

# BioFace® Sky Hawk

## Criminal Identification from Recorded Surveillance Video



**PROBLEM** Major manufacturing centers in China experience a constant influx of low income workers seeking jobs. This instability, combined with extreme population density, results in crime, and a heavily loaded police department. Some of these cities have deployed thousands of surveillance cameras throughout the city. Management centers at key points allow officers to observe selected cameras simultaneously. But manual observation of such a large number of cameras is overwhelming, and much criminal activity goes undetected.

**SOLUTION** BioFace® Sky Hawk is an automated Facial Recognition application that extracts facial images from a live video stream and searches a database of known criminal images for a match. Sky Hawk was implemented with the BioFace® Automated Biometrics ID System, a powerful software platform and SDK for application development.

There were several challenges to a Facial Recognition solution:

1. The installed base of surveillance cameras were several years old, and not of sufficient quality to support facial recognition.
2. Video stream analysis is processing intensive; the projected expense for thousands of live video streams was prohibitive.
3. Current Facial Recognition technology requires controlled lighting conditions, neither too dark nor too bright.

The police identified approximately 50 high crime areas (transportation hubs, hotels, etc.) and installed higher quality cameras to support Facial Recognition. They placed the cameras largely at indoor locations, but also in shaded exterior spots with controlled lighting conditions. All available photographs and sketches of known criminals were scanned into a database. Sky Hawk analyzes each live video stream to identify faces, then searches for a match in the criminal database. Upon a match, alerts are issued, and police officers are informed and potentially dispatched to the location.



**IMPACT** Implementation of BioFace® Sky Hawk had an immediate effect. Three months after the FR system went online, police reported a 10% drop in crime.

### CHARACTERISTICS

<b>Market</b>	Municipal Law Enforcement
<b>Client</b>	A Metropolitan Police Department
<b>Location</b>	China
<b>Integrator</b>	PinnacleSoft Technologies
<b>SW Platform</b>	BioFace® Automated Biometrics ID System
<b>FR Algorithm</b>	L1 Facelt® G6
<b>Source Image</b>	Live Video Stream Surveillance Cameras

### FEATURES

<b>Database Size</b>	Small: 50 Thousand Facial Images
<b>Database Content</b>	Known and Suspected Criminals
<b>Network</b>	Private WAN & LAN
<b>Server</b>	1 IBM BladeCenter 13 blades, 2G RAM/Blade, Intel dual Xeon 3.6 Mhz
<b>Clients</b>	20 Management Stations Geographically Distributed
<b>Performance</b>	- Realtime Search/Match <500msec / image - Template Creation 1sec / template / proc

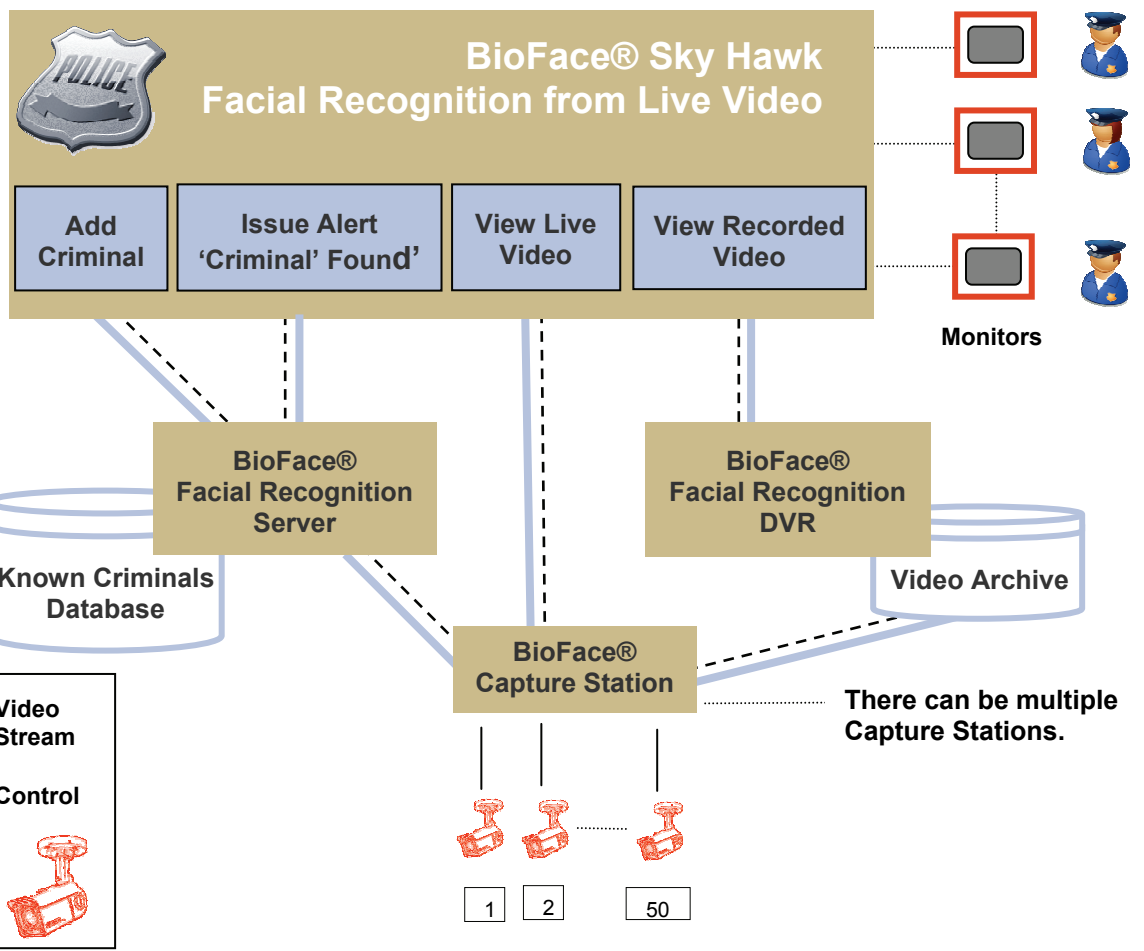


Sky Hawk Management Stations display live video from video channels (cameras) selected by the operator.



BioFace® provides DVR functionality for the video streams, automatically populating the database with all faces during the recording process. The video is also indexed for each segment containing a face.

The top left panel of Sky Hawk's BioFace® window shows live video from one of the video channels (cameras). The system automatically identifies and extracts facial images from the video and displays them in the lower panel. When a match is detected, the system alerts the operator and shows the potential match in the upper right panel.



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