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Face
identification
for surveillance
applications

VeriLook Surveillance SDK

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Face identification for video surveillance applications

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VeriLook Surveillance SDK is intended for developing biometric software that performs face identification using live video streams from high-resolution digital surveillance cameras. The SDK is based on VeriLook facial recognition technology and is used for **passive biometric identification** – when passers-by do not make any efforts to be recognized. List of possible uses includes law enforcement, security, attendance control, visitor counting and other commercial applications.

The VeriLook Surveillance SDK allows to create applications for Microsoft Windows and Linux platforms.

- Real time face detection, template extraction and matching against watchlist database.
- Simultaneous multiple face tracking in live video.
- Automatic operation allows to log and report face appearance, match and dissapearance events, as well as to enroll new faces from video stream and add them to watchlist automatically.
- Available as multiplatform SDK that supports multiple programming languages.
- Reasonable prices, flexible licensing and free customer support.

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VeriLook Surveillance Algorithm Features and Capabilities

VeriLook Surveillance 1.1 SDK extends the VeriLook algorithm for working with surveillance cameras. The VeriLook Surveillance 1.1 SDK has these specific capabilities:

- **Real time performance.** Verilook Surveillance technology performs face detection, features extraction and template matching with the internal database in real time. The technology is designed to run on multi-core processors to achieve fast performance.

- **Multiple face tracking**. Once detected, the faces are tracked in all successive frames from the video source until they disappear from camera field of view.

- **Automatic operation.** A system based on VeriLook Surveillance 1.1 SDK is able to log face appearance, disappearance and tracking. The detected faces are matched the watchlist in the internal database and recognized faces are immediately reported to the system. The system uses face tracking for automatic enrollment from video stream and adding new facial templates to watch list on the fly.

- **Multiple cameras support.** A PC running a system based on VeriLook Surveillance 1.1 SDK can accept video from more than one camera simultaneously. Note, that using several cameras with one PC reduces the overall system performance, as each camera requires to run a separate instance of VeriLook Surveillance 1.1 component on the same PC. Using several cameras with one PC is not recommended for crowded areas.

- **Video files support.** VeriLook Surveillance also accepts data from video files. The video files are processed in real time as coming from a virtual camera, therefore a hour-long video will be processed in one hour.

Technical Specifications

All specifications are given for a PC with Intel Core2 processor (with 4 cores) running at 2.66 GHz and one camera connected to the PC.

VeriLook Surveillance has certain tolerance to face posture that assures face detection and tracking:

- head roll (tilt) – ±180 degrees (configurable);
  ±15 degrees recommended as it is the fastest setting which is usually sufficient for most near-frontal face images.
- head pitch (nod) – ±15 degrees from frontal position.
- head yaw (bobble) – ±15 degrees from frontal position.

VeriLook Surveillance 1.1 algorithm technical specifications	
Minimal frame size	640 x 480 pixels
Minimal face size for face recognition	40 pixels between the eyes
Frame rate when tracking up to 3 faces	More than 10 frames per second
Watch-list database matching time	Less than 1 second*
Maximum watch-list database size	Limited by amount of **free RAM**

* up to 50,000 records in the database; larger database yelds slower response time.

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VeriLook Surveillance 1.1 SDK components

VeriLook Surveillance 1.1 SDK is based on the VeriLook Surveillance 1.1 technology that is specially designed for integrating biometric facial recognition into video surveillance systems. Face templates created with VeriLook Surveillance SDK are fully compatible with VeriLook 3.2/3.3/4.0 SDK and MegaMatcher SDK multi-biometric technology.

VeriLook Surveillance 1.1 SDK includes Camera Manager library for Microsoft Windows and Linux that allows to perform simultaneous capture from multiple cameras.

Components	Microsoft Windows (32 & 64 bit)	Linux (32 & 64 bit)
• VeriLook Surveillance 1.1 component	1 license	
• Camera manager library	+	+
Programming tutorials		
• C++	+	+
• C#	+	
• Visual Basic .NET	+	
Programming tutorials		
• C	+	+
• C#	+	
Documentation		
• VeriLook Surveillance 1.1 SDK documentation	+	

VeriLook Surveillance Component

The VeriLook Surveillance Component performs real-time detection and tracking of all near-frontal faces from live video stream. The component is able to track multiple faces simultaneously and match them with faces from internal database (i.e. a watch-list of suspects or a list of company employees). New faces may be automatically enrolled to the database.

Camera Manager library

Camera Manager library works under Microsoft Windows and Linux and provides functionality for working with cameras. The library supports a range of high-resolution digital surveillance cameras and other cameras that provide DirectShow interface for Windows platform, or Video4Linux interface for Linux platform.

The list of supported cameras is available below in the "System Requirements" section.

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System requirements

- At least **Intel Core2** CPU with **4 cores** running at 2.66 **GHz** or equivalent multi-core processor from other manufacturer

- At least **1 GB** of free RAM

- A **high-resolution digital camera**. The camera resolution may vary depending on the actual application. The recommended resolution is about 1 Megapixel, as processing video from cameras with higher resolution will require more free RAM and more powerful processor to keep the acceptable frame rate.
  These supported cameras are suitable for using with VeriLook Surveillance 1.1 SDK:
    - **Axis M1114** camera (Microsoft Windows only)
    - **Cisco 4500 IP** camera (Microsoft Windows and Linux)
    - **Mobotix DualNight M12 IP** camera (Microsoft Windows and Linux)
    - **PiXORD N606** camera (Microsoft Windows and Linux)
    - **Prosilica GigE Vision** camera (Microsoft Windows and Linux)
    - Any other high-resolution digital camera that is accessible using:
        - **DirectShow** interface for Microsoft Windows platform
        - **Video4Linux** interface for Linux platform.

