

# The Digital



# NavigatorEG

## Facial Recognition: Briefing Paper

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### Facial Recognition

Facial recognition represents a way to identify (or confirm) a person's identity using their face. Facial recognition uses a combination of AI algorithms and biometric security software to identify people in photos, videos, or in real-time motion. One such example can be seen in the area of law enforcement where a suspected criminal's photo is matched against a state, federal or international data base containing the name, photo and police records of known criminals or previously arrested persons. A second example can be seen in the area of social media where a service like Facebook uses facial recognition as the basis for identifying people who appear in a user's digital album while suggesting users "tag" the person with a click, thereby, linking the image to that person's account. Facebook has one of the largest repositories of facial recognition photos in the world.

Facial recognition is used in a variety of settings for purposes that include:

- Unlocking smartphones
- Law enforcement
- Business and high tech-security clearance
- Airports and customs security

- Social media and photo sharing
- Attendance at special event gatherings

### **How does facial recognition work?**

Many users are familiar with facial recognition technology as a method for unlocking one's smartphone. In such cases, the facial recognition system simply identifies and recognizes one person as the sole owner of the device, while limiting access to others. Another example of facial recognition can be seen in the area of public safety where special cameras are placed on a city street that records the faces of people walking by and matches it to people on a watchlist database. In general, there are three steps to facial recognition.

#### **Step 1: Face detection**

The camera detects and records the image of a face, either alone or in a crowd.

The image may show the person looking straight ahead or in a profile position. Facial recognition has become a familiar sight at many airports around the world. An increasing numbers of travelers now hold biometric passports, which allow them to skip the ordinarily long lines and instead walk through an automated ePassport control to reach their gate and plane faster. Similarly, facial recognition systems are used by customs officials for newly arrived visitors coming into a new country.

## Step 2: Facial Analysis

The facial recognition system transforms the facial image into a set of digital data points. The numerical code is called a faceprint. The software reads the geometry of a person's face including the distance between eyes, the contour of nose, lips, eyes and ears as well as the shape of an individual's cheekbone. Each faceprint has its own unique set of identifiers. See Figure 1.

**Fig. 1. Facial Recognition Scan**



## Step 3: Finding a match

Once a facial image is captured and analyzed, a prescribed software is used to match the image against a specific information database depending on purpose and application. Examples can range in size and complexity from a company database that contains the identity of company employees to the internationally based Interpol's Face Recognition System which contains facial images received from more than 179 countries which makes it a unique global criminal database. The Interpol face recognition systems is equipped with AI capability that is designed to identify potential criminals even through their appearance might have been altered such as wearing a beard, a change in hair color or the use of glasses.

