

# Eagle Eye Application Note - AN090

## Best Practices for Using Face Match

2026-02-19 Revision 1.0

### Target Audience

This Application Note is intended for Eagle Eye Cloud VMS users and administrators who wish to set up Face Match. This includes installing a bridge-connected device, the 441fm. This document will help you better understand the process and guide you through the installation.

Using Face Match requires QL Stream. To enable the QL Stream features of the Bridge or CMVR, a user who has access to Bridge Settings must first enable QL Stream (RTSP) in Bridge Settings for Local Display: [Link to AN059](#)

### Installing the Face Match device

Follow the instructions below to install the 441fm.

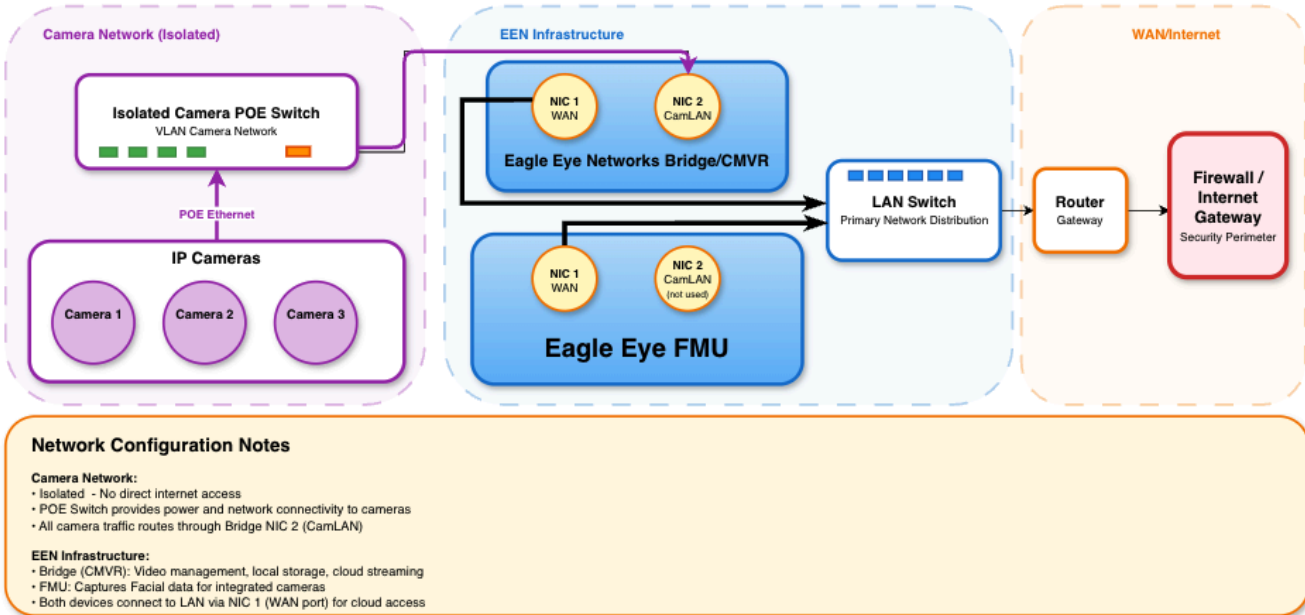
#### Network Overview

The 441fm connects to the Internet via a WAN network interface, which allows the 441fm to access online services.

**Note:** It is highly recommended that you use this configuration to isolate your cameras from the Internet. If your installation does not follow this setup, please contact your provider to change it. Your cameras should not be accessible from the Internet. The figure below illustrates the network architecture of the 441fm and its connections.

## Eagle Eye Networks - Recommended Network Architecture Diagram

Bridge and FMU Topology with Isolated Camera Network



## Firewall Configuration

The Face Match Platform uses specific endpoints for outbound communications. If a firewall is in place at the site, please consult the Quick Start Guide included with the Face Match device to ensure the device can communicate with the internet.

## Installation



1. Unpack the 441fm and find a suitable, secure location.
2. Follow the network overview above to connect the devices together.
3. Connect the power. The device should immediately power on when connected.

If your 441fm has successfully connected to the Internet, it will display its status and report that it is online. View status by navigating the left-hand menu to System > FMUs. Additional details can be found by clicking the kebab menu under **Action** for the device, and selecting **Details** or **Status**:

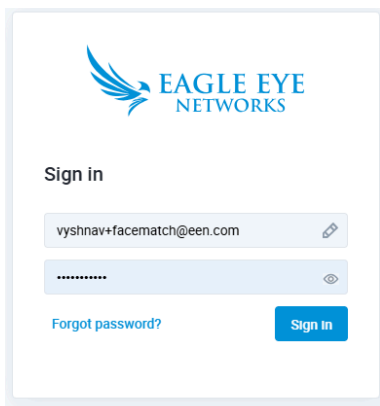
FMUs	
Status	Title
● Online Just now	EEN-MISC-026652

**Note:** If your device is not reporting online, check that it's powered on and has an Internet connection. If you've successfully completed these steps and your device is online, you can continue. If you have any issues, verify the firewall settings if any. If the issues persist, please contact your reseller.

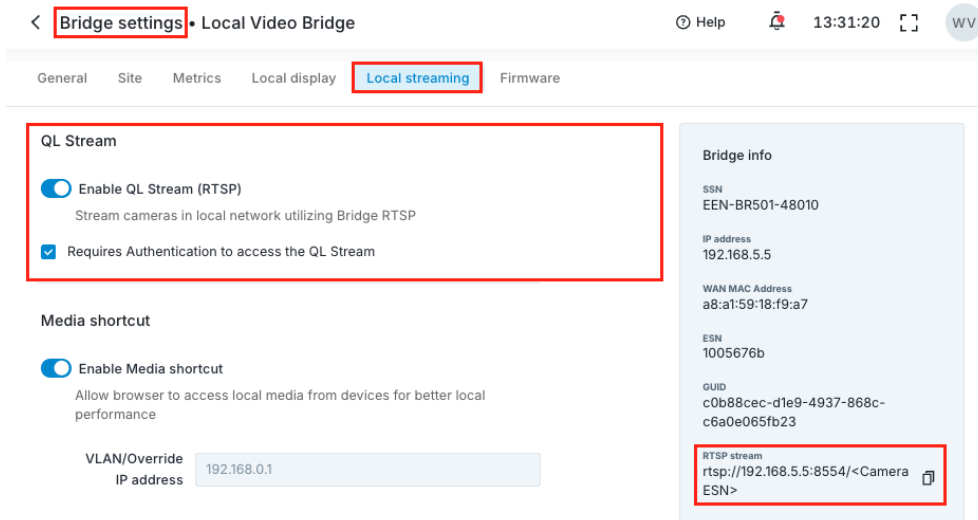
## Configuring Eagle Eye Face Match

Follow the steps below to configure Face Match.

1. Contact Eagle Eye Support and ensure the Bridge firmware is up to date.
2. Open a web browser.
3. Log in to your Eagle Eye Networks account at: <https://webapp.eagleeyenetworks.com/>.

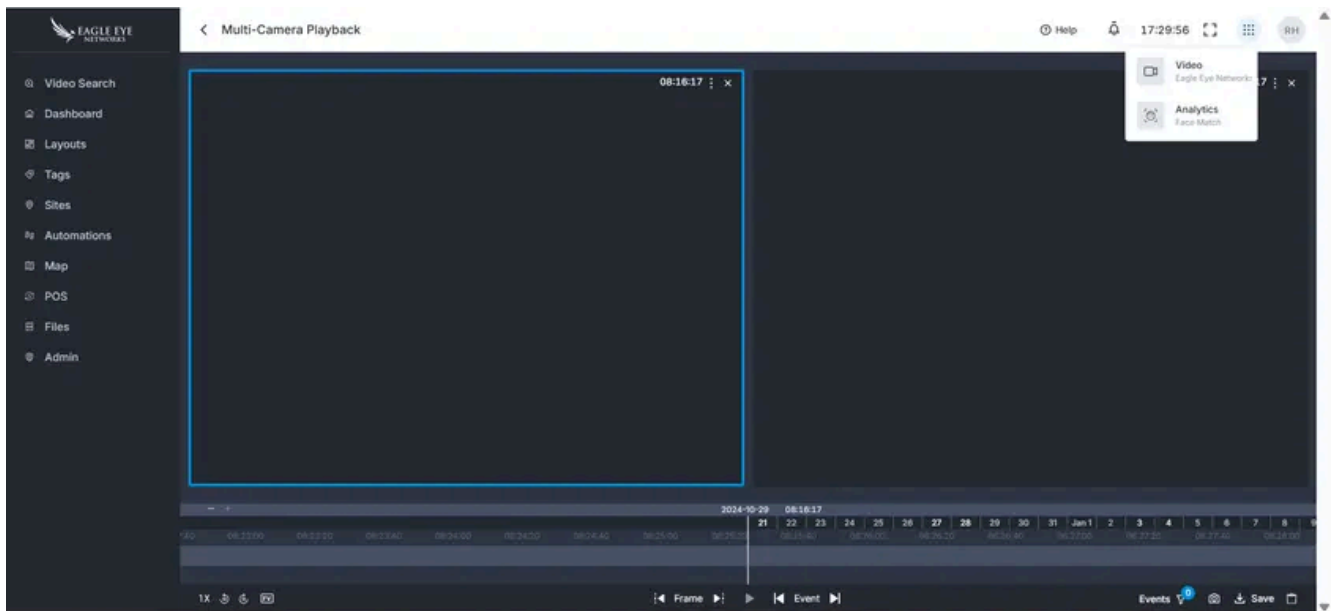


4. Open the **Bridge Settings**, then click **Local Streaming** from the top tabs.
5. Verify enablement, or enable the following settings:
  - a. Enable QL Stream (RTSP) checked
  - b. The default is for stream authentication to be checked; this can be left enabled.

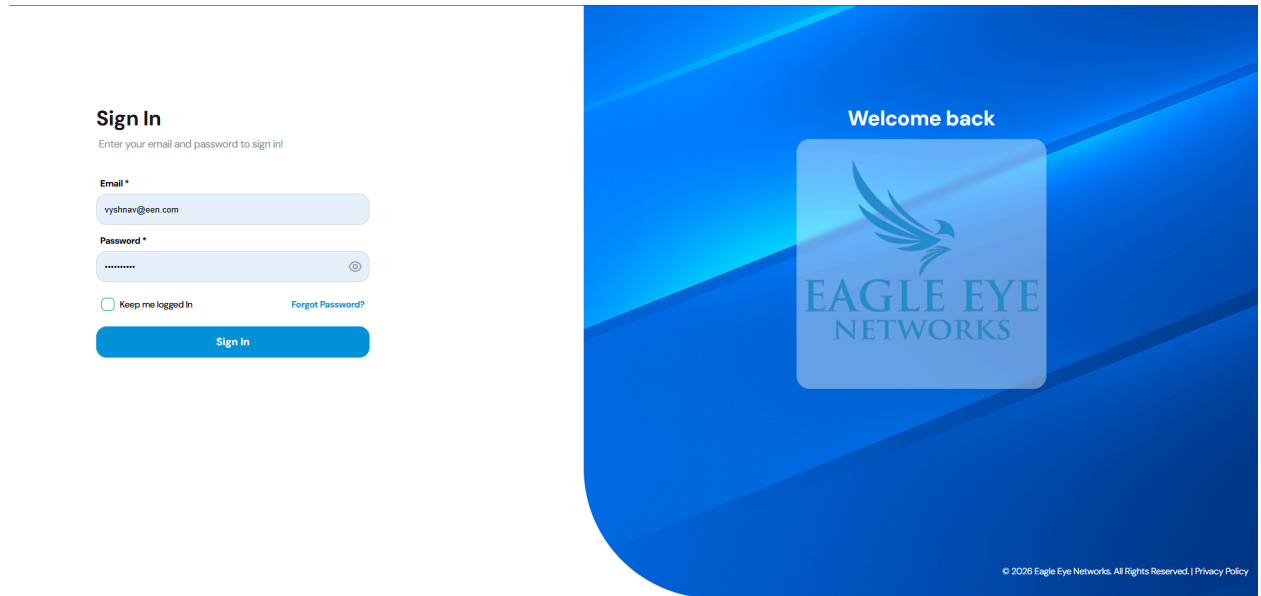


**Note:** If you do not have these settings, you do not have the latest firmware. Please contact Eagle Eye Networks support. If you cannot edit these settings, you do not have sufficient permissions. Please speak with your manager or contact Eagle Eye Networks support.

