

FVC-on Going Test Result for Union Community

Experiences Tomorrow's Technologies

The Number 1 Fingerprint Security Company
Our good is to enrich the lives of our customers for a better world.



on 9 Sep 2009

1. WHAT IS FVC-on Going?



FVC stands for **F**ingerprint **V**erification **C**ompetition

* FVC-on Going is the evolution of FVC: The international Fingerprint Verification Competitions are organized in 2000, 2002, 2004, and 2006.



The algorithms are evaluated using strongly supervised approaches to maximize trustworthiness

2. FVC-on Going Test Area

1. Fingerprint Matching (ISO) benchmark area :

- Using a standard minutiae-based template format [ISO/IEC 19794-2 (2005)]
- Fingerprint matching test by Participant's fingerprint algorithm
- Compatible with other products

2. Fingerprint Verification benchmark area :

- Using same fingerprint image DB
- Extracting fingerprint template & fingerprint matching
- Not compatible with other products

2. FVC-on Going Test Area

What is **EER** stands for?




Equal Error Rate

- When FAR and FRR rates are equal, the common value is referred to as the equal error rate. The value indicates that the proportion of FAR is equal to the proportion of FRR.
- FVC extended testing authentication number of times as over 100K from Year 2009.

3. FVC-on Going Result

1. Fingerprint Matching (ISO) benchmark area Test Result

Fingerprint Matching (ISO) [Web Link: https://biolab.csr.unibo.it/FVCOnGoing/UI/Form/PublishedAlgs.aspx](https://biolab.csr.unibo.it/FVCOnGoing/UI/Form/PublishedAlgs.aspx)

Published on	Benchmark	Participant	Type	Algorithm	Version	EER	FMR1000	FMR10000	Show details
09/09/2009	FMISO-STD-1.0	UnionCommunity	Company	Triple_M_ISO	1.0	0,405%	0,610%	1,064%	
20/07/2009	FMISO-HARD-1.0	Neurotechnology	Company	MM_FMISO	3.0	2,430%	4,607%	6,139%	
20/07/2009	FMISO-STD-1.0	Neurotechnology	Company	MM_FMISO	3.0	0,598%	0,801%	1,234%	






As shown above, Union Community's fingerprint algorithm for matching is now ranked 1st top in the FVC-on Going test using ISO Standard Template (ISO/IEC 19794-2).

This test is very significant for commercial purposes since it is tested with ISO Standard Fingerprint Template format under same testing environments.

3. FVC-on Going Result

2. Fingerprint Verification benchmark area Test Result

Fingerprint Verification [Web Link: https://biolab.csr.unibo.it/FVConGoing/UI/Form/PublishedAlgs.aspx](https://biolab.csr.unibo.it/FVConGoing/UI/Form/PublishedAlgs.aspx)

Published on	Benchmark	Participant	Type	Algorithm	Version	EER	FMR1000	FMR10000	Show details
31/08/2009	FV-STD-1.0	UnionCommunity	Company	Triple_M	1.0	0,665%	1,389%	2,403%	
20/07/2009	FV-HARD-1.0	Neurotechnology	Company	MM_FV	3.0	1,528%	3,043%	4,079%	
20/07/2009	FV-STD-1.0	Neurotechnology	Company	MM_FV	3.0	0,281%	0,386%	0,581%	
15/07/2009	FV-STD-1.0	Secuest Inc.	Company	STAR	1.0	1,265%	2,504%	4,026%	
24/06/2009	FV-STD-1.0	jFinger Co., Ltd.	Company	JF_FV	V1.21a	1,618%	2,872%	4,545%	

Remarks. FVC2006, S Company, EER rate 2.543%

As shown above, Union Community's fingerprint algorithm for matching & extracting is now ranked 2nd top in the FVC-on Going test.

Neurotechnology is currently ranked as 1st with EER 0.281%. However, its technology is more academic than commercial in real environments.

