IARPA Nail-to-Nail Challenge Registration

All Stage 1 Registrations need to be submitted to Challenge.gov by March 17, 2017

Company Info		Technical POC	
Name:	Touchless Biometric Systems AG	Name:	Patrick Knuchel
Address:	Rietbrunnen 2 CH-8808 Pfäffikon Switzerland	Phone:	+41 (0)55 533 20 00
		Email:	patrick.knuchel@tbs-biometrics.com
N2N System Description			
Title: Product Manager		□ Software Solution (uses conventional sensor) x Hardware/SW Solution (custom hardware and software)	

Abstract

Touchless Biometric Systems (TBS) is known on the market for its unique touchless optical 3D biometric fingerprint technology, used commercially in various Access Control and T&A applications and counting numerous projects live for years. The core TBS 3D finger surround imaging sensor is composed of 3 cameras, taking images of the finger from different angles and insensitive to finger condition. Built-in positioning guidance in combination with intelligent reconstruction algorithms ensures the highest achievable fingerprint quality on the market.

A forensic Civil/Criminal version of the sensor contains additional line projectors to generate a geometrical accurate 3D model of the finger from nail to nail. It comes with an SDK that can be used to virtually flatten the 3D model and create high quality N2N finger images in the 2D domain. These images can be optionally post processed to match against standard plain or latent prints.

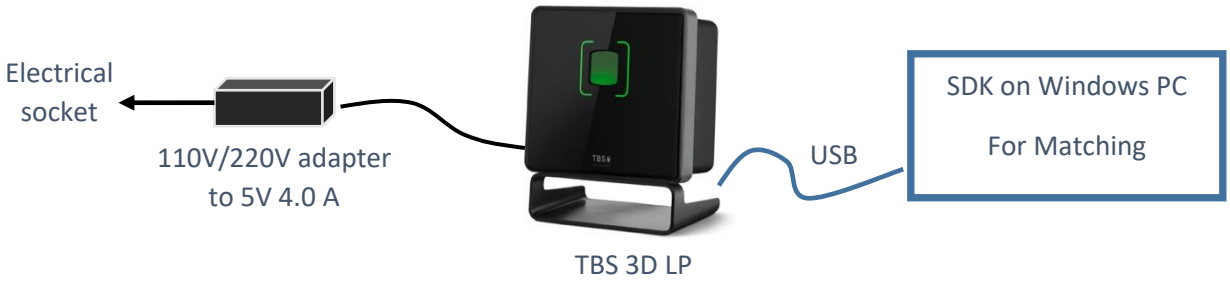
The 3D commercial version has been successfully used on various projects (nuclear plant, airports, data centers, police, military and more) for 6 years, bringing invaluable field experience on how to complement/extend the civil criminal version.

Concept of Operations

For the 3D Civil/Criminal (3D CC) device, an SDK allows to build custom interactions with the device, to enroll, match and manage the scans and templates. The user interacts by placing the finger in a cavity. The sensor principle is camera-based and touchless, the cavity serves merely to reduce interference from external light. The matching of plain or latent fingerprints with the 3D CC templates is performed on a server PC and matching feedback displayed.

System Diagram

The TBS 3D CC and corresponding SDK were developed precisely for the application requested here. The bundle is therefore already packaged and very simple to use. The 3D CC is a fully finished device with a power supply and connects to the analysis PC through USB. The SDK is installed on a PC, to connect to the 3D CC via USB and to match the database “2D” plain / latent fingerprints with the virtually flattened 3D scans read with the TBS 3D CC. There is no mechanical movement, material used is aluminum, glass and plastic, and the touchless sensor does not involve any contact, other than possibly resting the finger on the polished glass edge of the cavity. Visible light (wavelength, frequency, power) is used inside the 3D surround imager sensor.



Anticipated Equipment

For the TBS 3D CC test, material needed is:
Hardware: Windows PC, 3D CC device and power supply. Software: TBS 3D SDK.

Devices

The TBS 3D CC is actually made purposefully for this exact application, no change required. The standard COTS product will be used.

Matchers

*A) Which Matcher will your team use for the **tenprint** to **tenprint** comparison? Please select one:*
____ *Government* _X__ *Custom* ____ *Not Sure*

*B) Which Matcher will your team use for the **latent** to **tenprint** comparison? Please select one:*
____ *Government* _X__ *Custom* ____ *Not Sure*

Safety Assessment

There are no safety concerns. The TBS 3D technology is out in the consumer field for years, tested and proven. Various authorities have also checked it. The system is basically touchless, and in case of contact, fingers would only touch inert materials (plastic or polished glass cover).

Innovation

TBS 3D CC is the **first touchless finger-based N2N sensor** in the biometric world, still unique today. Also uniquely, a commercial version (product) has **been installed and operating successfully for 6 years** in various locations in the world, solving identification issues to an unprecedented level. One such example claimed to have never been recognized before trying the TBS 3D sensor, which recognized him without fail. Examples are numerous. Installations include nuclear power sector, government, sensitive datacenters, police, military, airports and mission-critical sites. TBS 3D is the **only touchless 3D finger imaging technology on the commercial market** and has **not a single competitor** years after its release. The touchless hygiene is highly appreciated, a rare feature in the fingerprint field. Last but not least, the TBS 3D is **only fingerprint device guiding the user in a fully autonomous manner**, removing the need for labor-intensive human assistance. We have never come across a more accurate reader so far. It also provides live finger detection feature. A major International airport POC concluded in 2016 that TBS 3D was t**he only fingerprint reader they could not spoof** with fake finger samples, among all prominent biometric brands they tested. The **TBS Biometric Subsystem software is the other disruptive innovation of TBS**, which was adopted and integrated within few years by almost all big names in security (Siemens, Honeywell, Nedap, Johnson Controls, Lenel, Kaba, …).