AI Powered Face Recognition

Datasheet v4.5B

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AllGoVision

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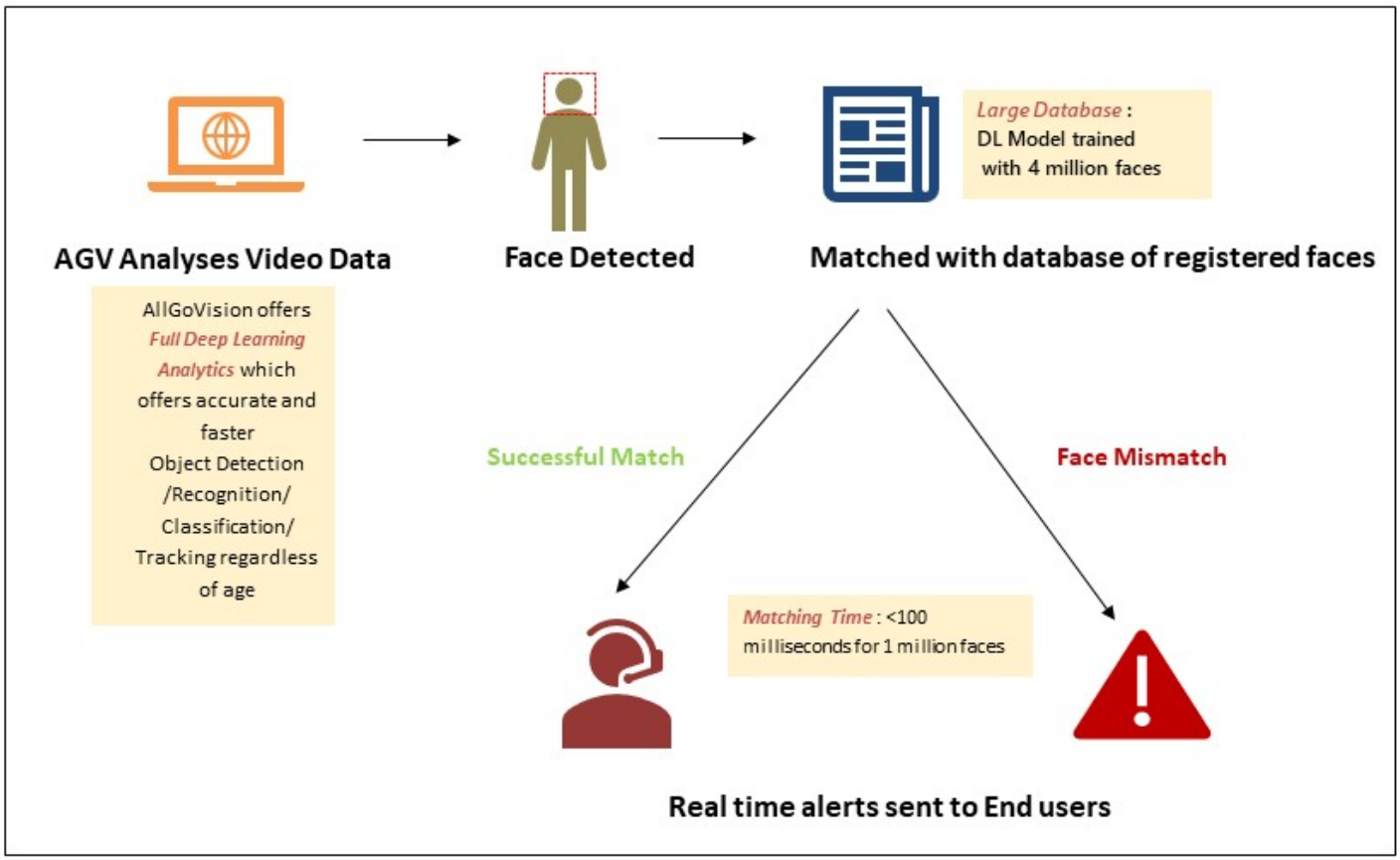
INTRODUCTION

Face Recognition: The Face Recognition feature identifies and verifies human faces in the camera view from a user-assigned video source. It operates by comparing selected facial features in the camera view with the image of the faces stored in the database. Alarms are generated corresponding to a match or mismatch. Supported by Deep Learning, this feature identifies both static and moving agents in conducive environments. It can also be optimized for speed search of faces in a database of up to many million faces. The feature easily integrates with existing infrastructures and produces precise outputs on a real time basis. Common applications include, access control, attendance management, forensic search, and VIP/Blacklist identification.