3. FVC-on Going Result

2. Fingerprint Verification benchmark area Test Result

Union Community – Ranked as 2nd

Efficiency indicators						
Avg Enroll Time	Avg Match Time	Avg Match Time (G)	Avg Match Time (I)			
79 ms	3 ms	4 ms	3 ms			
Memory indicators						
Avg Model Size	Max Model Size	Max Enroll Memory	Max Match Memory			
415 Bytes	1123 Bytes	2668 KBytes	844 KBytes			
Accuracy indicators						
EER	FMR ₁₀₀	FMR ₁₀₀₀	FMR ₁₀₀₀₀	Zero _{FMR}	Zero _{FNMR}	
0,665%	0,664% - 0,666%	0,534%	1,389%	2,403%	3,341%	100,000%

Neurotechnology – Ranked as 1st

Efficiency indicators						
Avg Enroll Time	Avg Match Time	Avg Match Time (G)	Avg Match Time (I)			
225 ms	3 ms	3 ms	3 ms			
Memory indicators						
Avg Model Size	Max Model Size	Max Enroll Memory	Max Match Memory			
5887 Bytes	14331 Bytes	4156 KBytes	1768 KBytes			
Accuracy indicators						
EER	FMR ₁₀₀	FMR ₁₀₀₀	FMR ₁₀₀₀₀	Zero _{FMR}	Zero _{FNMR}	
0,281%	0,270% - 0,292%	0,184%	0,386%	0,581%	0,985%	98,135%

Web Link: <https://biolab.csr.unibo.it/FvcOnGoing/UI/Form/AlgResult.aspx?algId=420>

As shown above, Avg Model Size for Neurotechnology is 5,887 bytes, which is abnormal in real environments. Union Community's Avg Model Size is normal as 415 bytes.

4. 2009 FVC Summary

4-1. EER Ranking

Test Type	Date	Company	EER	Country
Fingerprint Verification	June, 2009	J finger	1.618%	Korea
	July, 2009	Neurotechnology	0.281%	Lithuania
	AUG, 2009	Union Community (2nd Ranked)	0.665%	Korea
Fingerprint Matching (ISO)	July, 2009	Neurotechnology	0.598%	Lithuania
	SEP, 2009	Union Community (1st Ranked)	0.405%	Korea

4. 2009 FVC Summary

4-2 Detail info

Item	Union Community	Neurotechnology	J finger
Fingerprint Matching	0.405%	0.598%	-
Fingerprint Verification	0.665%	0.281%	1.833%
Template	415 bytes	5,887 bytes	1,390 bytes
Enrollment Speed	79 ms	225 ms	108 ms
Authentication Speed	3 ms	3 ms	36 ms

5. FVC History

- FVC YEAR 2004
 - 1ST: Suprema (EER 3.51%)
 - 2ND: Bioscrypt (EER 4.29%)
 - 5th : Testech (EER 4.33%)
 - 6th : Nitgen (EER 4.86%)

- FVC YEAR 2006
 - 1st : Beijing Smackbio Technology Co., Ltd. (EER 1.916%)
 - 4th : Suprema (EER 2.543%)

6. Best Fingerprint Algorithm in the world

- Fingerprint Matching (ISO) Benchmark Area : No.1 in the world
- Fingerprint Verification Benchmark Area : No.2 in the world (No.1 in real environments)
 1. Neurotechnology is ranked as 1st with EER 0.281%. However, its technology is more academic than commercial in real environments.
 2. Normally fingerprint terminal has limited resource of memory available less than 1K byte template size
 3. Comparing with Neurotechnology template size of 5887 bytes, Union Community's algorithm (Avg Model Size is normal as 415 bytes) excels in the real environment

7. Who is Union Community?

- Using No.1 Fingerprint Algorithm tested by FVC as of Sep 2009
- The biggest and the most promising company by sales amount in the commercial sector of biometrics industry in Korea (No.1 M/S in Korea).
- The biometric company that has patented “**Fake Finger detection Technology**” in all products including OEM modules.
- Received Product Achievement Award in Biometrics by SIA at ISC West 2007
- A leading biometrics company with the best variety of products including access control, time& attendance, door lock, PC peripherals, safety box, etc.
- Market-proven fingerprint finished products have been sold in over 70 countries including Samsung, LG, SECOM, Mul-T-Lock, ADT, Miwa, POSCO, etc.