MIMOS Surveillance Platform for Video Analytics (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-Surveillance employ proprietary algorithms to automatically detect and alert suspicious or violation activities within the live feed of security cameras, 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-Surveillance is a versatile video surveillance platform that executes intelligent elements of advanced video analytics and flexible architecture. The platform is capable of detecting suspicious or violation activities based on the movement and behaviour of an object in a monitoring area day and night. It provides intelligent monitoring clients to enhance situational awareness in a monitoring centre. This includes a chronological event list and snapshot, 2D/3D model to provide locations of events and event-based forensics tool to retrieve events based on various search criteria.

Video Analytics Management Server Features

MIMOS Mi-Surveillance platform executes the following advanced video analytics features:

- **Climbing Detection**
  Detects climbing activity in a monitoring area.
- **Loitering Detection**
  Detects object presence in a monitoring area for a fixed long duration.
- **Aggressive Detection**
  Detects fast movement or aggressive activity in a monitoring area.
- **Tampering Detection**
  Detects any attempt to move the camera view.
- **Restricted Region Detection**
  Detects object presence at a location with limited access.
- **In/Out Detection**
  Detects the ins and outs of object movement with direction in a monitoring area.
- **Entering/Leaving Detection**
  Detects the entering and leaving of object movement in a monitoring area.
- **Crowd Density Detection**
  Detects the presence of high occupancy of people.
- **Object Left Detection**
  Detects objects left by people.
- **Object Removed Detection**
  Detects the removal of objects from a scene.
- **Counting**
  Counts the number of people in two directions.

Technology Summary
Mi-Surveillance

A versatile video surveillance platform executes intelligent elements of advanced video analytics with flexible architecture.

Video Analytics Management Server Features

- Climbing detection
- Loitering detection
- Aggressive detection
- Tampering detection
- Restricted region detection
- In/Out detection
- Entering/Leaving detection
- Crowd density detection
- Object left detection
- Object removed detection
- Counting

Event Metadata Display and Management

Smart Client Features

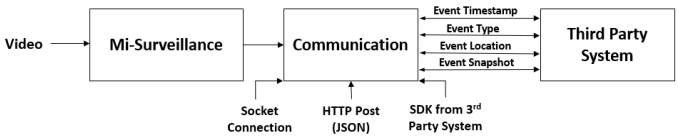
- Matrix viewer
- HD viewer
- Event list management
- Location-based event indicator
- Event video search and retrieval for forensics application
- Dynamic masking for privacy preservation
- Comprehensive and integrated viewer

Technology Benefits

- Real-time monitoring and alert of human behaviour
- Event-driven surveillance
- Increased operational efficiency
- Open innovation platform
- Patented algorithm/technology

Event Metadata Display and Management

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



Event metadata interfaces

Smart Client Features

- **Matrix Viewer**
  - Real-time camera view for live monitoring.
  - Real-time event alert (visual and audio).
  - Select cameras for display.
  - Arrange cameras for display sequence.
  - Click any camera view for high resolution view display in another client interface (HD Viewer).
- **HD Viewer**
  - Displays camera view in high resolution with real-time event alert.
  - Adaptive change to respective high resolution camera view based on a chosen camera view in Matrix Viewer.

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Event List Management

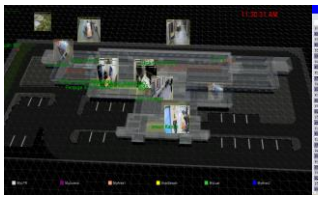
- Displays timeline of event alert in chronological order.
- Event alert details include event snapshot with date, time and event type.
- Clickable event details or event snapshot for event clip playback.
- Displays the history of previous event clips playback.

Location-based Event Indicator

- Displays 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.

Matrix viewer

HD viewer



Location-based event indicator

Event list management

Event Video Search and Retrieval for Forensics Application

- Search past event clips based on date, time, location and event type.
- Playback searched event clip.
- Export search report.

Dynamic Masking for Privacy Preservation

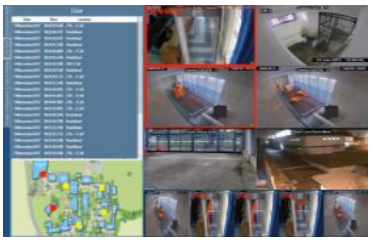
- Mask overlay at privacy area of live monitoring.
- Mask opacity is configurable.
- Flexible mask for a variety of sizes and shapes of privacy area.
- Event processing not effected by masking.
- Allows 24 hours of video recording without masking.

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.
- Allows event clip playback.
- Allows event video search and retrieval.
- Event-based recording.

Forensics

Dynamic masking



Comprehensive and integrated viewer

Technology Benefits

The main impacts of MIMOS Mi-Surveillance are:

Real-time Monitoring and Alert of Human Behaviour

MIMOS 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 categorised. 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 agnostic and can be customised and integrated with a third party system, for example a video management system.

Patented Algorithm/Technology

MIMOS' in-house algorithms to provide high accuracy and low false alarm rate.

System Requirements

Mi-Surveillance		
Configuration Requirements		
Resolution	352 x 288 (CIF)	
Frame/Second	15fps	
Hardware Requirements		
Server Machine	Processor: Intel® Core i7-6700 CPU@ 3.40 GHz (4 cores) Memory: 8GB Disk Storage: 500 GB	Support up to 8-12 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 72-108 video analytics

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Mi-Surveillance		
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 16-42 camera views display.
Network Bandwidth	2Mbps per camera	
Software Requirements		
Operating System	Windows® 10 or Windows® Server 2012	
Dot Net Framework	Microsoft® .NET 4.5 and above	
Database	Microsoft® SQL Server Express 2012	