- Microsoft Windows specific:
    - Microsoft Windows 2000/XP/2003/Vista/7
    - Microsoft DirectX 9.0 or later
    - Microsoft .NET Framework 2.0 or later

- Linux specific:
    - Linux (based on glibc 2.5 or newer)
    - Video4linux

VeriLook Surveillance related products

VeriLook Surveilllance **30-day SDK Trial** and **algorithm demo** applications are available for downloading

at *www.neurotechnology.com/download.html*.

These products are related to VeriLook Surveillance SDK:

- **VeriLook SDK** - a software development kit that allows development of PC- and Web-based solutions on Microsoft Windows, Linux and Mac OS X platforms. See "VeriLook SDK" brochure for more information.

- **MegaMatcher SDK** – intended for development of AFIS or multi-biometric face, fingerprint, iris and palm print identification products. See "MegaMatcher SDK" brochure for more information.

- **FaceCell EDK** – intended for development of embedded and mobile face identification systems. See "FaceCell EDK" brochure for more information.

Licensing VeriLook Surveillance SDK

To **develop** a product based on VeriLook Surveillance technology, an integrator should obtain VeriLook Surveillance 1.1 SDK (EUR 790).

Integrators can develop only an **end-user** product using VeriLook Surveillance 1.1 SDK and sell/install the product to their own customers. If the integrator wants to develop and sell a VeriLook Surveillance based development tool (with API, programming possibilities, programming samples, etc.), he/she will need a permission from Neurotechnology and shall sign a special VAR agreement.

To **deploy** the product that was developed with VeriLook Surveillance 1.1 SDK, the integrator should obtain only additional VeriLook Surveillance 1.1 component licenses for product installations. Also the additional VeriLook Surveillance 1.1 component licenses may be required during development of the product. The additional VeriLook Surveillance 1.1 component licenses can be obtained by VeriLook Surveillance 1.1 SDK customers at any time.

VeriLook Surveillance installation license allows to install and run VeriLook Surveillance component on **one PC** or on **one server CPU**. The following license types are available:

- Single computer license.
- Enterprise license.

VeriLook Surveillance 1.1 SDK includes 1 VeriLook Surveillance 1.1 component license.

Please also refer to VeriLook Surveillance SDK Software License Agreement on Neurotechnology web site for all licensing terms and conditions.

Single computer license

A single computer license allows to install and run a VeriLook Surveillance component installation on a single Personal Computer or on one Server CPU. The component license will not be lost if computer will be reinstalled.

The following license management options are available:

- license activation online by communicating with Neurotechnology's server;
- license activation by email;
- license activation using volume license manager;
- license management using volume license manager on LAN or Internet.

Single computer license activated over Internet or by email is not suitable for virtual environments. Volume license manager used as a dongle or license management over network would be required.

VeriLook Surveillance enterprise license

VeriLook Surveillance enterprise license allows an **unlimited use** of VeriLook Surveillance components in the end-user products in the certain territory, market segment or project. These limitations would be included in the licensing agreement.

The enterprise license price depends on the application size and the number of potential application's users within the designated territory, market segment or project. For more information please contact us.

Volume license manager

Volume license manager is **used on site by integrators or end users** to manage obtained licenses for VeriLook Surveillance components. It consists of license management software and a dongle, which are used to store the number of obtained licenses. An integrator or an end-user can use the volume license manager in the following ways:

- **Activating the single computer licenses.** An installation license for a VeriLook Surveillance component will be activated for using on a particular computer. The license quantity for the VeriLook Surveillance component in the license manager will be decreased by the amount of activated licenses.

- **Managing the single computer licenses on LAN or Internet.** The license manager allows to manage installation licenses for VeriLook Surveillance components across the computers on LAN or Internet. The number of managed licenses for a VeriLook Surveillance component is limited by the number of licenses in the license manager. No license activation is needed and the license quantity is not decreased. Once issued, the license is assigned to certain computer on the network.

- **Using a license manager as a dongle.** The volume license manager containing at least one license for a VeriLook Surveillance component can be used as a dongle that allows to run VeriLook Surveillance component installation on a particular computer.

Additional VeriLook Surveillance component installation licenses for the license manager can be purchased anytime. Neurotechnology will generate a special update file and send it to you. Then you will just have to enter the file to the license manager to add these purchased licenses.

Prices for VeriLook Surveillance SDK

- The prices are **effective from April 2, 2010**. 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.
- The prices do not include any local import duties or taxes.
- Product shipping cost depends on delivery country
- Our customers can gain a discount for our products by getting the Solution Partner status.

VeriLook Surveillance SDK

VeriLook Surveillance 1.1 SDK	€ 790.00

VeriLook Surveillance 1.1 installation licenses (prices per single computer license)

Quantity	Price per unit
1-9	€ 270.00
10-19	€ 200.00
20-49	€ 180.00
50-99	€ 155.00
100-199	€ 140.00
200-499	€ 125.00
500-999	€ 110.00
1000-1999	€ 99.00
2000-3999	€ 88.00
4000-7999	€ 79.00
8000 and more	Please contact us for more information

License management

Volume license manager	€ 16.00

VeriLook Surveillance SDK enterprise license

VeriLook Surveillance 1.1 SDK enterprise license	Please contact us for more information

VeriLook Surveillance SDK and related products 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*

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