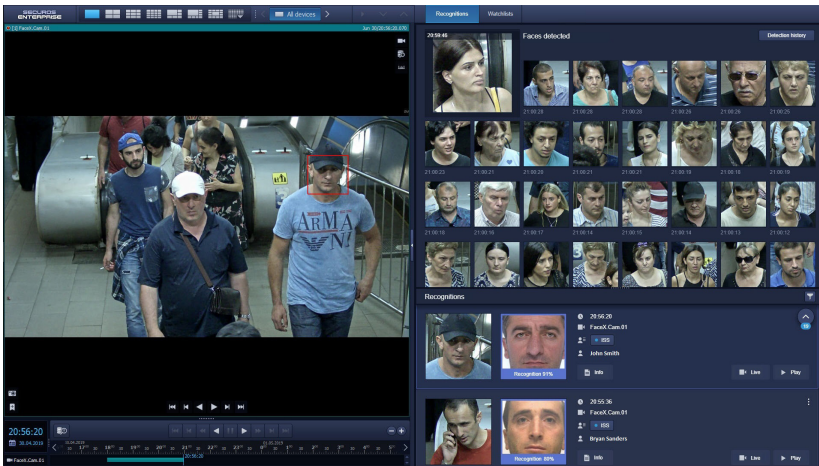




# SECUROS FACEX

## Neural Network Based Facial Recognition Technology



SecurOS™ FaceX is an intelligent video analytics module for the SecurOS™ video management platform, providing facial detection and recognition capabilities for your security needs. With its extraordinary recognition accuracy, SecurOS FaceX operates in a wide range of external conditions, i.e. changing illumination and angle.

The cooperative behavior of subjects has no major impact on the efficiency of the face recognition video analytics module. In particular, the recognition process is less dependent on the angle between the camera and the person's face and works well in passive recognition environments (where the subject does not know they are being recognized).

SecurOS FaceX runs on the SecurOS video management platform, which provides interoperability with other subsystems, for example ACS or ANPR. Several SecurOS FaceX systems consolidated under one SecurOS command & control center, can support working with multiple watchlists.

The module allows you to automate various operations related to monitoring, enrollment, authentication, as well as statistical analysis. SecurOS FaceX provides the necessary level of security at sites where person enrollment and identification are required, including multifactor authentication systems.



SECUROS  
PREMIUM



SECUROS  
ENTERPRISE

Compatible with ISS SecurOS  
Premium and Enterprise



[www.issivs.com](http://www.issivs.com)

### Technology Overview

#### Unlimited Database Size

Create an unlimited amount of watchlists and people in them

#### Convolutional Neural Network Based Algorithms

High percentage of correct recognitions, including those taken under conditions of changing illumination, expression, resolution, distance or aging. The video server CPU performs all neural network processes without the need of special GPU cards

#### Multifactor Authentication

Special mode to manage access control systems (ACS) for both single-factor and multifactor authentication

#### Anti-spoofing

Special feature to check for face liveness, and ensure that printed photos or images from mobile devices (phone, tablet) will be flagged as spoofing alarms

#### Expanded Field of Business Applications

Complete API/SDK toolkit to integrate with 3rd party systems to provide business process support (ERP, SCADA, PSIM, etc.)

#### SecurOS Native Analytic Module

FaceX is based on SecurOS VMS platform and utilizes its video processing and integration capabilities for best performance

### Applications

- Entrances of airports, subway and railway stations, sport venues
- Passport control zones
- Law enforcement
- Business centers
- Retail applications
- Restricted areas
- Entertainment and hospitality industry

## Key Features

### Real-time Detection and Recognition

Automatically detect and recognize faces in real-time and display the results in the SecurOS FaceX GUI (graphical user interface).

### Event to Video Evidence Linking

Collect information on all detected faces as well as recognition data such as person name, camera, date, time, watchlist, and link to the video clips in the video archive.

### Forensic Search

Search for person of interest by photo (search in database of previously detected people and in watchlists).

### Watchlist Management

Easily manage watchlists, including the add-one-person-to-multiple-watchlists option.

### Batch Import

Batch import of photos into watchlists while automatically checking for duplicates on existing photos and person's full name.

### Watchlist Change Log

System will log when changes are made to any watchlist. Log will reflect time, date, user, and description of the changes.

### Notifications

Inform the operator at workstation monitor, or send notifications by e-mail, SMS, etc. if a particular person of interest is in the detection field of view.

### Seamless Integration with Access Control

Ensure the interoperability with ACS in order to perform multifactor authentication.

### Anti-spoofing

Anti-spoofing feature to check for face liveness, and to ensure that printed photos or images from mobile devices (phone, tablet) will be flagged as spoofing alarms.

### History Search

Perform quick searches for all detections and recognitions through the corresponding History modes. Results are displayed in a thumbnail view.

### 3rd Party Integrations

Send data to 3rd-party systems as needed.

! SecurOS FaceX provides ample opportunity for design and development of multi-component vertical solutions:

- Controls and manages person access to industrial enterprises, critical infrastructure, and sensitive facilities
- Automates person authentication process in sport venues, hospitality and entertainment sites
- Performs person search in law enforcement databases including detecting missing persons or criminals (forensic search)
- Minimizes the human factor influence in verification of the conformity of person and photo

## Advantages

Automatically detect every person's face in the camera detection zone.

High recognition quality in a wide range of external conditions (camera angle, changing and insufficient illumination, heavy rain and snow).

System works at a high level of accuracy in both active and passive recognition environments.

Search for person of interest by photo (search in database of previously detected people and in watchlists).

Compare up to 20 detected faces per second per CPU core – against person database (based on a 100K Face DB sample).