Deep Learning: A subset of Artificial Intelligence, Deep Learning technology exposes machines to high volumes of tagged data. The machine is then tasked to 'learn', 'analyze', and 'detect' the same information in new datasets which ensures more proficient detection and identification of objects. Since Deep Learning is also powered by robust hardware infrastructure, the analytic output is better and faster.

Use of Deep Learning in Face recognition: The use of Deep Learning for Facial Recognition brings it much closer to human perception. Advanced Deep Learning methods can assess large datasets of human faces and the layered filters can take the minutest facial features into account. This increases the number of parameters considered for matching the faces, thereby increasing the degree of accuracy in facial recognition. Thanks to the technology's improved processing performance and superior object classification capabilities, it can efficiently detect and identify camouflaged faces, fugitives, criminals, etc.



AllGoVision Face Recognition Flow

SYSTEM REQUIREMENTS

AllGoVision analytics has the following system hardware and software requirements.

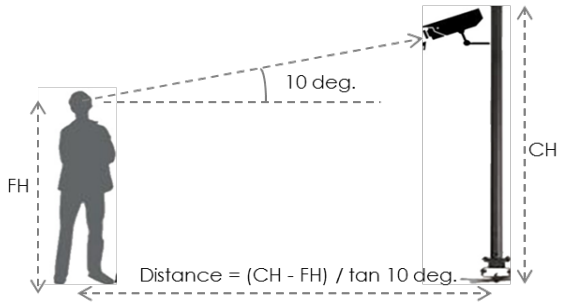
CATEGORY	REQUIREMENT
Operating System	Ubuntu server 18.04, 20.04, 21.04 Windows Server 2016, Windows Server 2019
Network	Ethernet, 1GB or higher recommended
Hardware Requirements	x86_64 Platform, AVX 2 Support 6th Gen and above + Nvidia GPU
Frame Rate	Frame Rate > 10 fps
Database	Maria DB (X64) 10.3.13.0
Stand Alone version camera support	Camera Models from Axis, Pelco, Bosch, Hikvision, Honeywell, IQinvision, Sony, Dahua, Panasonic, Brickcom, Indigovision, Cisco, Samsung, Acti, Digital Watchdog, and others (ONVIF Cameras).
VMS Support	Honeywell DVM, Honeywell Maxpro, Milestone, Genetec, IndigoVision, ExacqVision, Cognyte (Verint), Bosch, Network Optix Note: With VMS all cameras supported by VMS will be supported. Any new VMS/ACS can be integrated, provided SDK/API support.
Reporting & Analysis Software	AllGoVision Alarm Center

INSTALLATION

The software is easy to install and simple to use with intuitive GUI. The AllGoVision Face recognition supports face recognition of people moving towards camera. Perpetual Licenses will be given for each camera which enables the feature on those cameras without any limitation in terms of validity.

Camera Installation Scenario

- ✓ Generic IP cameras with good quality shall be installed at Angular direction, facing the region where people can walk towards camera. Height of installation can be varied, provided the angle of incidence < 10 degrees. For greater height of camera, lens focal length adjustment required, covers a larger distance, subject to angle of incidence <10 degree.
- ✓ The height of installation depends on resolution. The pixel distance between the eyes should be above 45 pixels.
- ✓ The camera should be installed at a proper position so that there is not much Back Light. If there is back light or low light, it should be uniform. The exact installation scenario should be tested before final installation.
- ✓ The important facial features such as eyes, nose and mouth should not have any occlusion. The lighting should be proper enough so that those facial features are discernible.
- ✓ The face of the subject must be visible and without significant shadow that may compromise the ability of the camera to capture the image with correct exposure. Lighting on the subject face should therefore be uniform. The illumination should be above 200 lux. Good constant illumination should be maintained throughout the day.
- ✓ The actual distance depends on camera installation height and associated angle of incidence for the subject face. Typically, the distance at which recognition works, corresponds to a maximum 10-degree angle of incidence. Hence, below results can be achieved:



