Latent Test Sets: Current Inventory

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NIST

Latent Test Sets: Current Inventory

- NIST Special Database 27 [SD-27]
  - Fingerprint Minutiae from Latent and Matching Tenprint Images
  - Publicly available
- USSS images [SS-1000]
  - Latent images from solved cases
  - Not publicly available

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- NIST Special Database 27 [SD-27]
  - specially chosen latent images publicly available
  - originally 100 ‘good’, 100 ‘bad’, 100 ‘ugly’
  - latent image paired with matching tenprint card
  - preceded (and used to test) IAFIS
  - data not biased toward automated matching
  - 300 latent images, later reduced to 258 (233 subjects)

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- format of SD-27 images
  - each latent print has:
    - latent image (type 13)
    - ideal latent minutiae (type 9 [x,y,theta])
    - matched latent minutiae (type 9)
    - rolled image (type 14)
    - Ideal latent minutiae (type 9)
    - matched rolled minutiae (type 9)
  - NIST also has available:
    - complete tenprint record, and thus:
    - flat [segmented] image

Latent Test Sets: Current Inventory

- USSS images [SS-1000]
  - latent images from solved cases
  - not publicly available
  - USSS operational data from 2001-2004
  - each subject initially matched by IAFIS
  - data biased toward automated matching
  - high rate of latent-to-rolled matching expected

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- format of SS-1000 images
  - lffs (type 7 [image] + type 9)
  - irr (tenprint card from IAFIS)
  - srl (search request) [not used]

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- a prior experimental use
- automated latent matching is necessarily performed against existing databases
- existing databases are largely rolled
- automated latent matching is either:
  - (1) latent probe against enrolled (tenprint) gallery
  - (2) enrollment (tenprint) probe against unsolved [or watchlist] latent gallery
  - with most matchers, (1) and (2) are equivalent
- unresolved question:

  does capture of plain rather than rolled impressions impair watchlist matching

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- a prior experimental use (continued)
- ‘equal utility’ hypothesis:

  “for automated latent matching, latent-to-plain is as at least as useful as latent-to-rolled”
- 2 related experiments, both used combined gallery (SD-27 and SS-1000)
- latent-to-plain vs latent-to-rolled comparison using ATB with SD-27
- latent-to-plain vs latent-to-rolled comparison using ATB with SS-1000
  - high rate of latent-to-rolled matching expected

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- a prior experimental use (continued)
- SD-27 data (258 latent images)
  - 150 rank-1 matches against rolled gallery
  - 91 rank-1 matches against plain gallery
  - 91/150 = 61%
- SS-1000 data (1021 latent images)
  - 862 rank-1 matches against rolled gallery
  - 492 rank-1 matches against plain gallery
  - 492/862 = 57%
- results from two experiments agree
- ‘equal utility’ hypothesis disproved: plain only 60% as useful as rolled

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- example from SD-27 [BAD # 108]