



WATCH LIST MATCH



Kimberly Taylor,
Sex: Female,
Age: 24



Peter Blake,
Sex: Male,
Age: 35

Persons or vehicles
recognition and tracking
for video management
systems (VMS)

SentiVeillance Server



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CONTENTS

Features and capabilities.	3
Technical details	4
System requirements.	5
SentiVeillance Server Trial and related products.	6
Licensing SentiVeillance Server	7
Prices.	8

SentiVeillance Server is a ready-to-use software for easy integration of biometric **face identification**, **vehicle and pedestrian classification and tracking**, as well as **automatic license plate recognition** into operating **video management systems (VMS)**. The software analyzes live video streams, which are served by a VMS from **surveillance cameras**. The list of possible uses includes law enforcement, traffic monitoring, security, attendance control, visitor counting and other applications.

SentiVeillance Server is designed for installation on server hardware which is running under Linux.

- Ready-to-use facial identification software for surveillance systems.
- Compatible with major video management systems.
- Biometric persons identification and tracking.
- Pedestrians and vehicles tracking and classification.
- Automated license plate recognition (ALPR) for moving vehicles.
- Real-time watch list check with automatic event triggering, logging and reporting.
- Search for events in a timeframe based on person ID, gender or age.
- Up to 10 video streams from multiple VMS are analyzed in parallel by each SentiVeillance Server.
- SentiVeillance SDK optionally available for software development.



Features and Capabilities

A video management system (VMS) usually provides only motion detection functionality and can help to filter out parts of video from surveillance cameras when there is no movement.

SentiVeillance Server software **enhances existing VMS** with these features and functions:

- The **ready-to-use** SentiVeillance Server software needs only **configuration** via **browser-based interface** for connecting an operating VMS.
- SentiVeillance Server is **compatible** with **Milestone XProtect VMS** and **Luxriot Evo S and Evo Global** video management systems. Each running SentiVeillance Server can connect to **multiple VMS** and receive more than one video stream from each of them.
- Biometric **persons identification and tracking** is based on proprietary facial detection and recognition algorithm, which is based on deep neural networks. The face identification technology is also used in other Neurotechnology products (see page X), which have **millions of end-user deployments** worldwide. The algorithm **accuracy** and **performance** has been **tested** in the **NIST Face Recognition Vendor Test (FRVT)**.
- Vehicle or pedestrian detection and classification is performed for moving and static objects in the scene. The algorithm can separate these traffic subjects: **pedestrians, cars, busses, trucks and bikes**. Also, it is possible to estimate **color** and **movement direction** for the detected objects.
- Automated license plate recognition (**ALPR**) allows to read vehicle's registration numbers after detecting them. The algorithm can process videos from **traffic cameras** and read license plates from **multiple moving vehicles** at the same time.
- SentiVeillance Server analyzes **all video streams** received from connected VMS **in parallel** and performs detection and recognition in **real-time**. All **watch list** match events trigger alerts, which are sent back to corresponding VMS and reported to an operator, as well as stored in the event log for further reference.
- Surveillance system operators can perform **search** in the events log. Search requests are made via VMS user interface and sent to the connected SentiVeillance Server, which returns the search results back. The operator can play back surveillance footage at the timestamps, which are specified by the search results, and perform further actions. The search can be performed within certain timeframe. The search criteria can be one or more person IDs from the watch list, or persons, who belong to specified age or gender group. Finally, operators can review all events with unknown persons.
- Each SentiVeillance Server can analyze up to **10 video streams** in parallel. Several SentiVeillance Servers can connect to the same VMS, as well as several VMS can be connected to the same SentiVeillance Server, meaning that SentiVeillance Server software can be integrated into a system with **any number of surveillance cameras**.



Technical Details

SentiVeillance Server software is based on SentiVeillance 7.3 SDK technology which provides real-time person or vehicle recognition and movement tracking for video surveillance systems. SentiVeillance Server has certain specifications and requirements for achieving best performance:

- **Face size** in a frame is important for reliable face tracking and biometric identification. **4 % of the frame's larger side** (at least 32 pixels) is the minimal recommended **distance between eyes** for a face on video stream. The performance depend on actual size of a face in a video stream, not on the size of the whole frame.
- **Face posture** can have certain difference from frontal position. SentiVeillance Server assures accurate face detection and tracking when the face posture meets these constraints:
 - head **roll** (tilt) – ± 15 degrees from frontal position;
 - head **pitch** (nod) – ± 25 degrees from frontal position (several face views should be enrolled);
 - head **yaw** (bobble) – ± 45 degrees from frontal position (several face views should be enrolled).
- Face **enrollment** can be done either from live video or still image.
 - **Image quality during enrollment is important**, as it influences the quality of the face template.
 - **Several images during enrollment** are recommended for better facial template quality which results in improvement of recognition accuracy and reliability.
 - **Additional enrollments** may be needed when **facial hair** style changes, especially when beard or mustache is grown or shaved off.
- Face **record size** in the watch list is **0.5 kilobytes**. A person can have multiple face records stored.
- The matching against a watch list is done in less than 0.5 seconds when the watch list has 20,000 face records.