Typical Calculations	Scenario 1	Scenario 2
Camera Height	6 feet	9 feet
Face Height	5 feet	6 feet
Angle of Incidence	10 degrees	10 degrees
Distance	~ 5.5 feet	~ 17 feet

TECHNICAL HIGHLIGHTS

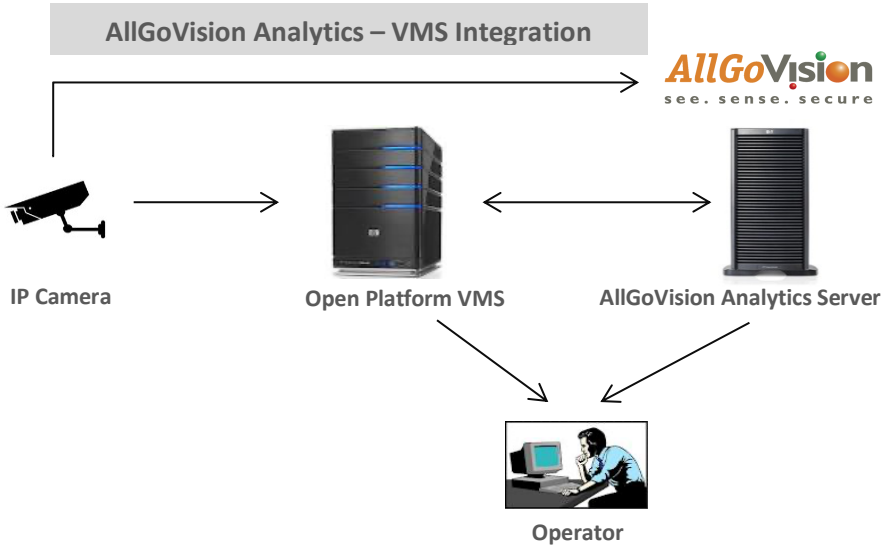
- ✓ Supports both Suspect Search and Access control use cases.
- ✓ NIST 1:N and 1:1 validated
- ✓ Easily integrable with access control systems. Integrated with Lenel and MOXA for access control applications. Any new ACS can be integrated provided SDK/API support from the respective systems.
- ✓ Can learn new faces on the fly – useful for business intelligence.
- ✓ Can work on input feeds from HD to 4K.
- ✓ Supports input frame rate from 8 to 30 fps.
- ✓ Supports H.264 and MJPEG streams.
- ✓ Performs best with uniform lighting conditions.
- ✓ Pitch, roll and yaw between –30 to +30 degrees.
- ✓ Minimum Inter Eye Distance of 40 pixels for recognition.
- ✓ Can detect and track up to 100 faces per frame and detects faces from multiple streams in real time with a higher accuracy of above 90%.
- ✓ Recommended face size for enrolment – 112 * 112; IED – 68 pixels.
- ✓ Source agnostic for enrolment.
- ✓ Can register with 1 photo and supports up to 10 images for registering a person.
- ✓ Tested with up to 12M enrolments.
- ✓ Supports bulk enrolments – 1 click enrolment for multiple classes.
- ✓ Built-in image quality check during enrolment
- ✓ Support customizable Categories/Groups and fields such as First, Middle & Last Name watchlist groups etc. while registering the faces.
- ✓ Real time recognition of faces despite of the changes in facial features of registered images such as facial hairs, spectacles etc.
- ✓ Supports both indoor and outdoor with different age groups and ethnicities.
- ✓ Can recognize the faces along with Age group and gender.
- ✓ Faces can be searched with multiple criteria such as by image, time stamp, ID etc.
- ✓ Customized reports can be generated specific to certain use-cases.

