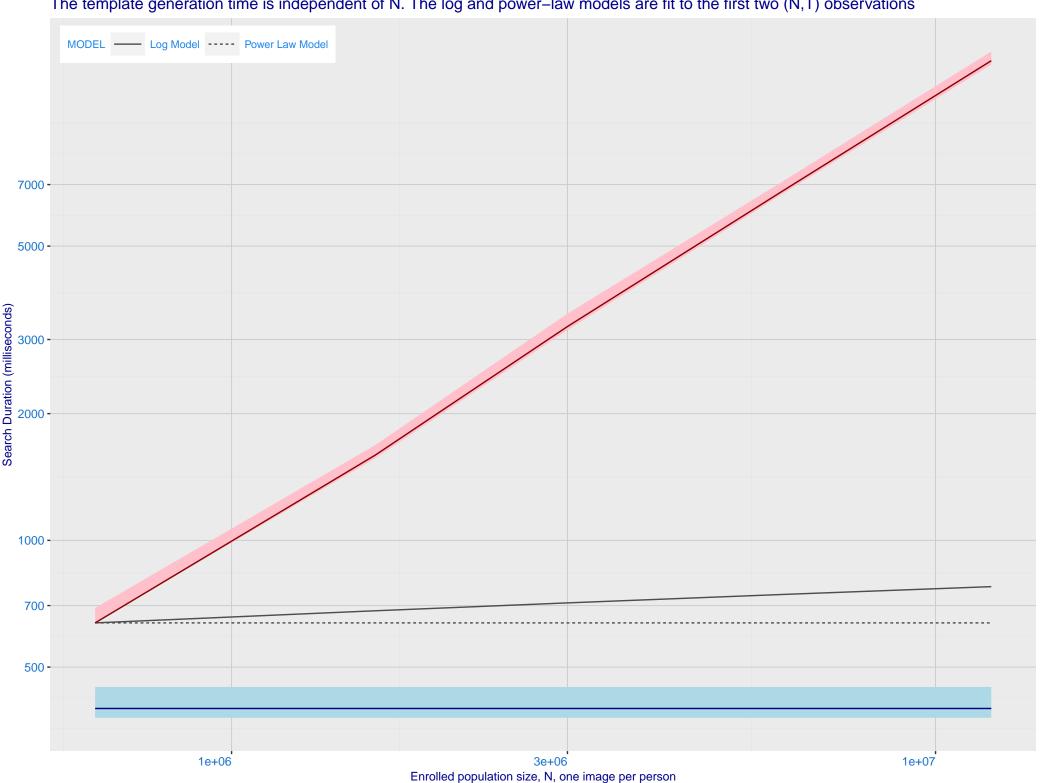




K: Investigational mode: FNIR(N, 1, 0) vs. most accurate (sensetime_005) Immigration **Immigration** visa-border visa-kiosk 0.100 -0.070 -0.050 -0.030 -0.020 -0.010 -0.007 -0.005 -0.003 - 0.002 - 0.001 - 0.001 - 0.000 enrolment_style consolidated ---- random --- recent Mugshot Mugshot webcam natural FNIR@Rank = 1 microsoft_3 sensetime_005 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

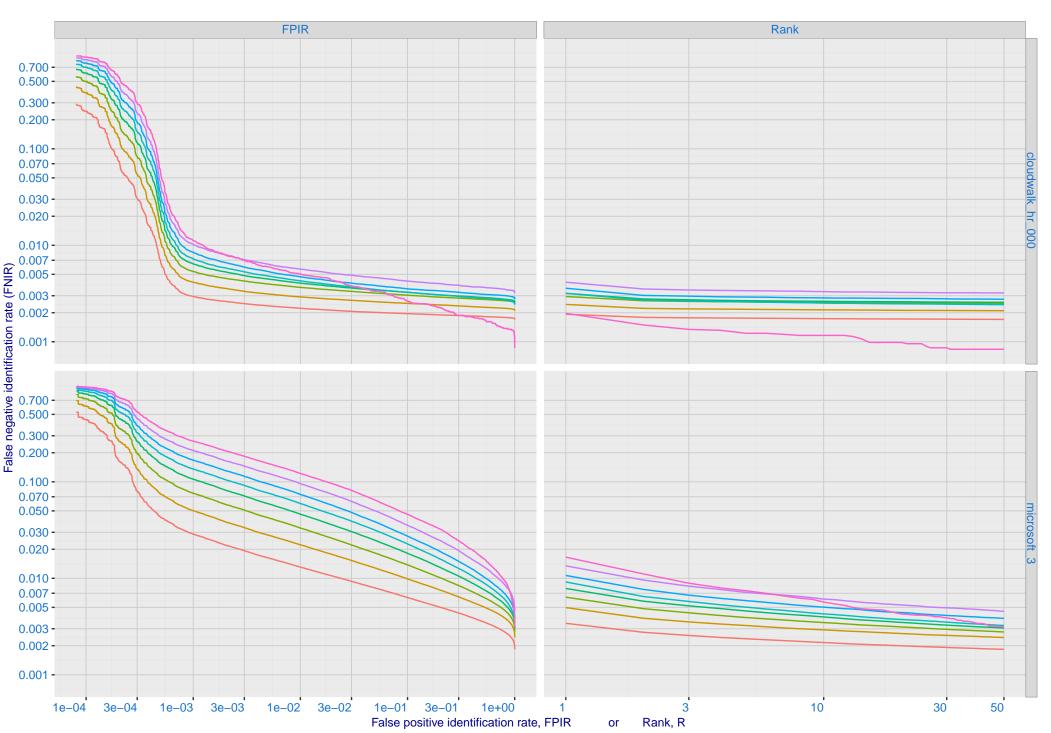


M: Template duration; search duration vs. N. The blue and pink ribbon covers 95 percent of observed measurements. The template generation time is independent of N. The log and power–law models are fit to the first two (N,T) observations



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) 0.9 -0.15 0.10 0.05 0.00 0.8 -TVAL - FPIR = 0.001 FPIR = 0.003 FPIR = 0.010FPIR = 0.030 0.7 -(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)