The **browser-based administration** interface for SentiVeillance Server software allows to manage the system via **remote** connection. Administrators can overview the connected video management systems status, as well as perform these tasks:

- VMS connection management.
- Watch list management, including new persons enrollment.
- Biometric engine configuration.



System Requirements

SentiVeillance Server is designed to receive video streams from video management systems (VMS). SentiVeillance Server software installations and VMS installations are expected to run on **separate machines** and communicate over network. There are specific requirements for VMS and SentiVeillance Server software.

System requirements for SentiVeillance Server software

- **PC or server with x86-64 (64-bit) compatible processor:**
 - **3 GHz** or better processor with **6 cores** is recommended.
 - **AVX2 support is required.** Most modern processors support this instruction set, but please check if a particular processor model supports it.
- A **graphical processing unit (GPU)** is needed for a SentiVeillance Server with **more than 2 cameras** connected to the same PC or server.
 - **NVIDIA GeForce GTX 1080** GPU or better is recommended for systems with up to 10 cameras.
 - at least **6 GB of vRAM is recommended.**
 - **Compute Capability 3.5** or better should be supported by the GPU.
 - **CUDA 10.1** toolkit or newer is required
 - **cuDNN 7.5** library is required.
- At least **8 GB of RAM.**
- **Network connection.** At least **1 gigabit per second** data transfer rate is recommended for real-time processing of multiple high resolution video streams.
- Linux specific:
 - Ubuntu 16.04 OS
 - glibc 2.17 or newer
 - GStreamer 1.10.x or newer with gst-vaapi plugins installed for hardware accelerated video decoding
 - libgudev-1.0 219 or newer
 - wxWidgets 3.0.0 or newer libs and dev packages

System requirements for video management systems (VMS)

SentiVeillance Server software uses face biometrics to perform persons identification and tracking in video streams, which are received from VMS. The results of SentiVeillance Server operations are sent back to the VMS.

SentiVeillance Server is designed to be used with the following video management systems (VMS):

- Luxriot Evo S or Evo Global or newer;
- Milestone XProtect VMS.

A VMS should be deployed on hardware which provides enough resources for generating specified resolution video streams and storing video for a specified time frame. Please refer to VMS manufacturers for specific system requirements.



SentiVeillance Server Trial and Related Products

SentiVeillance Server **30-day Trial** is available for downloading at www.neurotechnology.com/download.html.

SentiVeillance Server is **ready-to-use** software, which requires only connection to operating surveillance video management systems (VMS). No other Neurotechnology products are required for deploying SentiVeillance Server based solution.

These Neurotechnology products are based on the same facial recognition technology, which is used in SentiVeillance Server software (see the corresponding product brochures for more information):

- **SentiVeillance SDK** – allows to create software for performing biometric face identification and pedestrian or vehicle or other object motion tracking using live video streams from high-resolution digital surveillance cameras. SentiVeillance Server software is based on SentiVeillance 7.3 SDK technology.
- **VeriLook SDK** - for development of PC- and Web-based solutions on Microsoft Windows, iOS, Android, macOS and Linux platforms.
- **MegaMatcher SDK** – for development of AFIS or multi-biometric face, fingerprint, iris and palm print identification products.
- **NCheck Bio Attendance** – an end-user employee attendance management application designed as **ready-to-use time and attendance system** with biometric face, fingerprint and iris identification for checking person identity.



Licensing SentiVeillance Server

A license for SentiVeillance Server software installation allows to analyze up to 10 video streams on a computer. The license is required for each computer that runs this software and requires activation. Additional licenses for SentiVeillance Server software can be purchased at any time.

License activation options

SentiVeillance Server software is copy-protected. The following license activation options are available:

- **Internet activation.** A special license file is stored on a computer; the license file allows to run SentiVeillance Server software on that computer after checking the license over the Internet. Internet connection should be available periodically for a short amount of time. A single computer license can be transferred to another computer by moving the license file there and waiting until the previous activation expires.
- **Use a dongle** – this method requires to purchase a dongle (special hardware token) that needs to be connected all the time to the USB port of the computer that runs the SentiVeillance Server software. No online registration required.

Licenses Validity

All SentiVeillance Server software licenses are perpetual and do not have expiration. There are no annual fee or any other fees except license purchasing fee. It is possible to move licenses from one computer or device to another. Neurotechnology provides a way to renew the license if the computer undergoes changes due to technical maintenance.

Licensing Agreement

The Licensing Agreement (https://www.neurotechnology.com/sentiveillance_server_sla.html) contains all licensing terms and conditions.

Note that you unambiguously accept this agreement by placing an order using Neurotechnology online ordering service or by email or other means of communications. Please read the agreement before making an order.



Prices for SentiVeillance Server

- The prices are **effective September 10, 2019**. The prices may change in the future, so please **download and review the latest version** of the brochure before making an order.
- Quantity discounts do not accumulate over time.
- Prices do not include local import duties or taxes.
- Product shipping costs depend on delivery country

SentiVeillance Server installation licenses

Price per license	€ 4,900.00
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License management

Volume license manager	€ 16.00
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SentiVeillance Server licenses can be ordered:

- online, at www.neurotechnology.com/cgi-bin/order.cgi
- via a local Neurotechnology distributor; the list of distributors is available at www.neurotechnology.com/distributors.html