INTEGRATION FLEXIBILITY

AllGoVision Face Recognition application is available in 2 flavors:

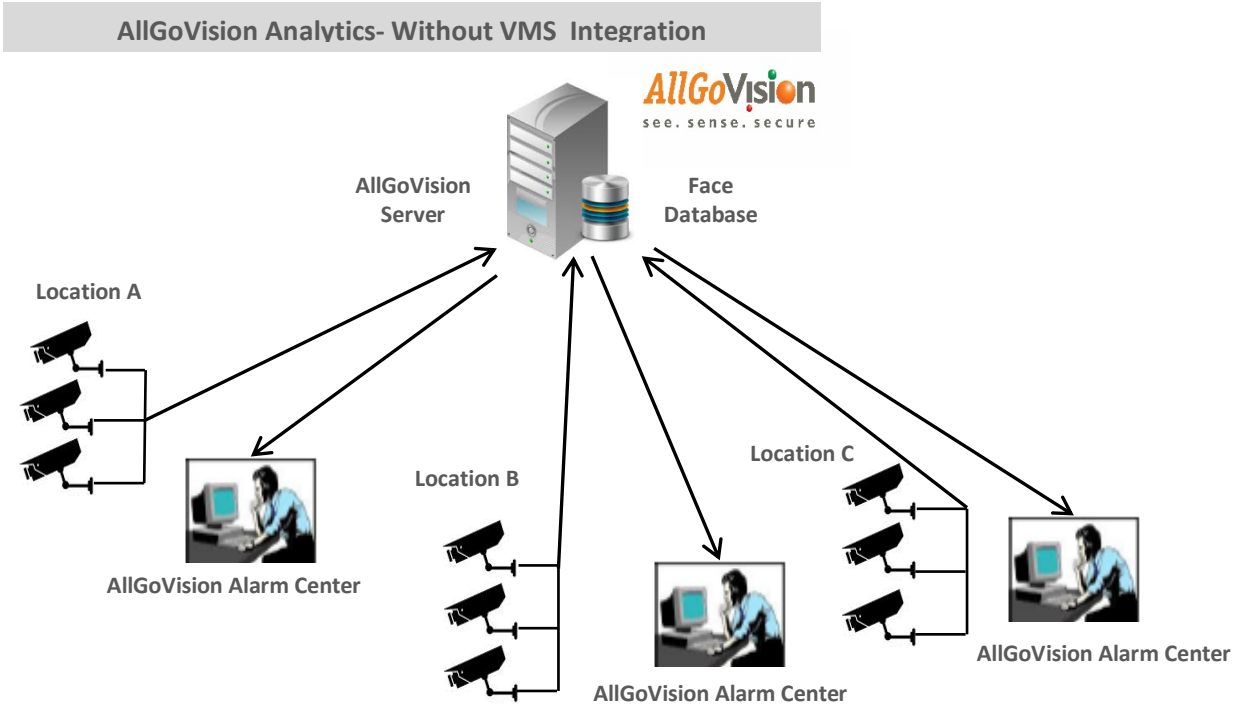
With VMS:

AllGoVision application is based on Open Platform Standards.
It is integrated with many open platform VMS.