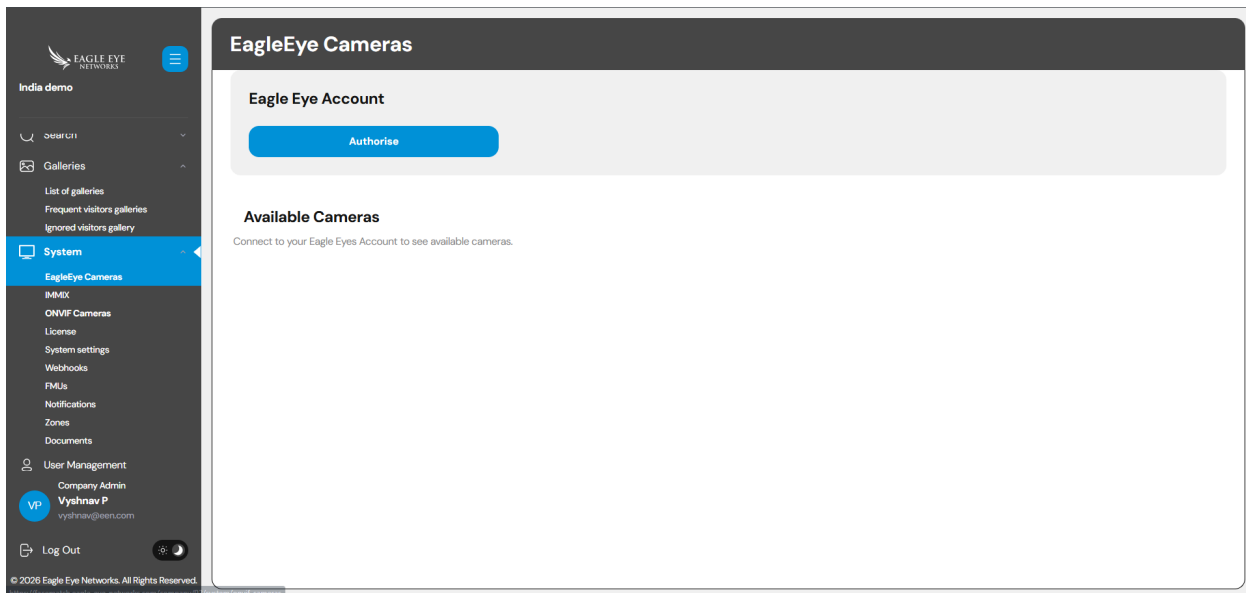
6. Go to the waffle menu and click on it to get an icon to navigate to Face Match



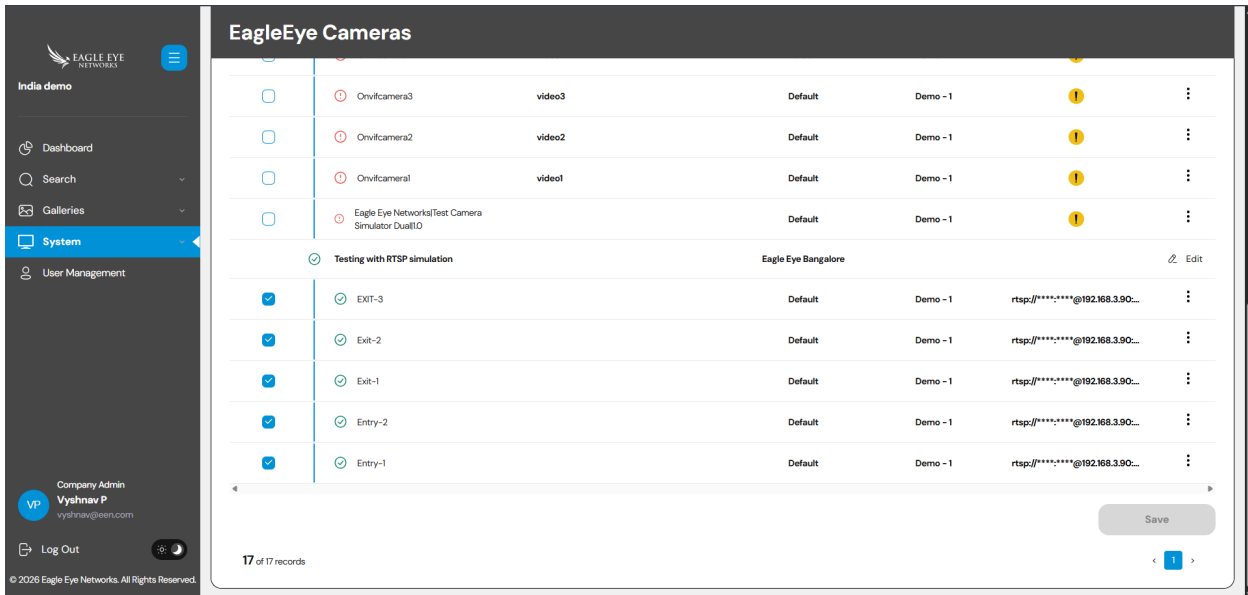
This will open <https://facematch.eagle-eye-networks.com> where you can sign in.



7. From the left-hand menu, navigate down to **System > Eagle Eye Cameras** to authenticate the Eagle Eye Cloud VMS account with the Face Match platform.
  - a. **Note:** The login to the Face Match platform and the login to the Eagle Eye Cloud VMS account may be tied to different users. If that is the case, authenticate the connection to the Eagle Eye Cloud VMS using a user account that has access to the Face Match cameras. If it is the same user, make sure the password used here is for Eagle Eye Cloud VMS, not the Face Match dashboard login.



8. Once authenticated, select the cameras you want Face Match to monitor by checking the checkbox to the left of each camera, then click **Save** when done.



- To configure each camera, click **Edit** on the right of the camera. Make the desired changes to the camera, then click the **Save Camera Settings** button.

## Using Galleries

Once your 441fm is online, the next step is to configure your **Frequent Visitors Gallery**. A gallery is a list of people you want to monitor. For example, a gallery can contain images of your staff or bad actors who are a threat to your premises. They can also be a gallery of loyal customers you want to be alerted to and greet personally.

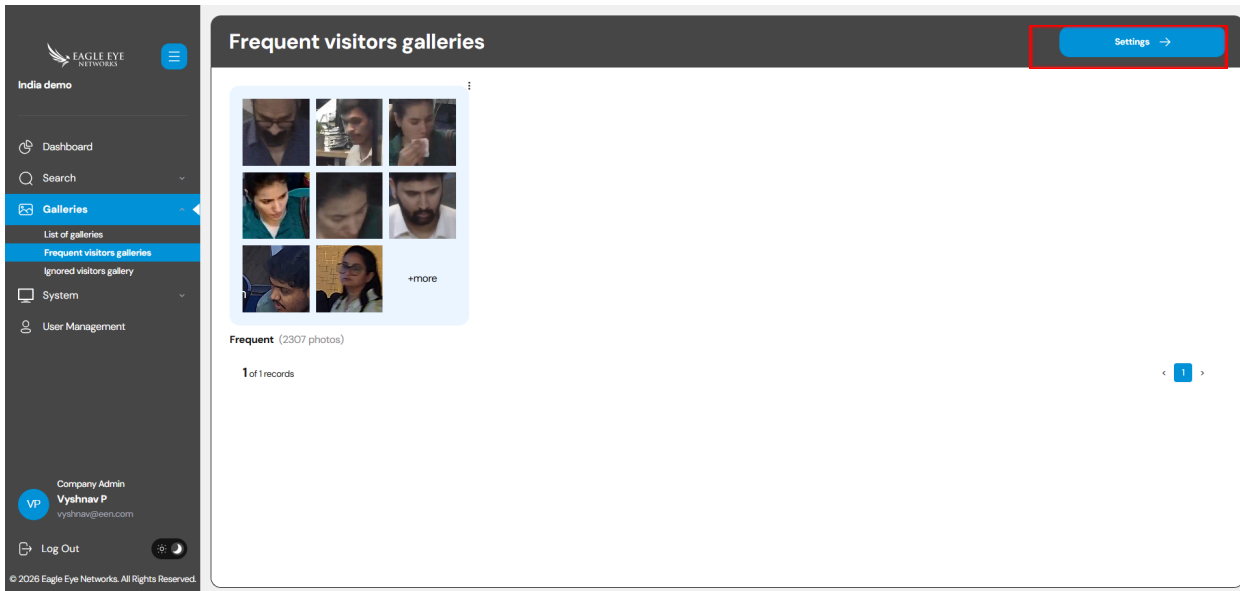
Once a person is added to a gallery, Face Match begins monitoring. If a match is found, a timestamp event will be logged. If you have enabled alerts, you will also receive an email.

### Using Frequent Visitors Galleries

The Frequent Visitors gallery automatically records all visitors who come into view who match the predefined settings of a frequent visitor.

#### Frequent Visitor Settings

To define a frequent visitor, click **Settings** button in the Frequent Visitors galleries.



To define a frequent visitor, configure the following settings:

1. **Visit period:** Sets the interval that determines how frequently a person is seen to be considered a frequent visitor. Each unit represents one day.
2. **Visits count:** Sets the number of visits (times) a person needs to be seen within the visits period. Each unit represents a single visit.
3. **Minimum age:** Sets the minimum age of a person.  
**Note:** The age calculations are estimates.

## Settings of frequent visitors galleries

Here you can change the settings for frequent visitors galleries.

Visits period ⓘ

7 days

Visits count ⓘ

1

Minimum age of visitors

10

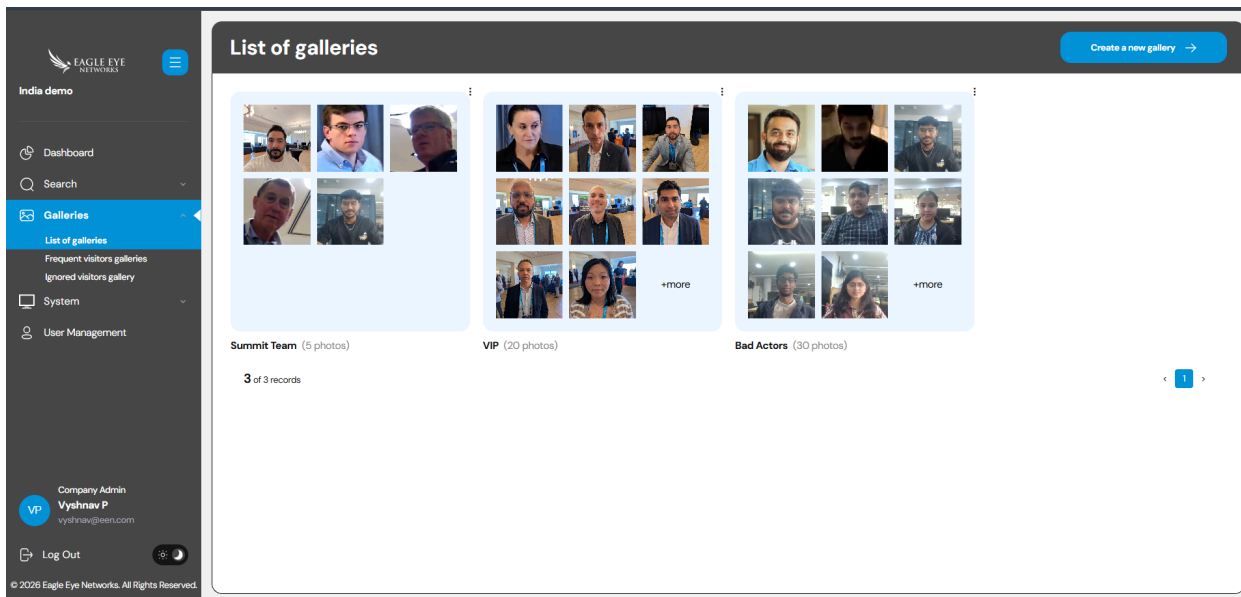
After the changes will be applied all images with people below the specified age will be deleted

Once you have configured the settings, click **Save Changes**.

