



A4Vision's Vision Access technology allows intelligent and accurate 3D facial recognition.

## Facial recognition goes 3D

BIOMETRIC technology has been in the limelight recently. A study by the International Biometric Group predicts that the worldwide biometric market will grow to US\$5 billion (\$8.3 billion) by 2010, up from US\$116 million in 2000, a testament to the worldwide adoption of the technology in the face of the threat of terrorism.

In the light of its fast-growing popularity and acceptance, players are not only concentrating on improving their respective technologies, but also diversifying into other types of biometrics recognition.

Local biometrics solutions provider IDLink Systems has made a name for itself by implementing fingerprint recognition systems and devices for clients such as Mary Chia Slimming Centre, Dennis Wee Properties and Queenstown and Jurongville Secondary schools. Its range of solutions includes physical access control, IT security and time/attendance applications.

Recently, it forged a partnership with California-based 3D facial recognition vendor A4Vision, granting it the sole rights to distribute A4Vision's 3D identification suite to countries within the Asia-Pacific rim, said Mr Christopher Bian, CEO of IDLink Systems. A4Vision also has offices in Geneva, Switzerland, as well as Moscow, Russia.

The suite comprises an enrolment station, a face reader camera that can be placed adjacent to a door, a server that manages the 3D recognition engine and a software development kit (SDK) for development and integration into other access control applications.

The end-user price for a single door access system is between \$8,000 and \$10,000

and includes the enrolment station, face reader camera and all the relevant software, according to Mr Bian.

Unlike traditional 2D facial recognition technology, A4Vision's intelligent 3D platform allows identification and verification to be done even in non-ideal conditions, like changing light conditions and limited view angles – factors that are known to be the bane of many a facial recognition engine.

The 3D mesh representation of the face is created using a combination of structured light and near-infrared projection.

The invisible structured light grid is projected onto a face and is distorted by the face's natural geometry. This distortion is recorded and rendered into a 3D mesh through triangulation via a reconstruction algorithm. A template is generated from this mesh by identifying key facial features and this template is used in the matching process.

A4Vision claims that it is able to extract and reconstruct images at rates exceeding 25 frames per second and perform between four and eight matches per second. The use of a 3D mesh also indicates that the system will be more difficult to fool. Trials on traditional 2D facial image recognition technologies have shown that aside from a rather low level of accuracy, the engines can be affected by the heavy use of cosmetics.

The SDK also allows a company to integrate facial biometrics to its backend applications through secure connections.

It manages the face reader stations, performs user enrolment, auditing, systems analysis and monitoring of standalone stations locally and centrally in the case of networked physical access solutions. — Ariel Tam