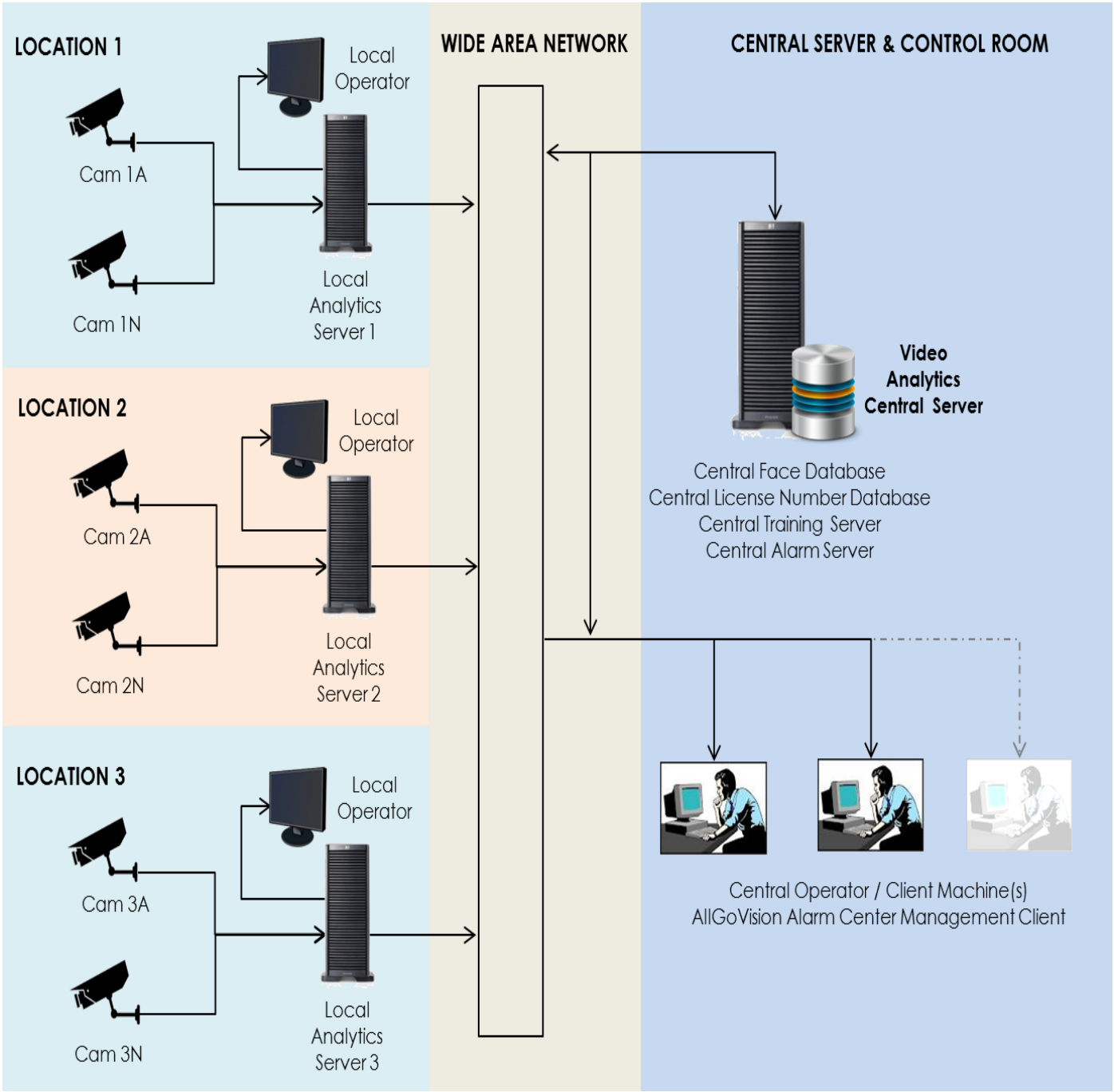
Without VMS:

- It is a standalone application.
- Directly takes the video feed from camera.
- The alarms and reports are seen in AllGoVision Alarm Center.