### Creating a Gallery

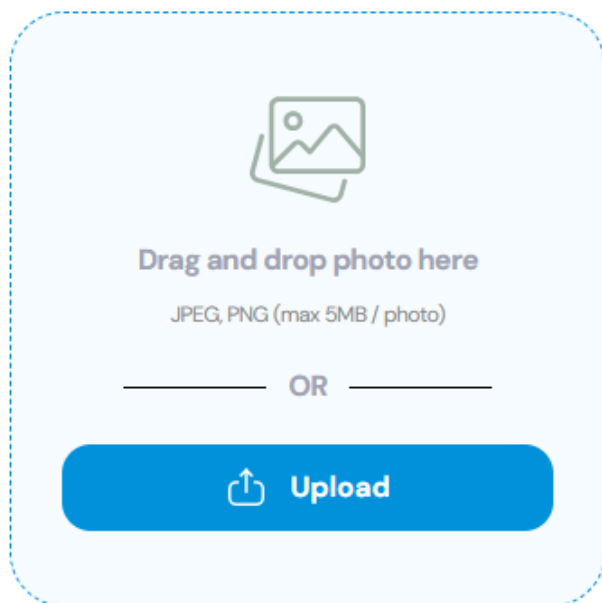
Follow the instructions in this section to create galleries.

1. Expand **Galleries** from the left menu and click **List of Galleries**.



2. Click the **Create a New Gallery** button in the top-right corner.
3. Upload photos of the people you want to monitor by clicking **Upload**.

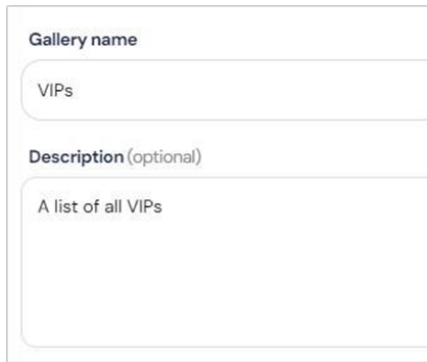
You can upload one photo or a set of photos.



**Note:** There is a limit of 50 photos per gallery, and each image may not exceed 5 MB.

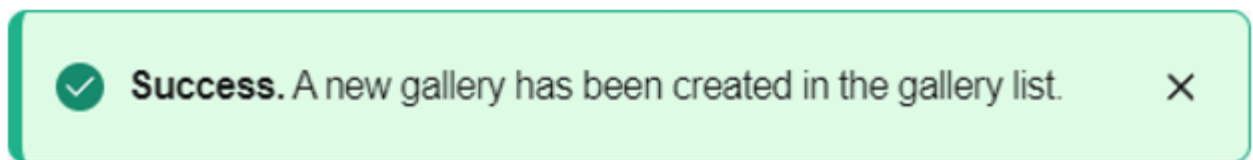
4. Name the image and add a comment if desired.

- Keep adding photos by clicking the **Upload** button and repeating the process  
**Note:** You can remove individual photos by clicking the X in the top-right corner of each photo.
- Once you've uploaded all your photos, name your gallery. You can also provide an optional description.



The image shows a form for creating a gallery. It has two main sections: 'Gallery name' and 'Description (optional)'. The 'Gallery name' section has a text input field containing the text 'VIPs'. The 'Description (optional)' section has a larger text area containing the text 'A list of all VIPs'.

- Click the **Create New Gallery** button found in the bottom right. If you successfully created the gallery, you will see the following message:

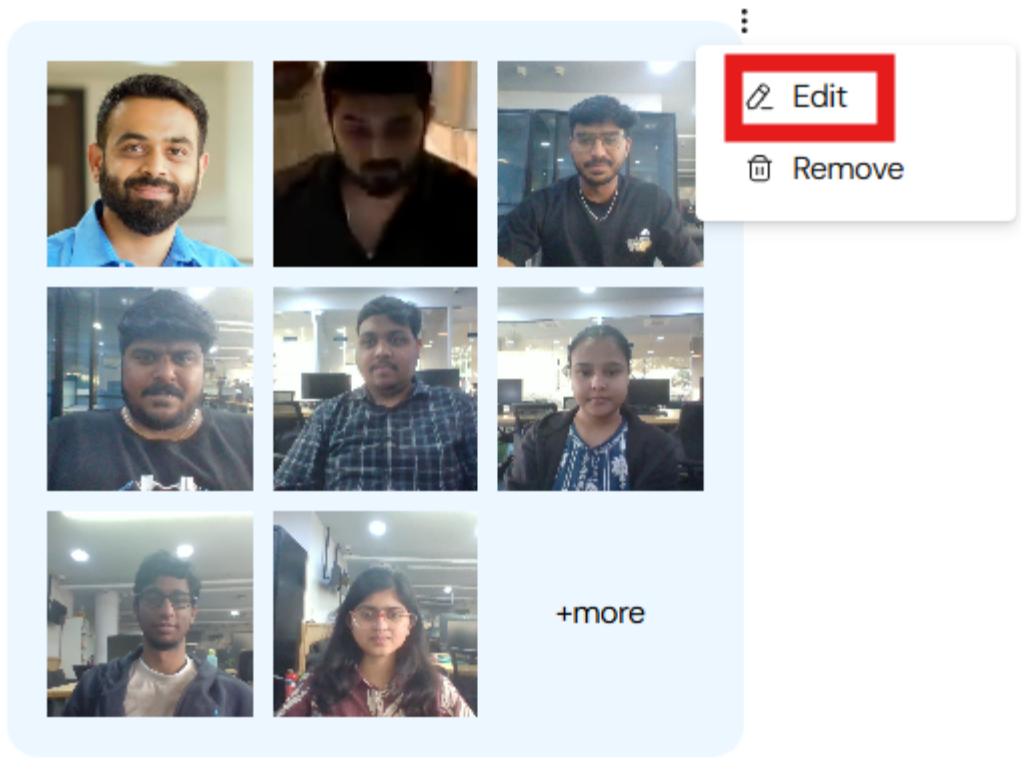


The gallery is now visible in your list and immediately active.

## Editing a Gallery

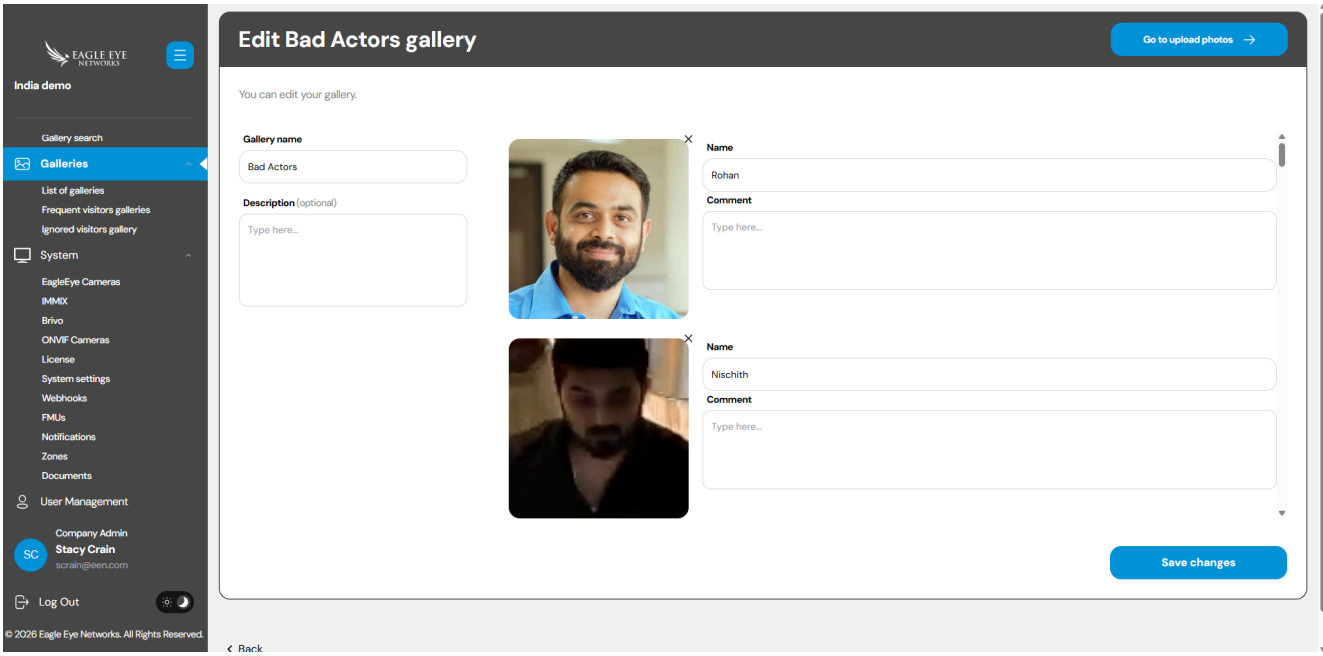
Once you've created a gallery, you can return to it at any time to make changes.

To edit a gallery, go to your gallery list and click on the action menu located at the top right of each gallery, and click **Edit**.



Once in **Edit Gallery** mode, you can perform the following functions:

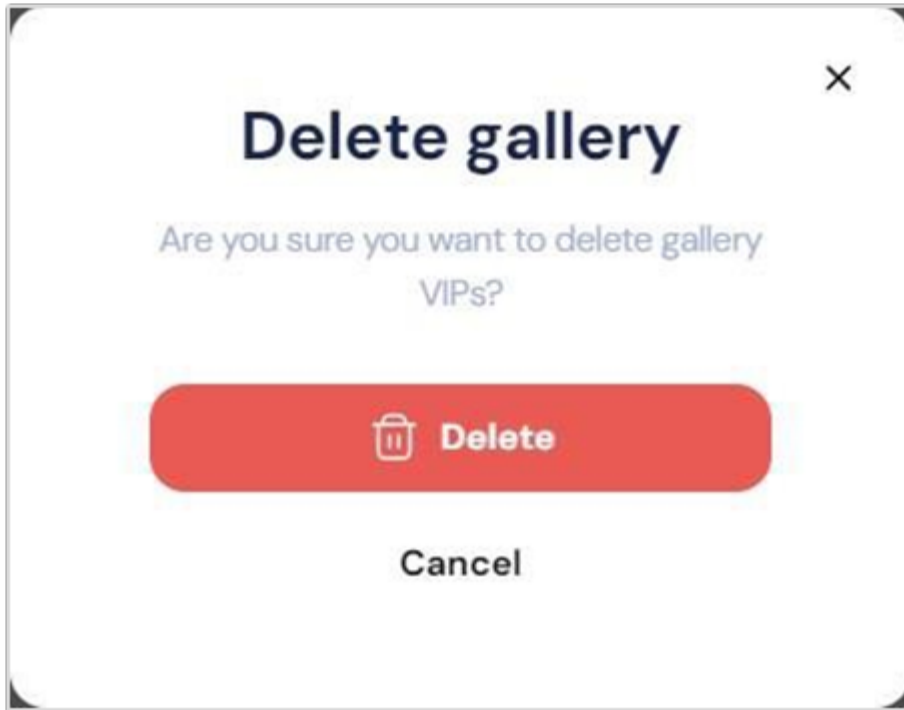
1. Update the Gallery name and description, and click the **Save Changes** button.
2. Remove photos from the gallery by clicking the **X** in the top right of each photo.
3. Upload new photos by clicking the Upload Photos button located in the top right, and follow the same steps as before.



## Deleting a Gallery

If you wish to remove an entire gallery, go to your galleries, select the action menu at the top-right of each gallery, and choose **Remove**. You will then receive a confirmation message.

Click the red **Delete** button to continue, or the **Cancel** button to cancel the action.