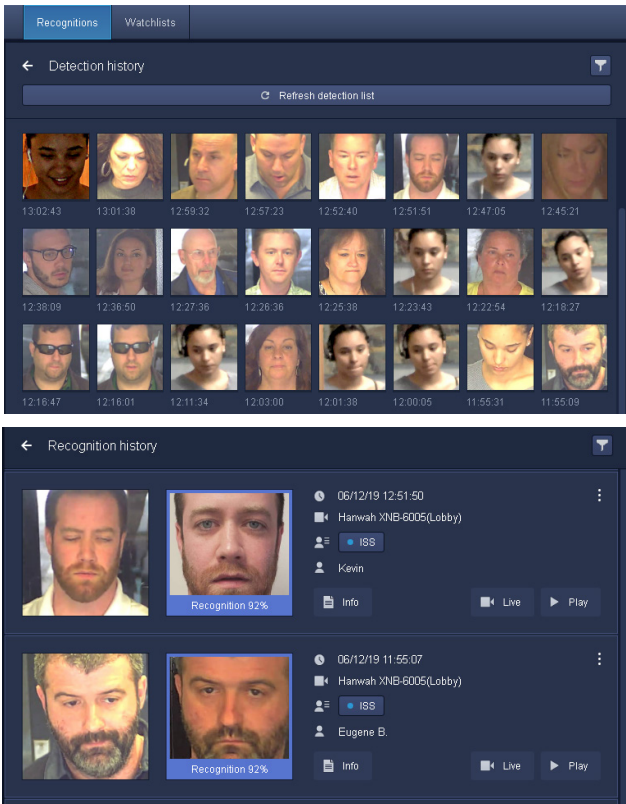
Unlimited number of watchlists and people per watchlist.

The captured face similarity threshold can be configured specifically for each watchlist.

Built-in automation tools to program specific system responses for detected recognition events.

No proprietary cameras required.

Intuitive and easy to use user interface.



## Graphical User Interface

SecurOS FaceX GUI includes the following functionalities:

- Detection and recognition results displayed in a user-friendly thumbnail view
- Ability to simultaneously view a detected face in both real-time and from previously detected faces in archive mode
- Manage enrollment via watchlists (create a watchlist, add/delete a person profile, edit a person profile, add additional photos of person to an existing profile)
- Batch photo import into watchlist(s). Check will be performed for duplicate images used, and user will be able to manage duplicates (if duplicates found - add a photo to an existing entry/replace a photo/or create a new entry)
- Easily view corresponding video archive by clicking on a photo of a detected or recognized face
- Search by photo (with the ability to set a threshold for the degree of similarity) and search in watchlists by name
- Provide retrospective search with filtering by similarity, time, camera name

## Specifications

Recognition quality: ISO / IEC 19794-5 standard visa compliant photos social network photographs (and mug shots) face recognition by video stream	99.5% True Positive Rate @ 0.1% False Match Rate 97.8% True Positive Rate @ 0.1% False Match Rate up to 98% True Positive Rate @ 0.1% False Match Rate (if camera installation procedure and reference photo quality meet the technical requirements)
Number of people in watchlist	unlimited
Number of watchlists	unlimited
Biometric template size	approx. 2Kb
Biometric template extraction speed	4 templates per second per 1 physical CPU core (2.5 GHz)
Face recognition speed against 100k faces in watchlist	up to 20 faces per second per 1 physical CPU core (2.5 GHz)
Number of faces detected simultaneously in one frame	Limited by processor performance only
Data transfer protocol	TCP/IP
Search by picture, parameters	date/time the person appeared in camera FoV, camera name, recognition threshold
Recognition event data of watchlist	person name recognition percentage camera name date & time of best-frame captured face image (best-frame) watchlist link to person profile link to a video archive anti-spoofing alarm (if feature is enabled)

## Face Recognition Camera Selection & Installation Recommendations



### Please Note:

The introduction of a face recognition system requires a pre-installation walk-through for each control point.



### Technical Support:

The design of individual configurations and the selection of hardware for the best system performance are recommended to be performed with the help of the ISS Pre-sales team.

Camera	IP, FullHD (1920x1080) resolution is recommended
Frames per second: for ACS installations (people slow down or stop) for areas with continuous people movement	12 25
Lens focal length: for recognition at 5 feet (1.5 meters) distance for recognition at longer distances	2.9-8mm 5-50mm
Optimal camera position	one which provides frontal view of face
Resolution quality requirements: recommended distance between eyes minimum distance between eyes	60 pixels 40 pixels
Image quality requirements	a face should be clear (not blurred) without any digital distortions or modifications. The face should not be too dark or too light.
Tilt and rotation angle of camera with respect to the detected face: recommended maximum allowed	up to 15° horizontal and vertical ≤ 30° horizontal, ≤ 20° vertical

### Enrollment - Image Quality Recommendations

- The recommended head size in the frame should be about 70% of the horizontal field of view.
- The distance between the eyes should be at least 60 pixels (or the width of the face should be no less than 160 pixels).
- Optimal angle (view) is a front view. The maximum allowed face deviation from the optical center should be 15° vertically and horizontally.
- Photos should be of normal sharpness, brightness, contrast, hue and saturation. For black and white images, the face area should be at least 64 shades of gray.
- Image color subsampling should be no higher than 4:4:2 (4:2:0, 4:2:2 and lower). Images must be in JPEG format.
- Image editing is not recommended (format converters, photo compression or photo editors).
- Images of person with closed eyes, opened mouth, facial expressions that distort natural face view, hair / head gear / shadows covering part of the face, wearing bright unusual makeup are not recommended for face recognition purposes.
- Optimal image quality is achieved by following the requirements of the ICAO standard.