Federated Architecture

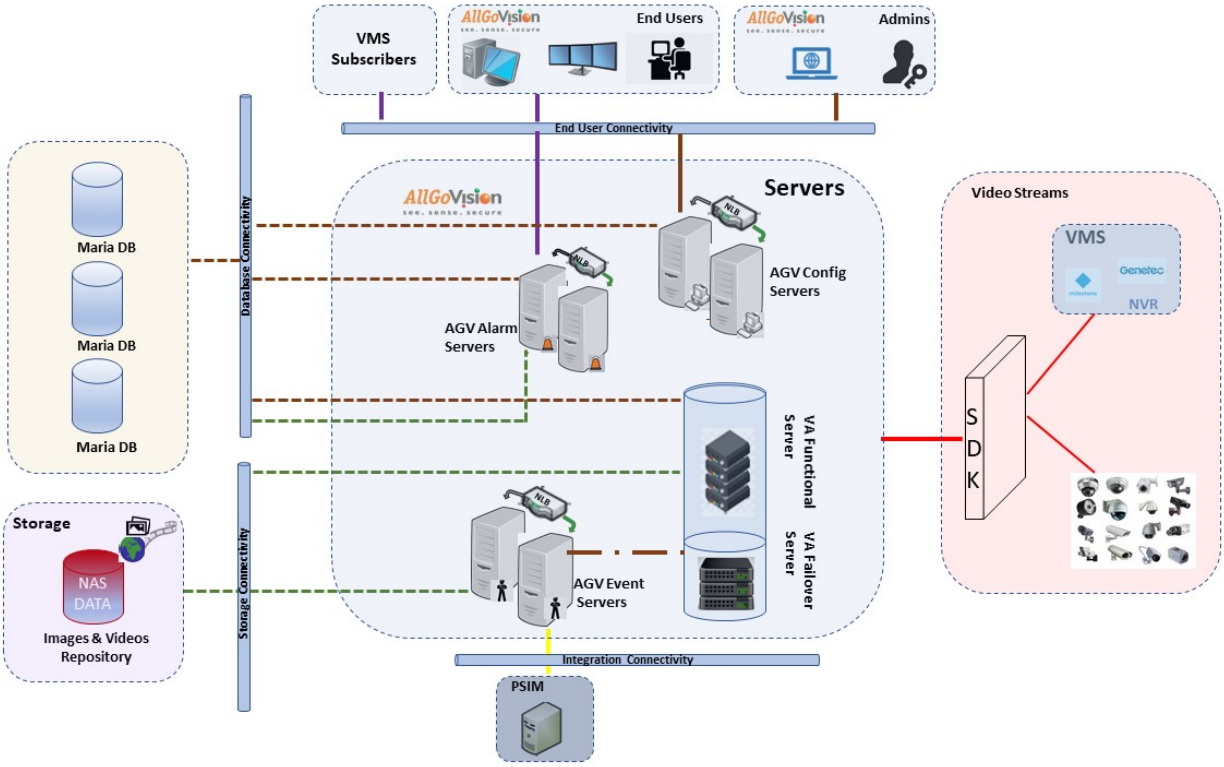
- With Federated Architecture, analytics can be done at local servers and viewed by local operators.
- A central server with a central operator can view all the alarms in the system generated by all the local servers.
- Alarms from different clients can be seen at the central Alarm Center and alarms are differentiated through Client IDs.



Redundancy / Failover

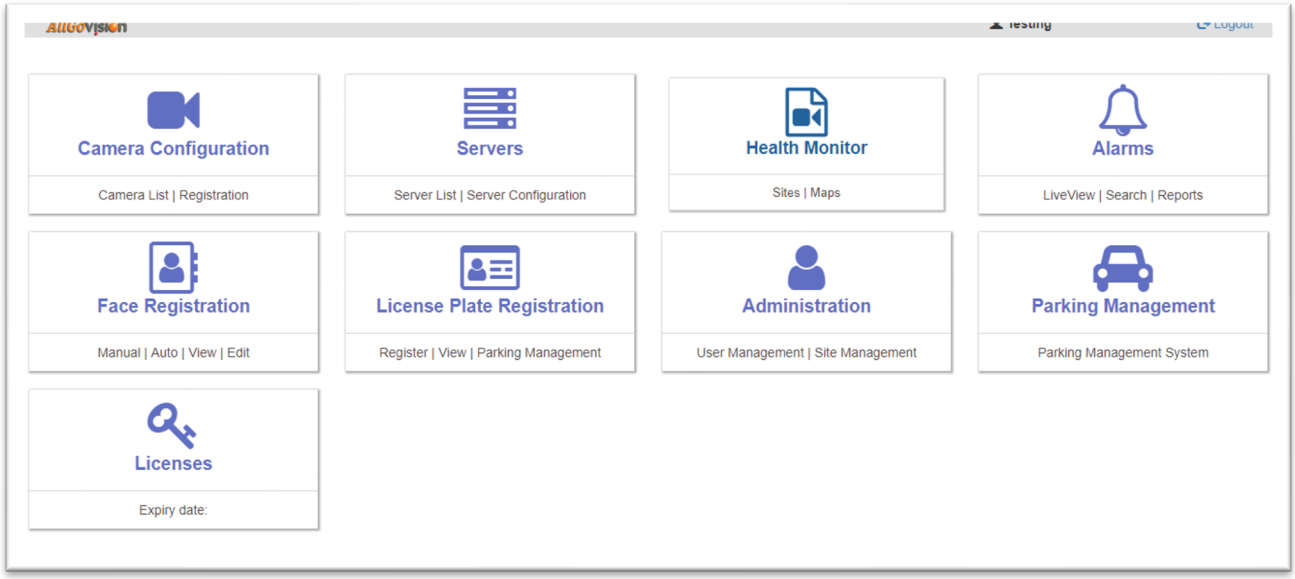
- Config Server can be setup for active/passive redundancy. NLB is used to manage the Active/Passive redundancy. When the active Config Server is up, all requests will be serviced by it. Only when it is down, requests are serviced by the passive Config Server.