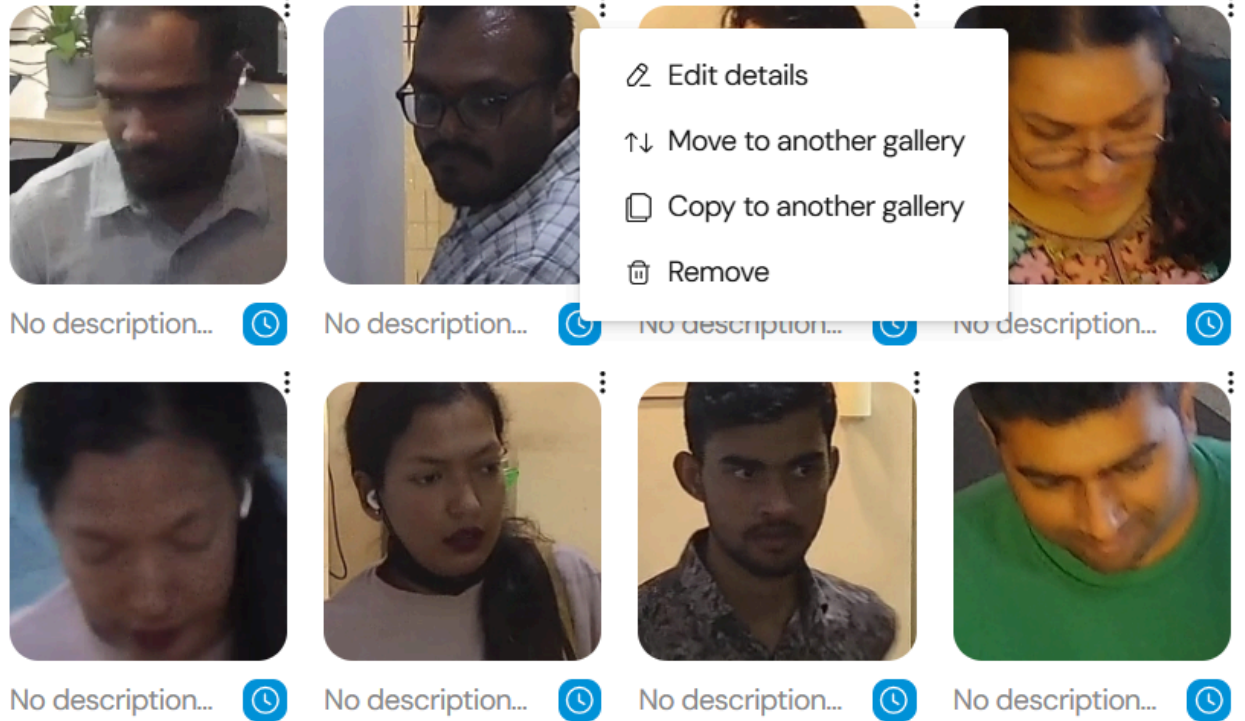
**Warning:** If you choose to remove the gallery, this action cannot be undone.

## Copy to a Fixed Gallery

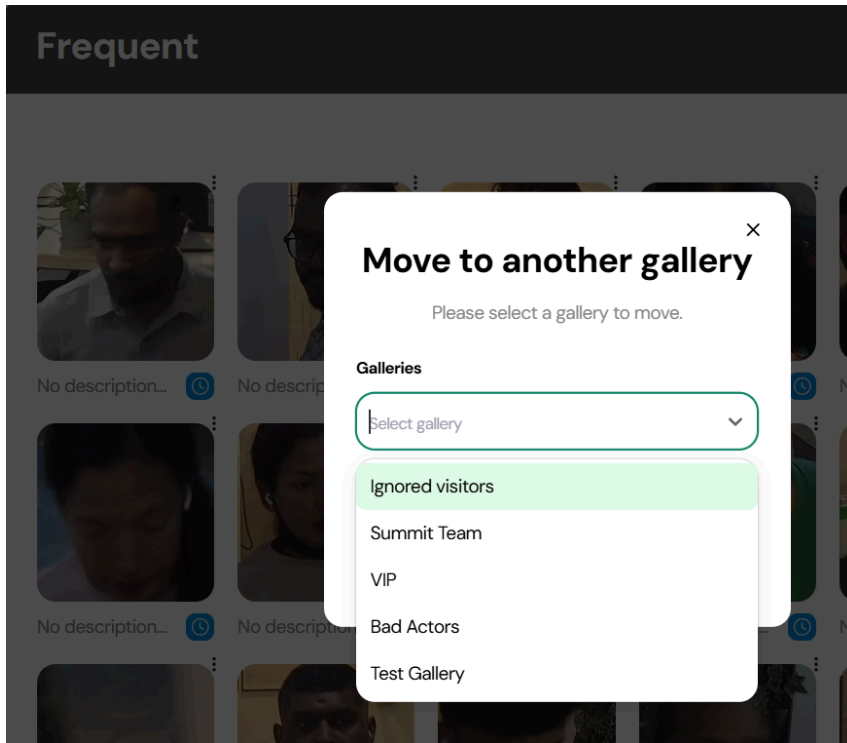
Face Match lets you easily move a person from a frequent gallery to one of your fixed galleries.

1. Open the frequent gallery containing the person.
2. Click the action menu on the top right to the target person and click **Copy to Another Gallery**.

## Frequent



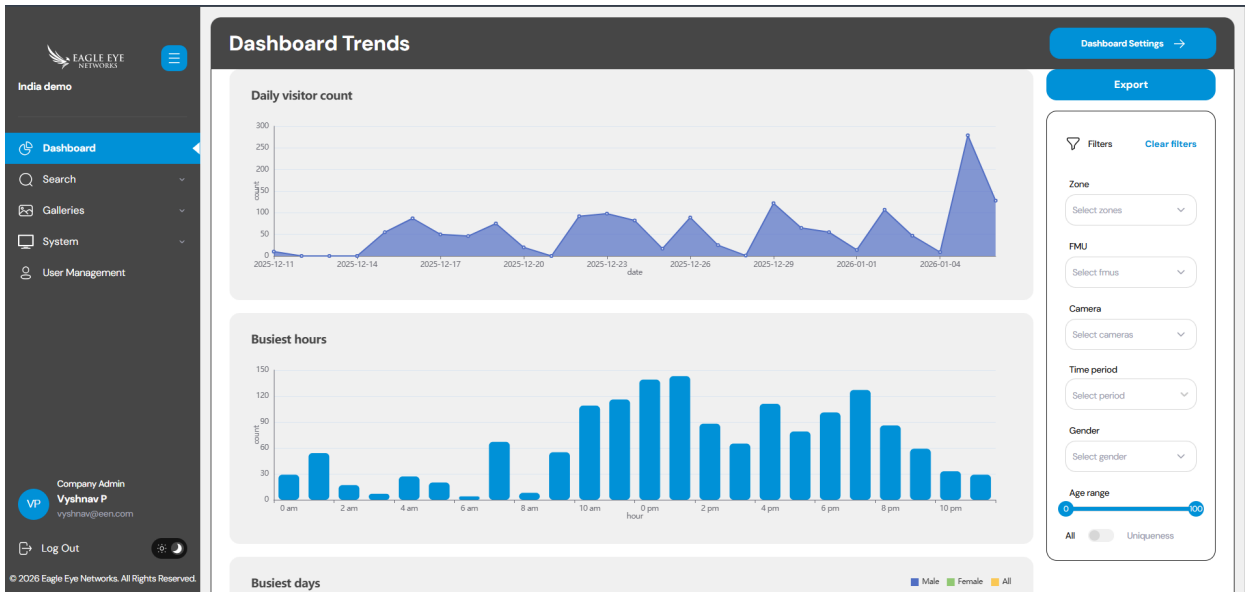
3. Select the target gallery from the list and then click **Start Copying**. Click **Cancel** to cancel the process.



# Dashboard Trends

## Using the Dashboard

The Dashboard displays the daily visitor count in a graphical format, and it can be filtered as required.



Click **Dashboard Settings** to select filters for the Dashboard. The selections are:

- **Daily Visitor Count:** Displays the number of visitors each day.

- **Busiest Hours:** Displays the number of visitors per hour on a selected day.
- **Zones Ratio:** Displays the number of visitors detected by all cameras in a selected zone.
- **Camera Ratio:** Displays the number of visitors detected by a selected camera.
- **Age and Gender Density:** Displays a graph of visitors by age and gender.
- **Gender:** Displays a chart showing how many male and female visitors are present.
- **Age Frequency:** Displays a histogram of age and gender frequencies for visitors.
- **Display Charts Count:** Shows how many display charts are on the Dashboard.

Click **Save Changes** to save the filters to the Dashboard.

# Searching

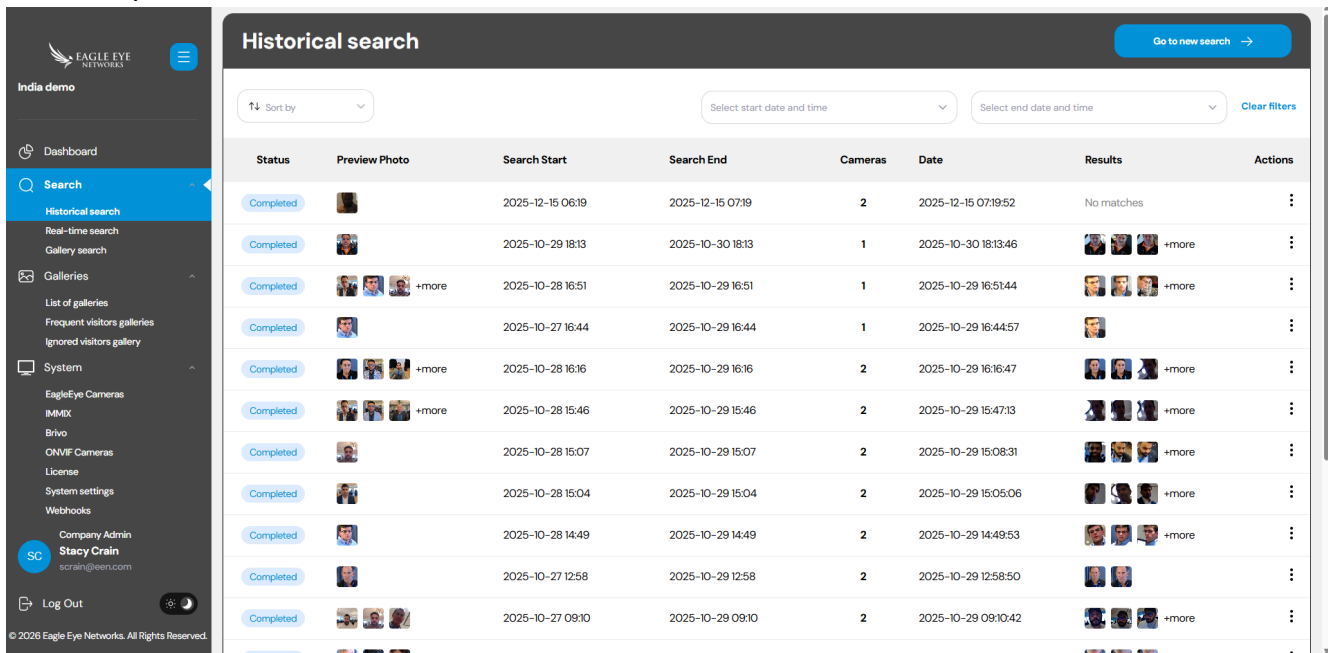
Face Match offers three search types.

1. **Historical Search:** This allows you to search for events from a photo you upload or to search your gallery for photos within a specified time period.
2. **Real-time Search:** This allows you to view events in real time, including a log of recent activity from photos in your galleries.
3. **Gallery Search:** This allows you to upload a photo to search from the galleries.

