



Biometric Quality

The last 1% Biometric Quality Assessment for Error Suppression

Next Generation NFIQ

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NIST / ITL / Image Group

Team Members

- » NIST (U.S.)
- » BSI (Germany)
- » BKA (Germany)
- » Fraunhofer IGD
- » Hochschule Darmstadt / CASED
- » secunet Security Networks AG
- » *...and you?*



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Match 2012 workshop agenda

~~13:00 Elham Tabassi, NIST, NFIQ 2.0 project overview~~

~~13:20 Oliver Bausinger, Motivation and use cases for NFIQ 2.0~~

~~13:35 Michael Schwaiger, Framework, architecture, modularization~~

~~13:55 Christoph Busch, Technical overview of features~~

~~14:05 Martin Olsen, Candidate features, computation and visualization~~

~~15:15 Break~~

~~15:45 Johannes Markle, Quality feature evaluation, preliminary results~~

~~16:15 Timo Ruhland, AFIS quality requirements and implementation~~

~~16:30 Soweon Yoon, Inclusion of mutilated fingerprint detection~~

16:50 Elham Tabassi, discussion on what's next.



Discussion topics at the workshop



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- NFIQ 2.0 for images captured by non-optical sensors
 - Such as swipe sensors used by mobile phones
 - Answer: happy to consider dedicated NFIQ 2.0 for swipe sensors when sufficient data becomes available.
- NFIQ 2.0 for AFIS systems
 - Can NFIQ 2.0 predict performance of finger image / latent comparison when it is developed for finger / finger comparison?
 - Answer: Calibration – expected error rate of quality levels will be different but order will stay the same.
- Revision of ISO/IEC 29794-1 to include confidence intervals?
- Computational expense
 - Will be considered, but have not evaluated yet
 - But when features are optimized for speed, they will most probably change.
 - Strive for ~125-150 msec
- Are matlab codes implementation available? Yes.
- Inclusion of fingerprint-ness in NFIQ 2.0 – it is liveness issue and not quality? Is it already included in NFIQ 2.0?



We are asking your review/ comment/contribution

1. Features (mathematical equation, or implementation)
2. Utility function (mathematical equation, or implementation)
3. Composition of training data (donations of challenging images)
4. Machine learning algorithm
5. Anything else that we are missing.

Documents for public review



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Topic	Document	Comment by
Quality features definitions	biometrics.nist.gov/cs_links/quality/NFIQ_2/IBPC2012/NFIQ2_Quality_Feature_Definitions.pdf	
Quality feature evaluation	biometrics.nist.gov/cs_links/quality/NFIQ_2/IBPC2012/NFIQ2_Feature_Evaluation_v0.5.pdf	
NFIQ 2.0 Framework		
Training data composition		
Utility		



Communication

- » Website:: www.nist.gov/itl/iad/ig/development_nfiq_2.cfm
- » Email :: nfiq2 DOT development AT nist DOT gov
- » Email reflector? On-line Discussion forum? (requires moderator – do we have resources?)
- » Next workshop?
 - » Before or after BioSIG Sept 6-7, 2012
 - » Or?



Long term plans



Standardized Feature?

Vector of quality components Allows for

- » Revision of ISO/IEC 29794-4
- » Follow the Part 6 (iris quality) model
 - For each quality component:
Specify definition (what it is),
computation method,
measurement unit,
threshold/valid range
- » Plug-and-play of features
for implementations that satisfy
semantic conformance to the
requirements of the standard
- » Actionable quality
 - constructive feedback
 - mitigation



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www.nist.gov/itl/iad/ig/development_nfiq_2.cfm
nfiq2 DOT development AT nist DOT gov