- For video analytics, redundancy is achieved by having redundant server capacity for N:1 or 1:1 redundancy. When one or more VA Servers fail, the analytics pertaining to the cameras running in that server are re-assigned to a pre-designated set of servers.



ALLGOVISION GUI

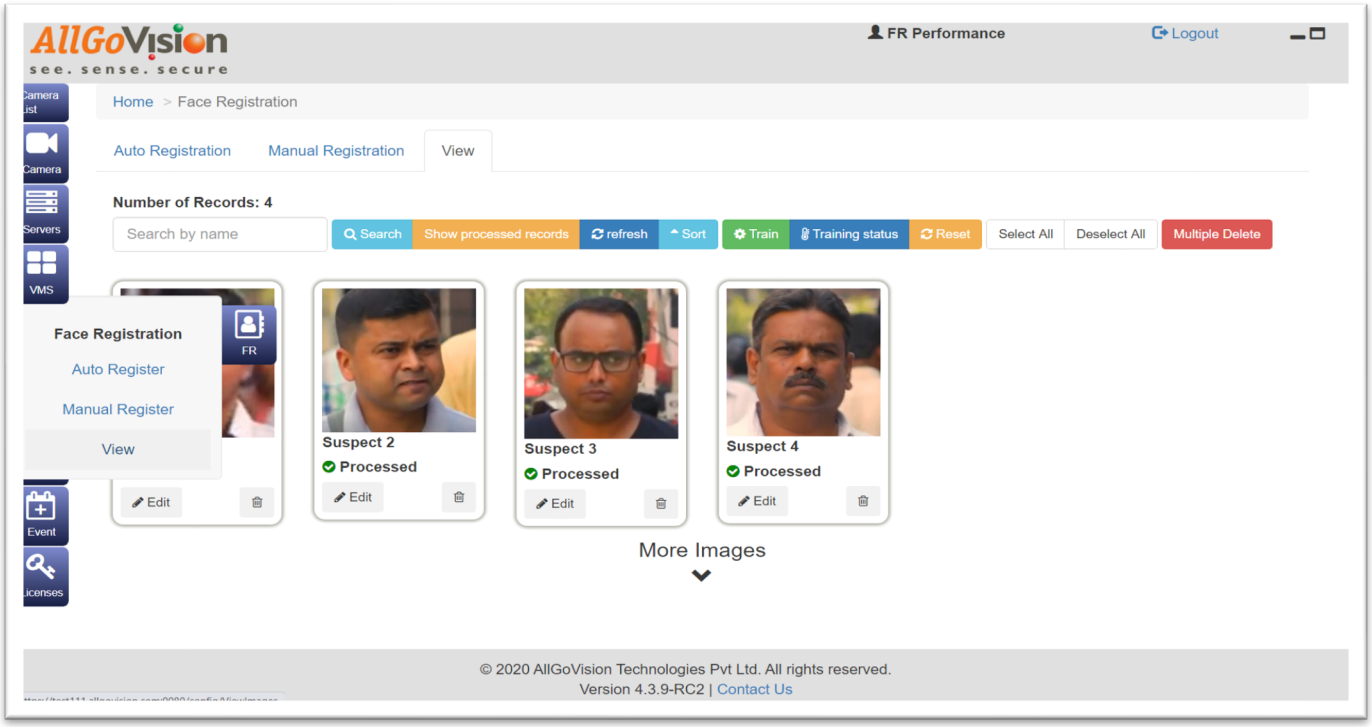
AllGoVision product offers a graphical user interface with the choice of native windows-oriented, tab based, point and pick interface along with the Web UI. The options are provided to add cameras directly or from VMS, provide configuration and view alarms whenever event happens.