## Historical Search

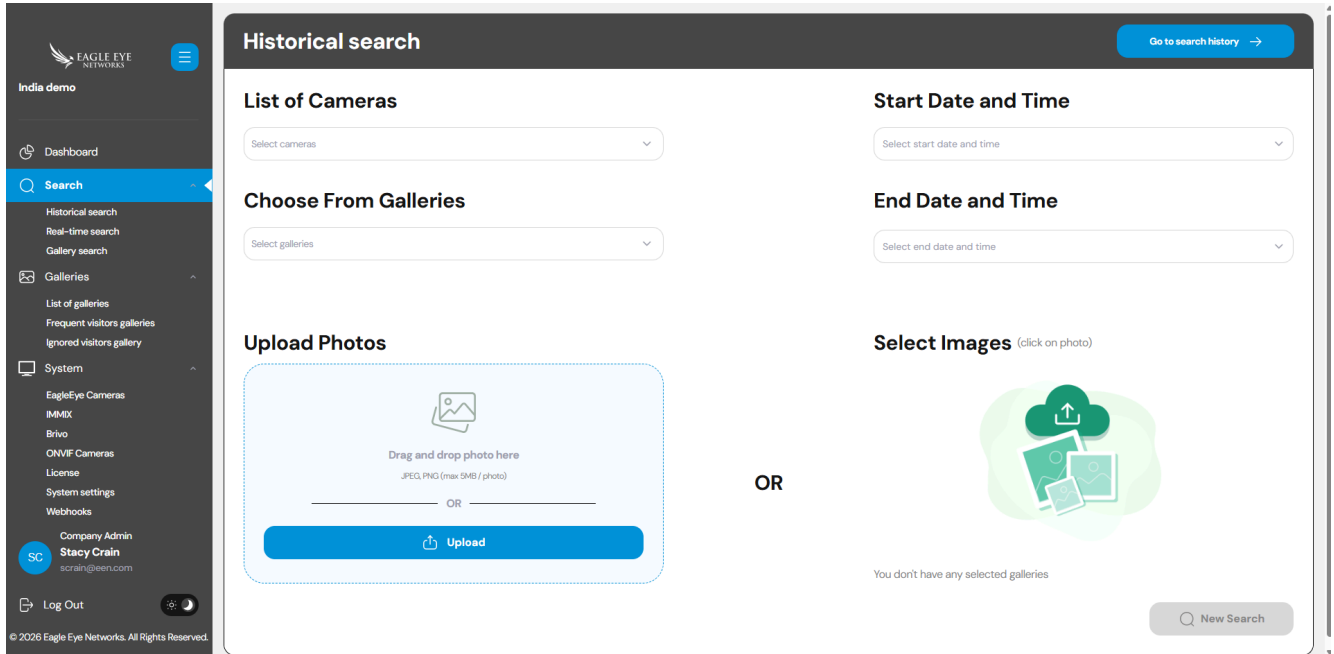
To initiate a historical search:

1. Expand Search from the left menu and click **Historical Search**.



2. Select the camera footage you want to review from the list and select the galleries that contain the photos of the people for whom you want to search, or:
3. Enter a start and end date and time search range.
4. Click the **Go to New Search** button and do one of the following.

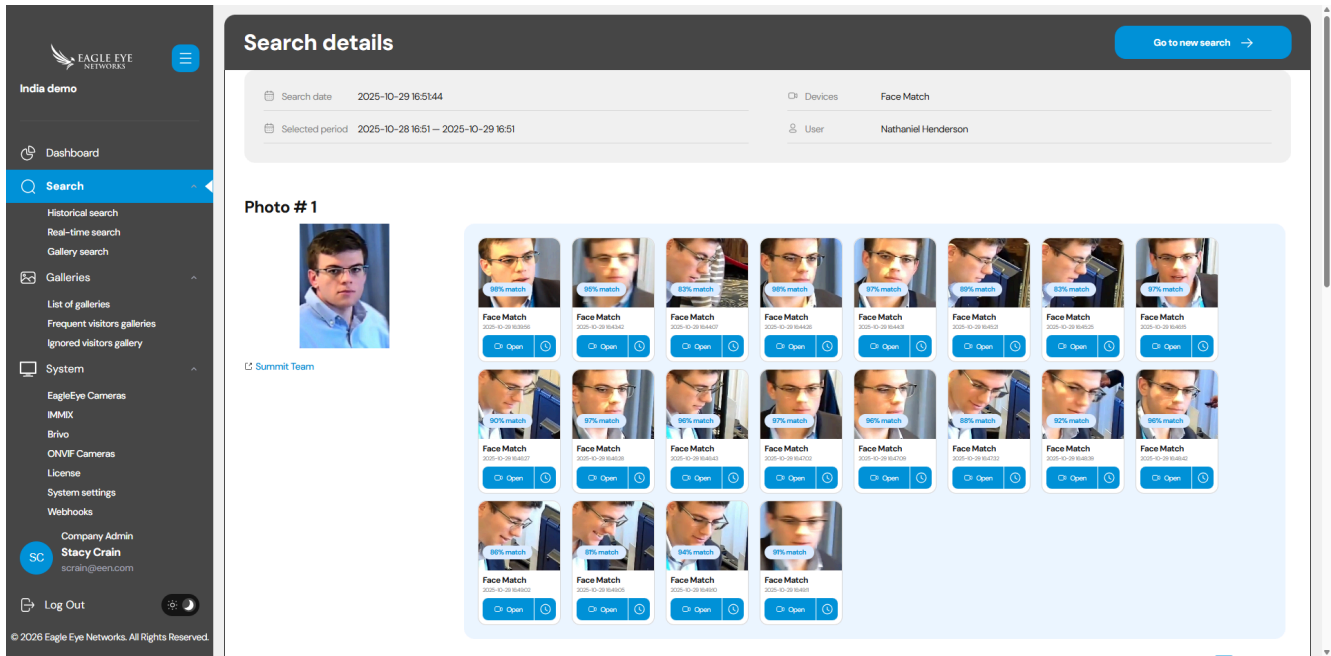
- a. Manually upload photos of people who are not included in your gallery by clicking **Upload**.
  - b. Choose from a list of Cameras or Galleries.
  - c. If you have selected any galleries, you can select images from that gallery.
  - d. Enter a start and end date and time search range.
5. Click **New Search** to begin your search.
- Note:** This button is inactive until all required information is configured.



Face Match begins searching in the background for the historical events within the specified date range using the photos you've specified. You will be notified once the search is completed so you can review the results. Processing time will depend on the date range specified and the number of photos included in the search.

## Viewing Search Results

To view the results of your historical searches, return to the Historical search list by expanding Search from the left menu and clicking **Historical Search**. A list of your past searches will then be displayed. Click on the action button (3 dots), then click **Details**:



The search results will then be displayed for you to review.

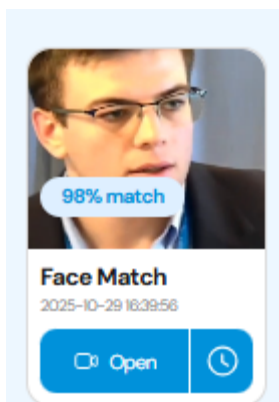
Photos that returned a matched event will include the following details:

- A copy of the source image, including the gallery (if selected from a gallery)
- A snapshot frame of the camera footage
- Percentage match to a photo included in the search
- Camera name
- Date and Timestamp of the found event

**Note:** Photos that return no results will display the message "No matches found for this photo..."

## Viewing Historical Event Footage

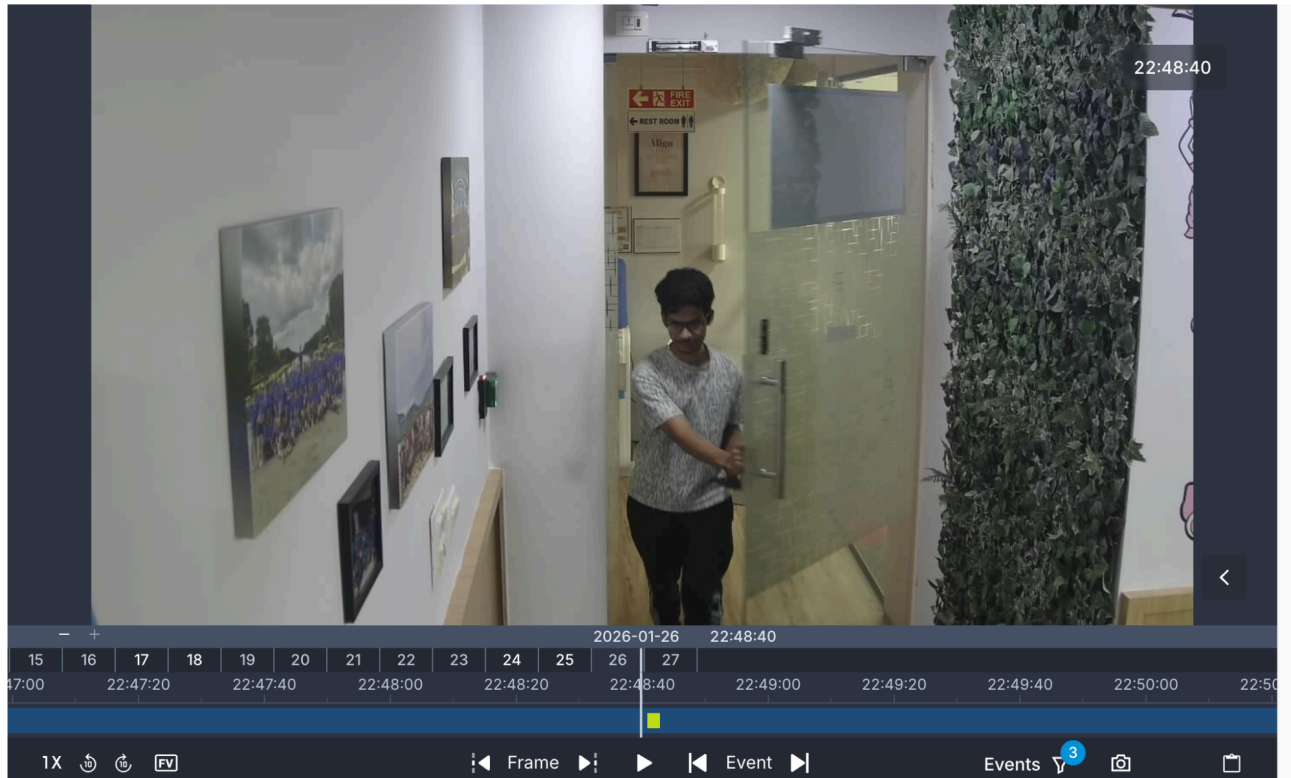
If you want to retrieve the footage from Eagle Eye Networks, click the **Open** button under each event frame:



You will then be taken to the camera preview, and Face Match will retrieve the selected footage and play it for you:

## Camera preview

The individual depicted in the gallery can be observed in footage recorded at 22:48:40 on January 26, 2026 (UTC+530). You have the capability to utilise the navigation controls to rewind the frames to a specific moment of interest, as well as to review the time preceding and following the identification of the individual.



## Canceling a Pending Historical Search

You may cancel a pending historical search at any time by returning to the Historical Search list (expand **Search** from the left menu and click **Historical Search**) and clicking the action button (three dots). Then click **Cancel**.

**Note:** This function is only available if the search is still pending.

## Removing a Historical Search

To remove the results of a historical search, return to the Historical Search list (expand **Search** from the left menu and click **Historical Search**) and click the action button (three dots). Then click **Remove**. You will be asked to confirm the action to continue.

## Delete search

Are you sure you want to delete  
historical search result?

