BioSign 2.0
Mobile Fingerprint Authentication Solution
WHY BioSign 2.0

FAST MATCHING
• 2-stage fast matching algorithm with patented “Entropy Point Pairing” method
• Optimal architecture for mobile embedded applications
• Hardware independent: free from hardware acceleration (ARM-NEON / GPU / DSP)
• No floating point arithmetic and all codes are fully written in C/C++

UNRIVALLED ACCURACY
• Enhanced robustness to the variation/distortion of fingerprints by Suprema’s patented technologies
• Reconstruction of discriminative fingerprint patterns from various noises
• Unique pattern analysis technique to ensure consistent performance over low-quality fingerprints (wet/dry skin, partial wound, crease)

ROBUSTNESS OVER TIME
• Intelligent self-learning algorithm to reflect users’ fingerprint condition and habit
• Highly compressive template to cover full finger area and variations
• Smart template management to enable algorithm to deal with variation and habit of user

FLEXIBILITY IN DESIGN
• Sensor-specific pre-processing algorithm (capacitive / optical / under glass (up to 300μm))
• Sensor independent features and patterns
• Satisfactory FRR even with smallest sensor size (13 mm²)
• No dependency to the sensor shapes (square/rectangle)

WORLD’S FASTEST SPEED
50ms* authentication time

WORLD’S MOST ACCURATE ALGORITHM
FRR=0.5% @ FAR=0.0005%

ROBUST PERFORMANCE OVER TIME
Gets smarter with use
- Self learning algorithm

FLEXIBILITY IN DESIGN
Supports wide selection of sensor types & form factors

* Conditions apply.
The world’s **fastest**, most **accurate** mobile fingerprint technology ever

BioSign 2.0 provides unrivaled authentication performance through advanced machine learning algorithm. The ultra-fast matching speed can even be achieved with mid-to-low range smartphone processors with the highest security while ensuring the lowest false acceptance rate (FAR)

**When speed matters**

Matching speed more than twice as faster as the leading competitor

* Test environment (BioSign)
  - Console app via ADB interface
  - Platform: Samsung Galaxy S7

**Take the most secure solution available today**

45% to 70% lower FRR than major players

* Test environment
  300 fingers (50 person x 6 fingers) x 100 tries = 30,000 tries
  Indoor, phone on desk, Not moving user, Normal condition fingers

**A technology gets smarter with use.**

Self-learning algorithm to reflect user’s changing habits and conditions.

* Test environment
  25 fingers (5 user x enrolled 4 finger) x 10 times authentication tries every 1 week during 3 months Indoor, Phone in hand-held, Not moving, Normal condition fingers
BioSign 2.0 allows greater design flexibility by supporting various sensor form-factors.

Wide Range of Sensor Sizes & Form-factors

- **A**: 4 X 3.2 mm
- **B**: 4 X 4 mm
- **C**: 5 X 4 mm
- **D**: 5 X 5 mm
- **E**: 6 X 6 mm
- **F**: 7 X 3.5 mm
- **G**: 8 X 4 mm
- **H**: 8 X 8 mm
- **I**: 9.5 X 3 mm

BioSign 2.0 ensures the best performance regardless of sensor types from conventional capacitive to latest under-glass sensors.

- Capacitive Sensor
- Under-glass Sensor
- Optical Sensor
BioSign 2.0 | Efficiency & Integration

In-depth **Intelligent** Fingerprint Pattern Analysis
Requiring **Minimal Computing** Resources

BioSign 2.0 offers uncompromising security with the lowest error rate. Using Suprema’s proprietary biometric technologies, from pre-processing, feature extraction, to matching stages, BioSign 2.0 provides the maximum level of security with minimal processor and memory usage.

**Seamless Integration** Support

Easy Integration with Android Fingerprint API And full support for trusted execution environment (TEE)
6 reasons why customers choose Suprema as the most preferred technology partner in fingerprint biometrics.

### 1. The World’s best performing fingerprint technology provider.

<table>
<thead>
<tr>
<th><strong>MATCHER &amp; EXTRACTOR ALGORITHMS</strong></th>
<th><strong>SUPREMA FINGERPRINT SCANNERS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranked No. 1 in US Govt. NIST MINEX Test</td>
<td>Received Full Compliance and Final STQC Certification for India Government’s UID Project</td>
</tr>
<tr>
<td>Suprema Algorithm Marked Best Accuracy of (Lowest False Rate) at FVC 2010</td>
<td>Fingerprint Scanners Received Highest Image Quality Certification from FBI IAFIS Appendix F</td>
</tr>
</tbody>
</table>

### 2. The World’s most widely-used biometric technology.

<table>
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<tr>
<th>Over 1,000,000 Fingerprint Devices Installed Worldwide</th>
<th>Over 1,000,000 Fingerprint Modules Sold Worldwide</th>
</tr>
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<tbody>
<tr>
<td>Biometric Solutions over 1,000,000,000 People</td>
<td>Suprema solutions used in Over 100 Countries</td>
</tr>
</tbody>
</table>

### 3. Proven market leadership with leading industry awards & recognitions.

<table>
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<tr>
<th><strong>NO. 1 BIOMETRIC VENDOR</strong></th>
<th><strong>BEST BIOMETRIC SOLUTION AWARD</strong></th>
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<td>Named to the World’s TOP 50* Security Company Ranking from 2010-2016</td>
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<td>No. 1 Biometric Vendor of EMEA regions in Market Share</td>
<td>Best Biometric Solution Award at ISC Brasil 2016</td>
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<td><strong>ASIA’S 200 BEST SMALL CAPS</strong></td>
<td><strong>TECHNOLOGY FAST 500</strong></td>
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<td>Forbes</td>
<td>Asia Pacific Deloitte</td>
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</tbody>
</table>

*Industry rankings in revenue
4 Outstanding business growth and excellent financial stability.

$300m Market Capital
(Listed company in KOSDAQ)

12% CAGR during 2010-2015

A+ Excellent Financial Stability
(by Korea Investment Services)

5 Global penetration: partnering with multi-nationals and governments.

- Key Global Partners
  - BOSCH
  - Honeywell
  - HIKVISION
  - Tyco

- Public ID Projects
  - US 2010 Census
  - China Ministry of Public Security
  - India Unique Identification (500+ Million Users)
  - Korea National Police Agency (500+ Million Database)
  - Japan National Police Agency

over 10,000,000,000 Fingerprints processed by Suprema solutions

6 End-to-end biometric technology provider.

- Mobile Fingerprint Authentication
- Fintech
- Biometric Time Attendance
- Physical Access Control
- Public Identification
- Forensic Science
- Civil Identification
- Law Enforcement

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