AllGoVision Dashboard

Face Registration

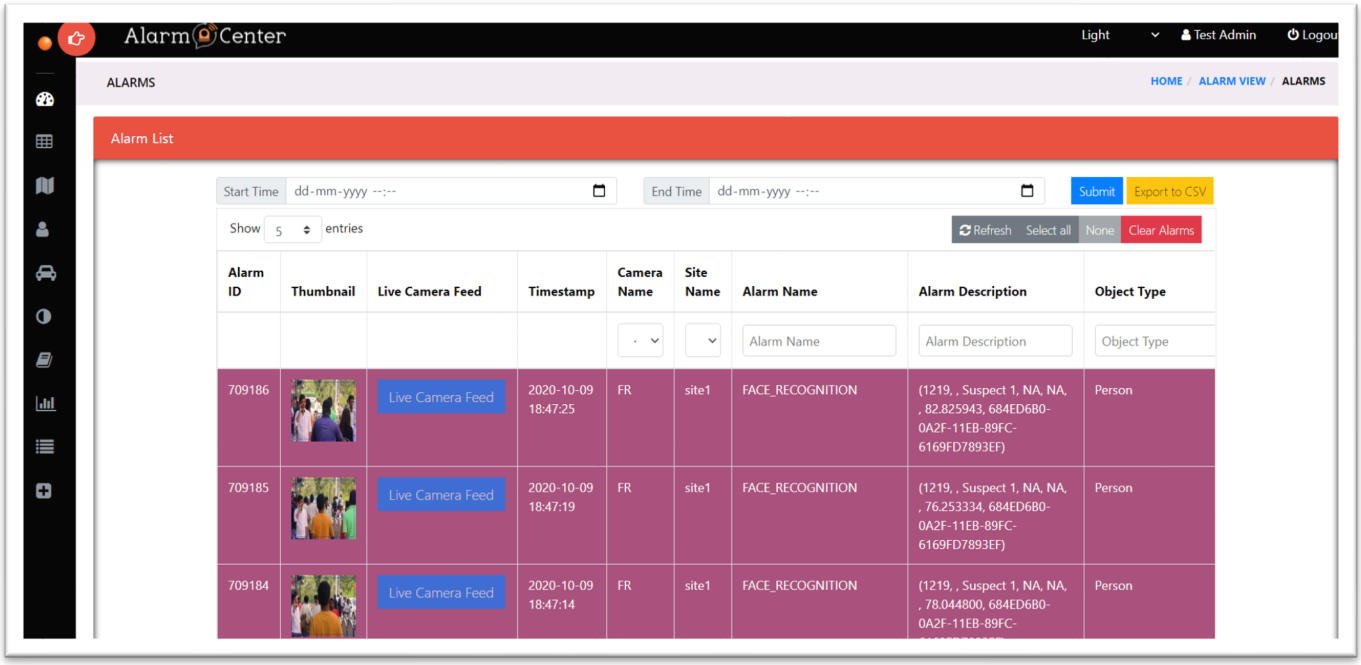
Software allows faces to be registered with multiple faces per person. It is better to have faces with front, left, right, up and down poses. The faces can be automatically captured in live view which can be used for registration. Supports Auto Registration of Faces from Database Images. Face Recognition also supports auto registration of live unknown faces by face id number.



Library of Registered Faces

ALLGOVISION ALARM CENTRE

AllGoVision Alarm Centre is a Client to view all the alarms generated by AllGoVision analytics running on different systems across a LAN. It also supports report generation.



Face recognition alarms in Alarm Center