 Delete

Cancel

**Note:** This action cannot be undone.

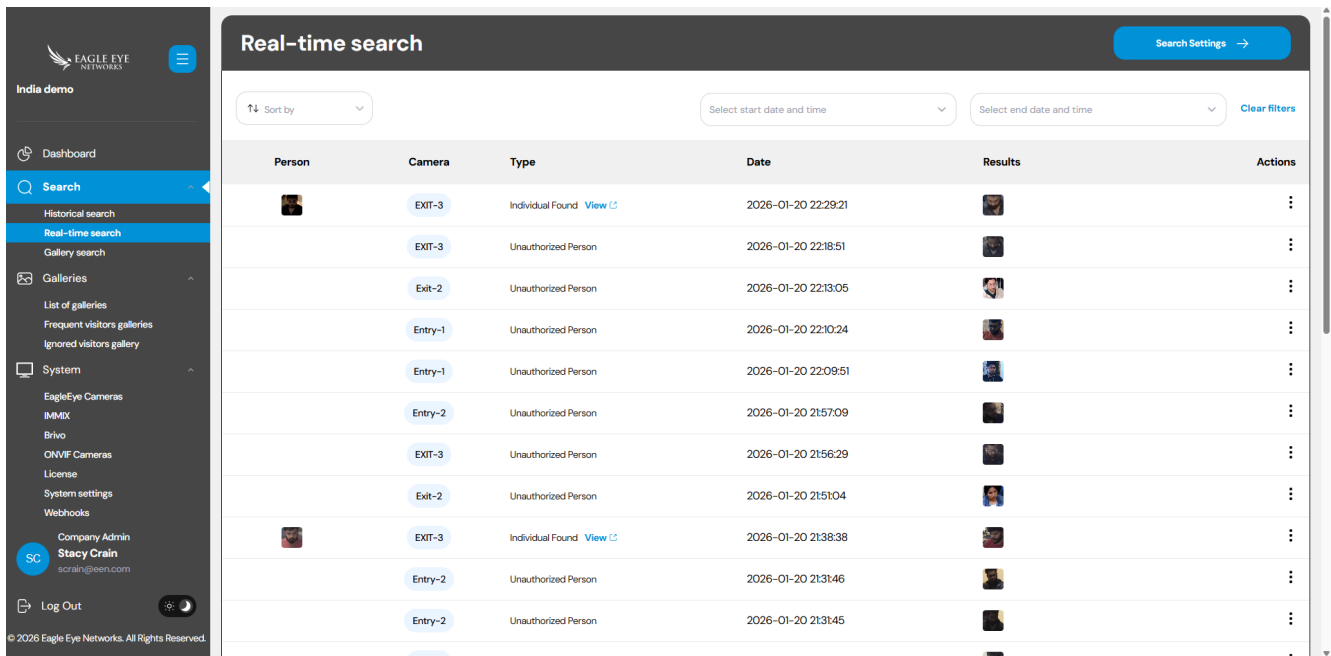
### Real-Time Search

To view real-time matches, expand **Search** from the left menu and click **Real-time Search**.

A history of matches found in your galleries is displayed.

The list includes the following details (left to right):

- The source image from the gallery
- The camera that detected the person
- The date and timestamp when the person was detected
- A snapshot frame of the camera footage



## Filtering the Real-time Search List

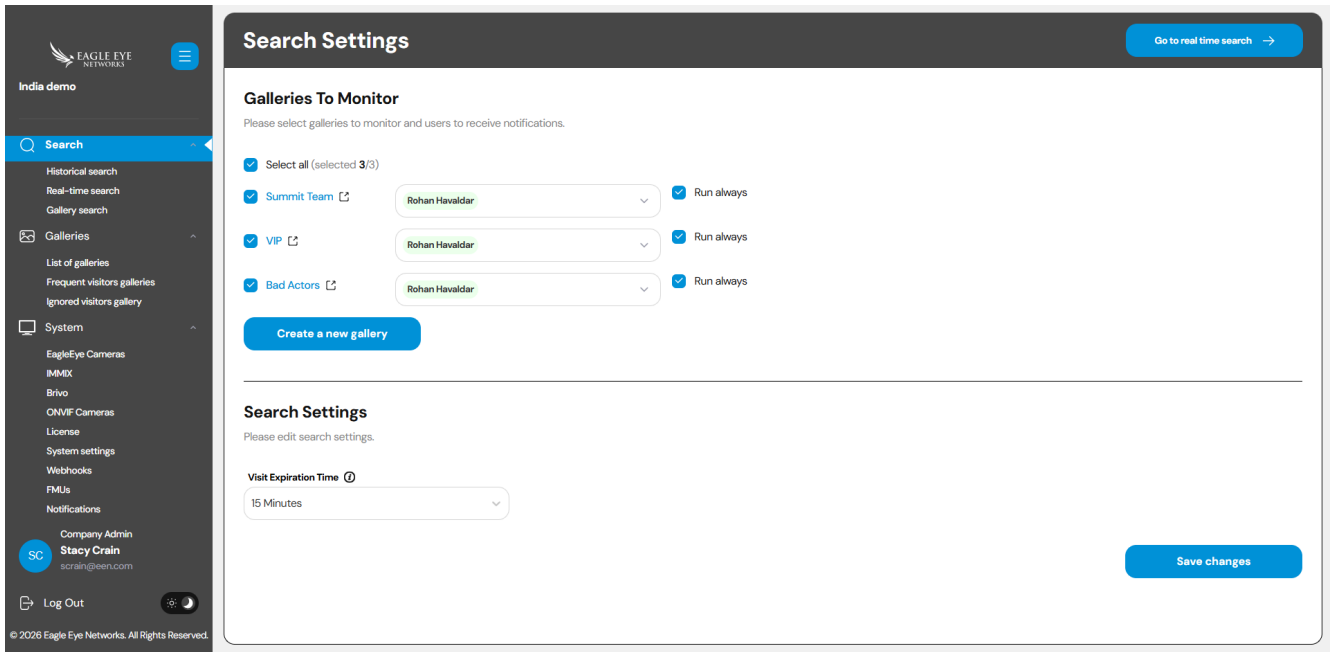
To help sort through the list and quickly locate an event, there are filter options included at the top of the list that will allow you to:

- Sort newest to oldest (or vice-versa)
- Search within a specified date range

## Configure Real-time Search Settings

To modify the Real-time search settings, click **Search Settings** at the top of the screen. From here, you can update the following settings:

- **Galleries to Monitor:** Select which galleries you want to monitor in real-time, as well as which users are notified when a match is found.
- **Search:** Adjust the Visit Expiration Time.

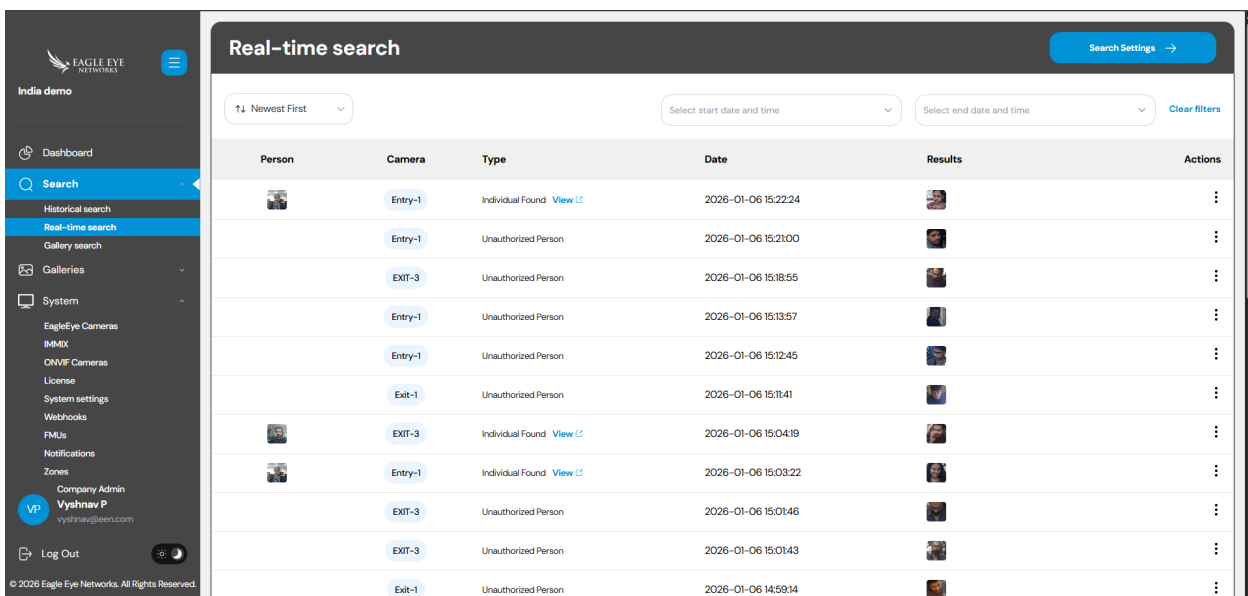


Once you have made your changes, click **Save Changes**.

## Viewing Real-time Event Details

To view details of an event, click the action button (three dots), and then click **Details**. The details of the real-time event will display the following:

- A copy of the source image, including the gallery (if selected from a gallery)
- A snapshot frame of the camera footage
- Percentage match to a photo included in the search
- Camera name
- Date and Timestamp of the found event

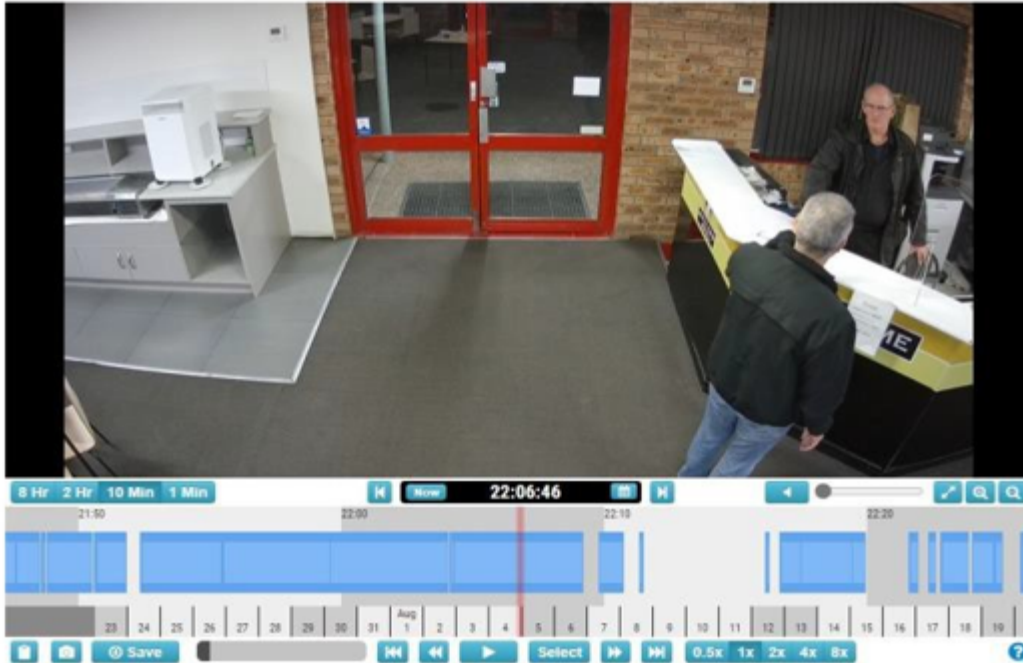


## Viewing Real-time Event Footage

To retrieve footage from the Cloud VMS, click the **Open** button under each event frame.

You will then be taken to the camera preview, and Face Match will retrieve the selected footage from the Cloud VMS and play it for you.

The person in the gallery is found on camera at 2023-08-04 22:06:44 (UTC+10). You can rewind the frames using the navigation, to the desired moment, as well as view the time before and after the event of finding the person.



## Removing a Real-time Event

To remove a real-time event, go to the Real-time Search List (expand **Search** from the left menu and click **Real-time Search**) and click the action button (three dots). Click **Remove**. You will be asked to confirm the action to continue.

## Delete search

Are you sure you want to delete real time search result?

