



for SMART Lockup

MIMOS Mi-SP / Mi-Surveillance

Traditional video surveillance systems rely on manual detection of abnormalities and become important only after a crime has taken place. The video analytics technology in MIMOS Mi-SP / Mi-Surveillance employ proprietary algorithms to automatically detect and alert suspicious or violation activities in the lock-up cells and the perimeter of the lock-up building, without the need of a manual patrolling security officer. It also provides intelligent monitoring clients to enhance the situational awareness in the area under surveillance.

Overview

MIMOS Mi-SP / Mi-Surveillance is a versatile video surveillance platform for lock-up environment that includes intelligent elements of advanced video analytics and flexible architecture. The platform is capable of detecting suspicious or violation activities based on the movement and behavior of the object in the lock-up cell and perimeter of the lock-up for day and night. It also provides intelligent monitoring clients to enhance the situational awareness in the monitoring centre. This includes the chronological event list and snapshot, 2D/3D model to provide location of the events and event based forensics tool to retrieve event based on various searching criteria.

Video Analytics Features

MIMOS Mi-SP platform comprised In-cell video analytics and perimeter-based video analytics features.

The in-cell video analytics features include:

- Climbing Detection** – able to detect climbing activity in the cell
- Loitering at Toilet Area Detection** – able to detect the object presence in toilet for fixed long duration
- Aggressive Detection** – able to detect fast movement or aggressive activity in the cell such as pushing and punching
- Tampering Detection** – able to detect any attempt to move the camera view
- Sudden Stand up Detection** – able to detect stand up position from sleeping positions



Climbing detection

Loitering at toilet area



Aggressive Detection

Tampering Detection



Sudden Stand up Detection

The perimeter-based video analytics (outside cell) includes:

- Restricted Region Detection** – able to detect the object presence at the location with limited access
- In/Out Detection** – able to detect the in and out of the object movement with direction in any location of the lock-up

- Entering/Leaving Detection** – able to detect the entering and leaving of object movement in the monitoring area
- Crowd Density Detection** – able to detect the presence of high occupancy of people
- Object Left Detection** – able to detect object that left by people
- Object Removed Detection** – able to detect the removal of object from the scene
- Counting** – able to count number of people in two directions



Restricted Region Detection
Entering/Leaving Detection

In/Out Detection

Crowd Density Detection



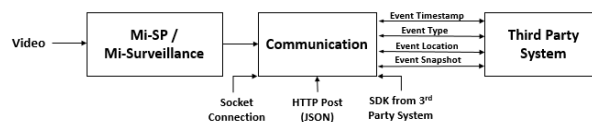
Object Left Detection

Object Removed

Counting

Event Metadata Display and Management

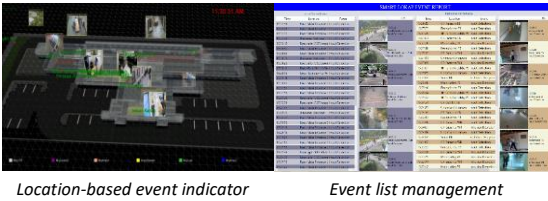
The event metadata from Mi-SP / Mi-Surveillance platform is displayed and managed by MIMOS Mi-Surveillance Smart Client. Alternatively it can also be managed by third party clients. When use third party clients, the event metadata would be accessible through standard interfaces such as provided socket connection libraries, HTTP POST (JSON) or SDK from third party system.



MIMOS Mi-Surveillance Smart Client Features

- Matrix Viewer**
 - Real-time camera view for live monitoring
 - Real-time event alert (Visual and audio)
 - Able to select cameras for display
 - Able to arrange camera for display sequence
 - Able to click any camera view for high resolution view display in another client interface (HD Viewer)
- HD Viewer**
 - Display camera view in high resolution with real-time event alert
 - Adaptive change to respective high resolution camera view based on the chosen camera view in Matrix Viewer
- Event list management**
 - Display timeline of the event alert in chronology
 - Event alert details include event snapshot with date, time and event type
 - Clickable event details or event snapshot for event clip playback
 - Display the history of the previous event clip playback

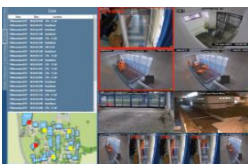
- d) **Location-based event indicator**
- Display the size and shape of site building, cells and camera in 3D view
 - Real-time event alert by colour change in camera location and event snapshot display
 - Navigation mode includes rotation and zooming



- e) **Event video search and retrieval for forensics application**
- Able to search past event clip based on date, time, location and event type
 - Able to playback the searched event clip
 - Able to export out the search report

- f) **Dynamic masking for privacy preservation**
- Mask overlay at privacy area at live monitoring
 - Opacity of the mask is configurable
 - Flexible mask to variety size and shape of privacy area
 - Event processing is not effected by masking
 - Allow 24 hours video recording without masking

- g) **Comprehensive and integrated viewer**
- Real-time camera view for live monitoring
 - Real-time event alert (visual and audio)
 - 2D map for camera location indicator with event alert
 - Display of event snapshot and event details in chronology
 - Allow event clip playback
 - Allow event video search and retrieval
 - Event based recording



Technology Benefits

The main impacts of MIMOS Mi-SP / Mi-Surveillance are:

- Real-time Monitoring and Alert of the Human Behavior**
Mimos Mi-SP / Mi-Surveillance can be applied for both automated human behavior monitoring and alert the security personnel in real-time.
- Event Driven Surveillance**
The surveillance events are detected based on specific events and it can be categorized. Forensics can be conducted based on various search criteria.
- Increased Operational Efficiency**
Video monitoring and analysis potentially increases daily work efficiency by providing situational awareness to users through various event fusion and analysis
- Open innovation Platform**
The platform is camera agnostics and can be customized and integrated to 3rd party system, for example Video management system.
- Patented Algorithm/Technology**
Mimos' in-house algorithms to provide high accuracy and low false alarm rate

Product Requirements

Configuration Requirement		
Resolution	352 x 288 (CIF)	
Frame/Second	15fps	
Hardware Requirement		
Server Machine	Processor: Intel® Core i7-6700 CPU@ 3.40 GHz (4 cores) Memory: 8GB Disk Storage: 500 GB	Support up to 12 video analytics
	Processor: 2 x Intel® Xeon® CPU E5-2697 v4 @ 2.3GHz 2.3 GHz (18 cores) Memory: 64 GB Disk Storage: 8TB	Support up to 96 video analytics
Client Machine	Processor: Intel® Core i5-4250U CPU@ 1.3 GHz (2 cores) Memory: 4GB Disk Storage: 500GB Processor: Intel CPU E3-1245 @ 3.3 GHz (4 cores) Memory: 16 GB Disk Storage: 500GB	Support each MIMOS Smart Client, separately. It is able to support 42 or 16 camera views display, respectively.
Network Bandwidth	2 Mbps per camera	
Software Requirement		
Operating System	Windows 7/Windows Server 2012 or above	
Dot Net Framework	Microsoft .NET 4.5 and above	
Database	Microsoft SQL Server Express 2012	