

Scalable and accurate face identification

A combination of patented 2D and 3D pose correction technology, used in conjunction with deep convolutional neural network algorithms, offers exceptional performance.

The Face Recognition analytic is equal to real-world challenges such as lighting, facial hair, pose, occlusions, motion, crowds, and expression. With a 128-byte template size, Face Recognition is nearly three times smaller than similar software and requires less memory. The analytic delivers industry-leading speed and match accuracy at a low CPU cost. As a native analytic for Senstar Symphony, Face Recognition offers ease-of-use and intuitive integration across video management system (VMS) functions.

FAST IMAGE PROCESSING

Face Recognition has registered a template correlation speed of 25 million matches per second (.040 microseconds/match), per core, against both live and archival video. This makes facialbiometric, multi-factor authentication possible and translates to accelerated response times for Security or Customer Relationship Management (CRM) use cases.

ENHANCE SECURITY

Combine Face Recognition with access cards to provide biometric, two-factor authentication. In retail, border security, and education settings, provide real-time security by immediately alarming on watch lists of known offenders. Comprehensive forensic analysis is possible through archival search.

LOWER OPERATING COSTS

Be in production immediately. Face Recognition is a native analytic, seamlessly integrated with Senstar Symphony. Installation and configuration are simple and intuitive, leveraging a familiar interface, ready to use with key VMS functions. Face Recognition maximizes server hardware efficiency. A dedicated analytic platform is not required. Both CPU and memory overhead are significantly less than competing solutions.

ACCURACY

Face Recognition delivers results in less than ideal conditions. It performs in crowds, where faces are partially obstructed, and when facial appearance or expression has changed. It has achieved a 99.44% Rank 1 matching accuracy on the Facial Recognition Technology (FERET) high pose data set and a 97.60% Rank 1 matching accuracy on the Labeled Faces in the Wild (LFW) data set, with a false positive rate of 0.1%. You can rely on Face Recognition for the most demanding applications.



IMPROVE USER EFFICIENCY

Stop manually sifting through hours of recorded video. Using search functionality, look for both known and unknown people, quickly get results, and immediately take action. Upload an image of a person of interest and automatically query recorded video to find each instance where they appear. Perform an iterative search starting with a low-quality initial image. Find a better image in the database, then use it to yield still higher confidence matches.

IDENTIFICATION - WHO IS THAT PERSON?

Auto PTZ can automatically control a PTZ camera, enabling it to zoom in and follow moving people and vehicles within the field of the camera. This is ideal for outdoor perimeter monitoring.

LAW ENFORCEMENT
Mug books and booking systems
Forensic imaging systems
Watch lists for real-time face recognition from live video
Safe city projects
Forensic or post-event facial searches
Health and human services
Identifying undocumented individuals

LOSS PREVENTION
Identification of known shoplifters
Pre-empting organized crime events
Point of sale monitoring

CRM: VIP AND CONCIERGE SERVICES
Financial services
Hospitality and casinos
Retail

MARKETING ANALYTICS
Business decision support based on anonymized face recognition to compute people analytics and demographic data while protecting privacy

VERIFICATION - IS THE PERSON WHO THEY CLAIM TO BE?

Detect and track people moving within the frame of a camera. Alarms can be set when unauthorized entry into an area is detected and dwell times can be tracked and recorded for the detection of unwanted loitering. Heat maps can also be created in retail stores and public spaces to determine high traffic areas.

PHYSICAL ACCESS CONTROL
Multi-factor authentication
Entry to commercial offices, apartment buildings and schools
Hospitals, manufacturers, and hosting facilities
Police departments, correctional facilities, and courts
Specialized secure areas like server rooms and pharmacies

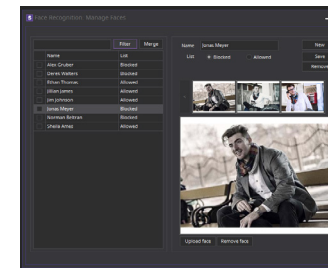
LOGICAL ACCESS CONTROL
Multi-factor authentication
Individual computer and network login
Financial services and ATMs
Healthcare provider segregation (HIPAA) and government benefit assistance
Customs and border control
Mobile transactions

IDENTIFICATION - WHO IS THAT PERSON?

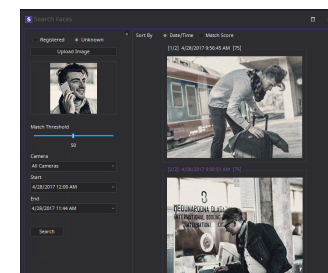
Given an unknown face, a computer system attempts to identify the person.

That process is broken into three main tasks:

- Face detection - distinguishes face-like objects from other objects in the image
- Feature extraction - reduces the face to its simplest terms for recognition
- Face identification - identifies the person's face by searching a database of known individuals



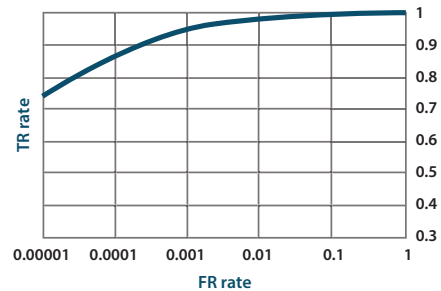
Enrolling a user



Search

Technical Specifications

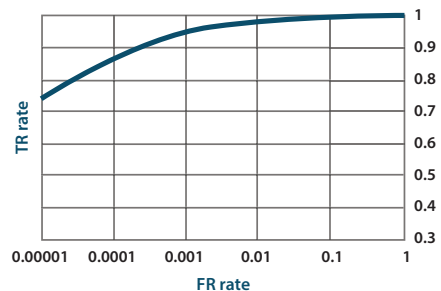
LFW ROC



THE LABELED FACE IN THE WILD DATASET

The Labeled Face in the Wild dataset contains more than 13,000 images collected from the web. Our test results presented here are based on a closed set test (every image compared to every other image). The test set consisted of every person with 2 or more images for a total of 9,126 images and more than 83.2 million comparisons.

FERET HIGH POSE ROC



THE FERET DATASET

The FERET dataset is a curated collection of images of 957 individuals in quarter, half, and full profile poses. For our closed set testing we selected the subset of high pose (quarter and half profiles but excluded full profiles) for a total of 7,830 images producing more than 61.3 million comparisons.

TECHNOLOGY	
Automatic feature (eye, nose, mouth) detection	Yes
Automatic face detection	Yes
Face tracking	Yes
Real-time video capable	30 fps
Recorded video search	Yes
1:1 Matching	Yes
1:n Matching	Yes

MATCHING ENGINE	
Pose - Yaw	60°
Pose - Pitch	20°
Scheduling	30°
Pose - Roll	Yes
Partial facial occlusion	Yes
Beards and hairstyles	Yes
Large expressions	Yes
Sunglasses	Some
Irregular lighting	Yes

MINIMUM IMAGE CHARACTERISTICS	
Minimum distance between the eyes	29 pixels
Minimum grayscales within the face	32

TEMPLATES	
Template Size	128 bytes
Template generation speed	10 per second
Template comparisons	0.040µs
Generation re-entrant thread safe	Yes

BENCHMARK HARDWARE SPECIFICATIONS	
CPU Speed	3.4GHz
Memory	2GB
1M person gallery stored in RAM	125MB

PERFORMANCE	
Matches per second, per core	25M
False positives	0.1%
Rank 1 matching accuracy on Facial Recognition Technology (FERET) high pose data set	99.44%
Rank 1 matching accuracy on Labeled Faces in the Wild (LFW) data set	97.60%