 Delete

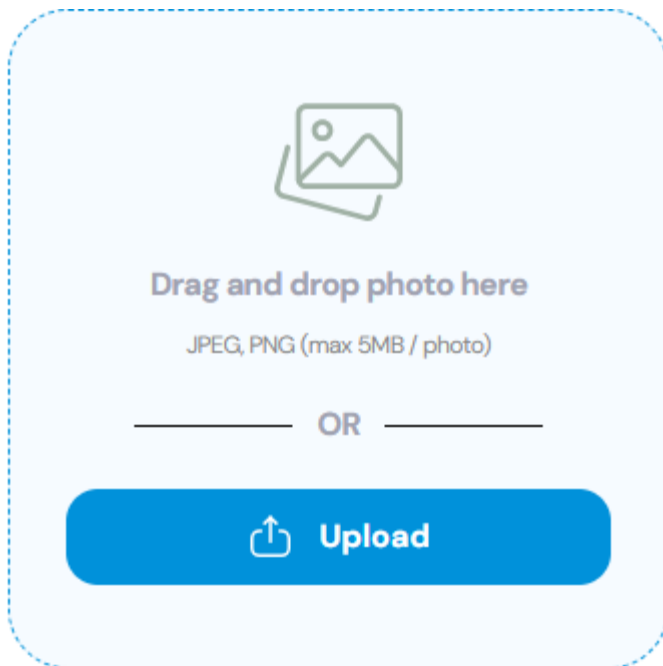
Cancel

**Note:** This action cannot be undone.

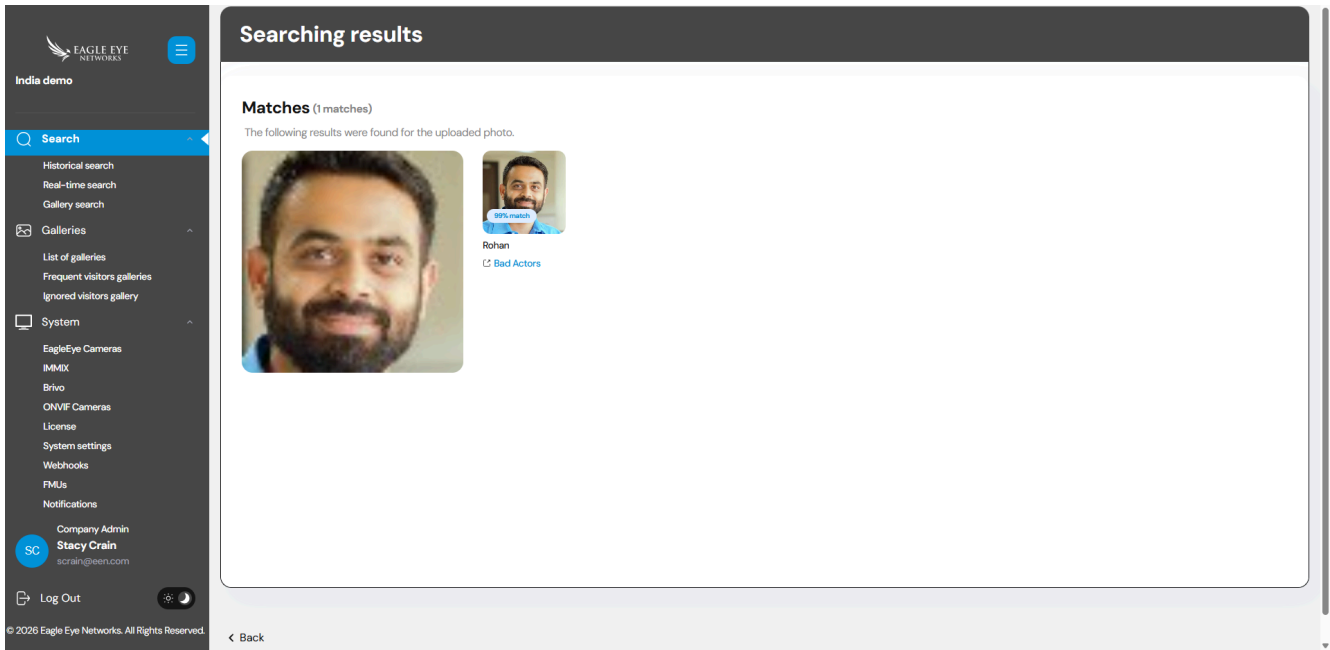
## Gallery Search

To search for a photo from the galleries:

1. Drag and drop a photo into the search box, or
2. Click the **Upload** button.



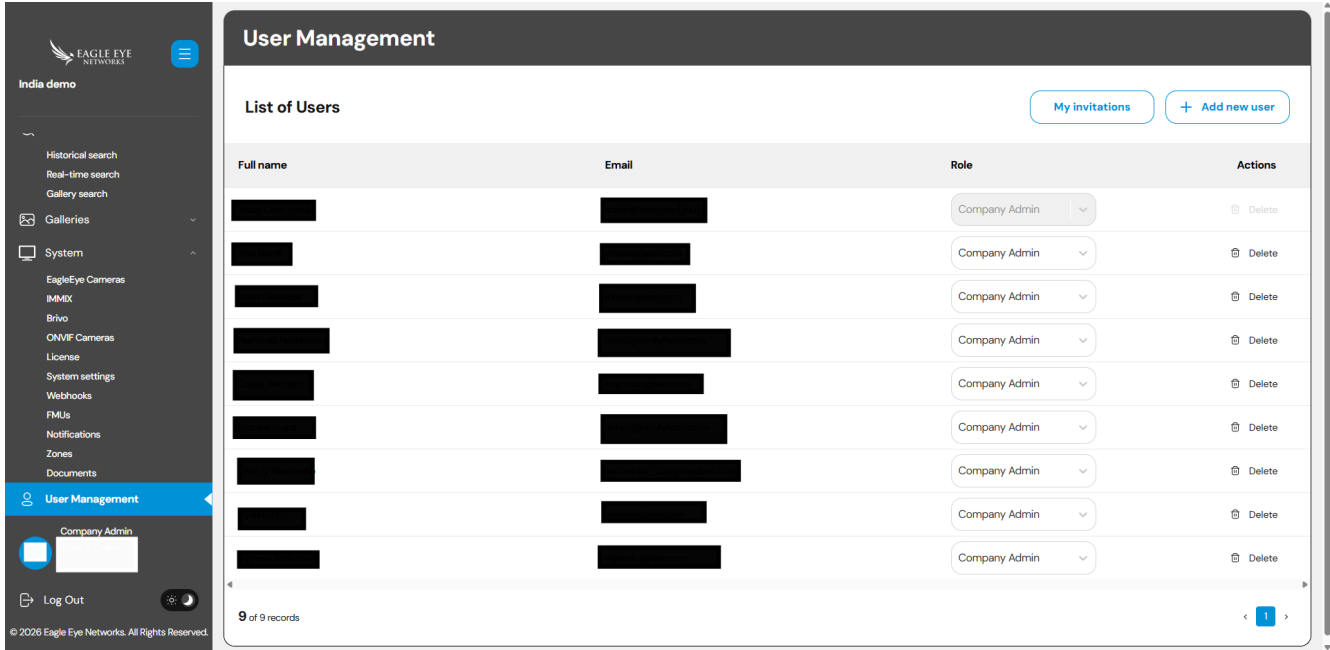
3. Click **Search Results**. This button remains inactive until all search criteria are met.
4. The results are displayed in the Searching Results window.



# User Management

The Face Match platform allows you to invite your staff and other interested parties (such as your security company) into your system. This is done via **User Management**.

A list of your current users is displayed.



**Note:** If a user has accepted their invitation, their name will appear on the left. If a user has not accepted their invitation, their name will appear under **My Invitations**.

## Adding a New User

To add a new user to your account, click the **Add New User** button on the top right.

×

### Add new user

Please enter the user's email to add it.

**Email**

**Role**

Select role▼

Add new user

Complete the wizard by entering the email address, setting their **Role**, and clicking the **Add New User** button.

They will receive an invitation that must be accepted before they can log in.

## Roles

There are three roles available for users. The Staff role is the lowest permission set available. And restricts access to system settings.

- **Company Admin:** Full control
- **Security Officer:** Some System settings, and Gallery Management
- **Staff:** Gallery Management only

## Removing a User

If you need to remove a user from your account, click **User Management** in the left menu, then click the **Delete** button under Actions to the right of the user you wish to remove. You will be asked to confirm the action to continue.



## Delete user

Are you sure you want to delete user  
from the company?

 Delete

Cancel

**Note:** This action cannot be undone.

### Updating Your Profile

To update your profile and change your notification settings, click your account at the bottom of the left menu.

From here, you can update the following details:

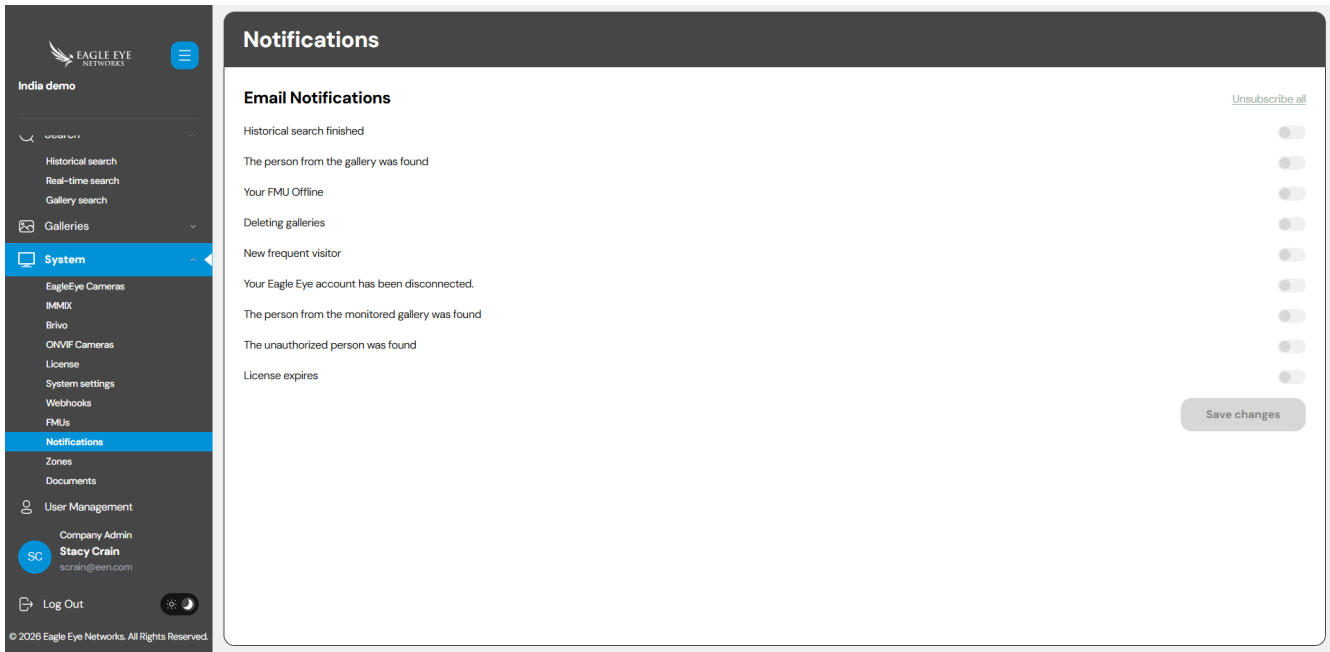
- First name
- Last Name
- Phone Number
- Change your password

### Setting Notifications

To make changes to your Face Match E-mail notifications:

1. Go to **System > Notifications**.
2. Toggle the items on or off to control whether you receive notifications for them.

**Note:** If you do not want to receive notifications at all from Face Match, choose **Unsubscribe All** at the top of the toggle list.

