This Specification Sheet gives the details of system requirements, features and other salient points of AllGoVision Face Recognition application.

Revision Date: January, 2017
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INTRODUCTION

This Specification sheet gives the details of system requirements, features of AllGoVision Face Recognition application.

The product analyses rapidly the video data, detects human face, captures the face image, matches it with database of registered faces, and sends real time alarm based on a successful match (face recognized) or mismatch (face not recognized). The face recognition application can also run on any previously recorded video.

SYSTEM REQUIREMENT

AllGoVision analytics has the following system hardware and software requirements.

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>REQUIREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>Window 7, 8, 10</td>
</tr>
<tr>
<td>Hardware configuration</td>
<td>GPU: NVidia GTX 980 + i7 5930 6 core, 32 GB RAM, 1 TB HDD, Windows 7/8 can support up to 4 channels</td>
</tr>
<tr>
<td></td>
<td>For Client: i7 5930 6-core, 8 GB RAM, 1 TB HDD machine</td>
</tr>
<tr>
<td></td>
<td>Database: 2 TB HDD (Minimum)</td>
</tr>
<tr>
<td>Network</td>
<td>Ethernet, 100 Mbit or higher recommended.</td>
</tr>
<tr>
<td>Hard Disk Space</td>
<td>50 GB for 1 week storage for alarm files (images &amp; videos)</td>
</tr>
<tr>
<td>Database</td>
<td>My SQL 5.5.2</td>
</tr>
<tr>
<td>Resolution &amp; Frame Rate</td>
<td>Resolution: VGA resolution (640x480) and above up to 1080p. Frame rate: 8 fps and above</td>
</tr>
<tr>
<td>VMS Support</td>
<td>Milestone, Genetec, IndigoVision, exacqVision, Honeywell, Cisco, DW, Wavestore</td>
</tr>
<tr>
<td></td>
<td>Note: With any other VMS supported through Alarm Center</td>
</tr>
</tbody>
</table>
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.

Camera Installation Scenario

✓ Generic IP cameras with good quality shall be installed at Angular direction, at a height of about 1.7 m facing the region where people can walk towards camera. Height of installation should be at eye Level to capture the real face.

✓ The height of installation depends on resolution. The pixel distance between the eyes should be above 60 pixels for detection and 100 pixels for recognition.

✓ 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 typical distance at which face recognition works is 3 meters. However, 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:

<table>
<thead>
<tr>
<th>Typical Calculations</th>
<th>Scenario 1</th>
<th>Scenario 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camera Height</td>
<td>6 feet</td>
<td>9 feet</td>
</tr>
<tr>
<td>Face Height</td>
<td>5 feet</td>
<td>6 feet</td>
</tr>
<tr>
<td>Angle of Incidence</td>
<td>10 degrees</td>
<td>10 degrees</td>
</tr>
<tr>
<td>Distance</td>
<td>~ 5.5 feet</td>
<td>~ 17 feet</td>
</tr>
</tbody>
</table>

**Face Registration Requirements:**

Requirements for live captured photo (in auto registration) and database photos:

- Centered and front face with whole face visible and properly focused
- Subject should wear no hat or cap. Face should not be obscured by Hair.
- Subject’s eyes should be open during registration.
- Subject should not have dark glasses/ clear glasses with very thick frame.
- Subject should have neutral facial expression.
- Subject face should be properly exposed, with uniform lighting on face and no strong shadow.
- Lighting intensity should not be less than 250 LUX, with no Back Light / Side Light creating any shadow
- There should not be noise, horizontal stripes & mosaic on the subject face.
- The pixel distance between eyes for Face registration process should be above 100 pixels.
- Multiple poses are preferred. The subject has to face the camera and move his face up and down, left and right slowly to the extent of 20 degrees on each direction.

**Recommended Camera Specification**

- AllGoVision Face Recognition supports a big number of HD Cameras.
- It also supports MJEPG, H.264 and ONVIF protocol with good lens.

