



How Do Fingerprint Identification Systems Work?

Fingerprint identification systems are becoming more and more popular. But how do they really work?

The fingerprint identification system consists of a fingerprint scanner and biometric software. The two most common methods for capturing the fingerprint are optical scanning and capacitance scanning. The methods operate slightly differently, but basically they are just ways of capturing fingerprints.

Once the fingerprints have been captured, the biometric software processes the fingerprints and converts them into a template. The templates contain information about key data points on the finger, such as dots, short ridges, ending ridges, forks (where one ridge splits into two), and enclosures (where ridges form circular patterns instead of going straight). These data points ("minutiae") form a unique pattern on each finger and therefore are a unique representation of a finger (or a person).

The software then compares this new template against existing templates of previously registered people. The system doesn't need to find a perfect match between the sample and the stored template. It simply needs to find that the two prints have enough minutiae patterns in common to state that the two are a good match. When a good match is found, the person is "identified."

The biometric software uses highly complex algorithms to analyze these minutiae, converting them to templates and matching one template with another.

This entire process is called identification. The fingerprint identification software is the most common form of biometric ID. As systems become easier to use and more cost-effective, they are expected to become even more popular.