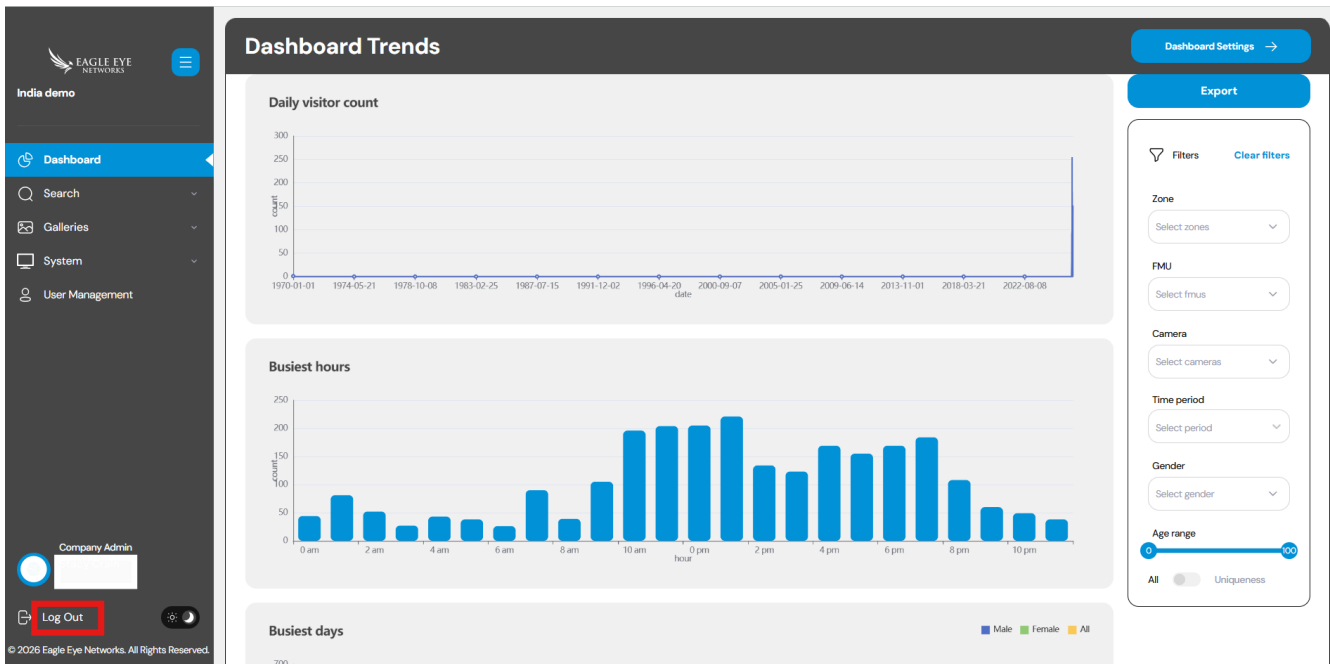


3. Click **Save Changes**.

## Logging Out

Once you have finished using Face Match, it is strongly recommended that you log out and close your browser.

To log out, click **Log Out** located at the bottom of the left menu.



## Security Considerations

Face Match is a powerful platform that requires high security standards. To prevent misuse and unauthorized access, please follow these best practices:

- Store the 441fm in a safe place.
- Limit access to the 441fm.
- Disconnect the monitor, keyboard, and mouse after the initial setup is done.
- Be selective about who you grant access to.
- Maintain your anti-virus software updated.
- Change your password regularly.
- Log off and close your browser after every session.
- Avoid saving your password in the browser.
- Avoid connecting your cameras directly to the Internet.
- Avoid sharing your password with anyone.
- Avoid using common or easy passwords.
- Avoid leaving your account logged in and unattended.

## Advanced Configuration

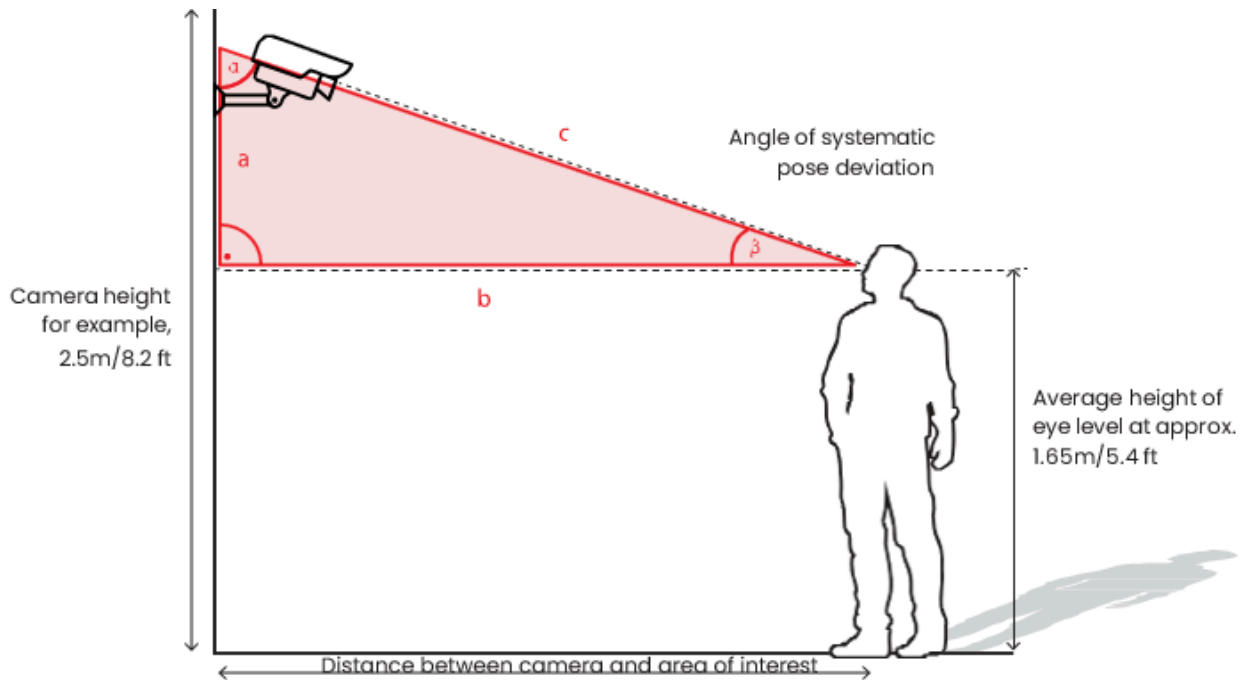
Frontal, well-lit images, showing the whole face, will produce the best matching results. Therefore, cameras should point in the right direction, hang close to eye level and in an evenly lit location, and capture the whole face.

### Direction

From a biometric perspective, frontal facial images without pose deviation achieve the highest match rates. Pose deviations are caused by turning the head up and down (pitch), sideways (yaw), or leaning it left and right (roll). The number of frontal image captures increases when people, for example, walk towards the camera in a long hallway or down an escalator, or when they look at advertising or an information screen with a camera mounted close by.

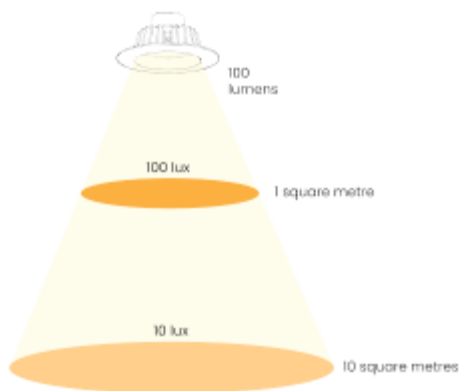
### Height

In a typical video surveillance scenario, cameras are mounted above people's heads to detect more faces, even when people walk behind each other. Assuming the eye level of an average person at 1.65 m (5.4 ft), cameras mounted higher will introduce a systematic pose deviation, shown as the  $\beta$  angle in the diagram below. For optimal biometric performance, Face Match recommends that the systematic pose deviation does not exceed 15 degrees. The lower the camera height and the longer the distance to the area of interest (b), the lower the systematic pose deviation.



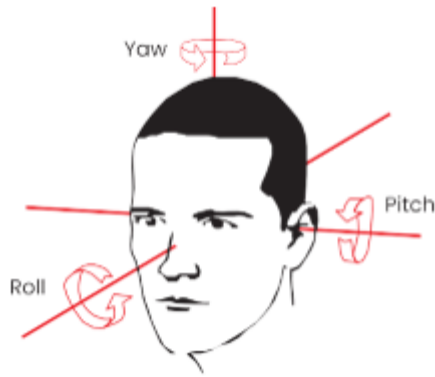
## Lighting

Lighting conditions also significantly influence biometric performance. If possible, the capture area should be free of erratic light sources, such as changing sunlight. Indoor image capture with artificial indirect lighting will produce an evenly illuminated facial area without under- or overexposed areas (blackouts or blown highlights). An illuminance of 100 Lux or higher produces the best results.



## Obstructions

Facial occlusions caused by hats, scarves, reflecting glasses, dark sunglasses, or other objects covering the face, or by turning of the head (pitch, yaw, roll), will reduce recognition rates and can be challenging to eliminate.



## Summary

Face Match recommends the following for optimal system performance.

## Video Streams

- Eye distance larger than 32 pixels
- Pose deviation (pitch, yaw, roll) less than (15°, 15°, 30°)
- The histogram of the face region should contain at least 64 grayscale levels
- Minor image compression

## Galleries

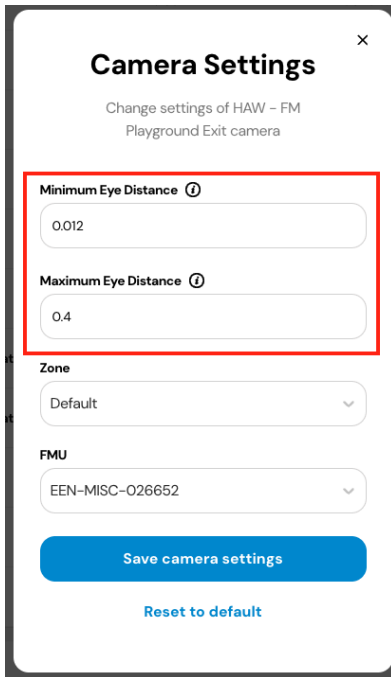
- Eye distance larger than 60 pixels
- Pose deviation (pitch, yaw, roll) less than (5°, 5°, 30°)
- No sunglasses
- No reflections, no shadowed areas
- Neutral facial expression (eyes open; mouth closed)

## Fine-Tuning Eye Distance Settings

After camera installation and initial system validation, the face finder's eye distance limits can be fine-tuned to optimize detection performance for each video stream. These parameters control which faces are detected and forwarded as FaceStreams and should be adjusted based on the actual scene geometry, camera placement, and operational requirements.

1. Navigate to **System > EagleEye Cameras**.
2. Find the desired camera, select the action (three-dots) menu, then choose **Edit**.

Name	Profile	ID	URL	Action
	Default	EEN-MISC-026652	rtsp://****:****@10.5.50.193:8...	⋮
aMatch	Default	EEN-MISC-026652	rtsp://****:****@10.5.50.193:8...	⋮ Edit Custom Fields
aMatch	Default	EEN-MISC-026652	rtsp://****:****@10.5.50.193:8...	⋮



## Eye Distance Configuration

The face finder detects faces based on the relative distance between the eyes, expressed as a fraction of the image width. Each video stream supports a configurable minimum and maximum eye distance limit, with values ranging from 0.0 to 1.0. Only faces whose eye distance falls within this range are detected.

The eye-distance limits should be set to reflect the smallest and largest faces expected to appear in the scene. Smaller values allow detection of faces farther from the camera, while larger values restrict detection to closer subjects.

## Baseline Settings

If cameras are mounted in accordance with the recommendations above (frontal view, limited pose deviation, appropriate height, and sufficient lighting), Face Match recommends the following baseline configuration:

- **MinEyeDistance:** 0.016
- **MaxEyeDistance:** 0.4

These values provide a broad detection range suitable for most standard surveillance scenarios and serve as a starting point for further optimization.

## Scene-Specific Fine Tuning

For optimal performance, the eye distance limits should be refined after installation using representative live video:

- Decrease the minimum eye distance to detect smaller or more distant faces, such as in long hallways or wide-area scenes. Note that lower minimum values increase processing time and may raise the likelihood of false detections.

- Increase the minimum eye distance to focus detection on faces closer to the camera, for example, at entrances or access control points.
- Reduce the maximum eye distance if very close faces or partial faces (e.g., faces entering the extreme foreground) should be excluded.
- Ensure that both limits correspond to face sizes within the camera's depth of field to maintain sufficient image sharpness for biometric processing.

### **Resolution and Orientation Considerations**

Eye distance limits are relative to the horizontal resolution of the video stream. When calculating suitable values, the expected eye distance in pixels should be divided by the image width.

Example:

If the target eye distance range is 64 to 120 pixels and the image width is 1,600 pixels, the appropriate configuration is:

- **MinEyeDistance** = 0.04
- **MaxEyeDistance** = 0.075

Changes in resolution, aspect ratio, or stream orientation (landscape or portrait) require corresponding adjustments to the configured values.

### **Operational Guidance**

Fine-tuning should be performed using real-world footage under normal operating conditions. Adjustments should be incremental, and the impact on detection rate, processing load, and image quality should be observed after each change.

### **Summary**

Properly tuned eye distance limits ensure that the face finder detects faces at the intended distances while maintaining efficient processing and high biometric quality. Baseline settings provide a reliable starting point, but scene-specific refinement is recommended to achieve optimal system performance.