**Integration**

AllGoVision Face Recognition application is available in 2 flavours:

**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.
- It works independent of VMS.
- Directly takes the video feed from camera.
- The alarms and reports are seen in Alarm Center.
Following Diagram shows VMS Integration schematic:

ARCHITECTURE

A simple architecture without VMS is shown below. The video feeds from IP cameras are sent to central server. The face detected from video is matched against face database and recognition/non recognition alarm is sent to be viewed in either VMS or 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.
- Alarms from different clients can be seen at the central Alarm Center and alarms are differentiated through Client IDs.

FEATURES & SPECIFICATIONS

- People face should be visible in front of the camera. The people who are walking towards the camera are recognized.
- In the face recognition process, the application provides alarm based on whether the face in the camera view is accepted (recognized) or rejected (not recognized).
- Advanced algorithm.
- The recognized person details are displayed in real time.
- Recognition can be based on Black List and White List
- Last Seen Time of the recognized time is also shown
- The environment is indoor as well as outdoor.
• Accuracy: For Face Detection > 95%, For Face Recognition > 90%
• The camera is able to track the detected face when it is moving and does not generate multiple alarms.
• The detection time is 1-3 sec.
• The face registration is done with 1-10 face images per person.
• The face detection allows ±20 degrees tilt in both x and y direction.
• The face recognition works at various resolutions above 640x480 and up to 1080p.
• Required frame rate above 8 fps.
• Works simultaneously with video analytics for other cameras.

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

Applications

• Black Listed People Recognition
• VIP Identification or White list people identification
• Forensic search and analysis
• Facial Recognition based Access Control
• Facial Recognition based automatic Attendance System
• Face Detection and Recognition based Business Intelligence
  o Viewership Measurement for retail shelf, digital signage – based on face count
  o Customer tracking and statistics – Face Capture, Face Tracking
  o Statistics on Face Analytics – Presence, Frequency, Age Group, Gender

Software Features

• Application can run as service.
• Settings are available for Direct Camera connection.
• Settings are available to send alarms to supported VMS clients and Alarm Center.
• Pulls recorded video from Milestone & Genetec on metadata search.
Face Recognition Snapshot
ALLGOVISION GUI

AllGoVision product offers a graphical user interface with windows-oriented, tab based, point and pick interface. Extensive use of graphical icons, pull-down menus, buttons, check boxes, and radio-buttons are incorporated to reduce typing work to the minimum possible extent.

AllGoVision product GUI consists of tabs:

Server Setup Tab
The server setup tab consists of setup for VMS connection or camera connection.

Analytics Setup Tab
The Analytics setup tab gives options to set the analytics fields for different features. The face recognition settings are completed here.

Advanced Setup Tab
This tab gives options to select advanced settings like camera environment, analytics processing complexity, shadow removal sensitivity, camera view, predefined object size and minimum object size etc.

Report Tab
This tab gives option to plot the statistics of counting features including face counting. Both line and bar charts are possible. This also has auto e-mailer and export of plots and report.

Face Recognition Tab
This tab is used for Face Registration.
ALLGOVISION ALARM CENTER

AllGoVision Alarm Center is a Client to view all the alarms generated by AllGoVision analytics running on different systems across a LAN. Database is MySQL.

Features

• Alarm Popup for latest alarm
• Alarm Preview and Alarm Video Playback options for any of the past alarms
• Displays alarms with date and time stamp
• Search: Filters to search alarms easily based on its types & properties
• Forensic Analysis based on various object properties – size / color / type / time etc.
• Forensic Face Search: searching appearance of a person in recorded video
• Forensic search works with Milestone & Genetec recorded video
• Alarm Management and Reporting of Face Counting
• Option available for Comparison Reports used in Times Series Analysis
• Duration of any face shown in the camera view (Face Presence)
• Frequency distribution map for recognized people (Face Frequency)
• Attendance Recording and Reporting System based on Face Recognition
• Options available for Demographics Analysis (Age & Gender)