Operator's Guide

Last update 03/02/2021

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1 Terms and definitions

1. The Guide – this document, titled *Face Intellect* Software Package: Operator's Guide.
2. The Software - *Face Intellect* software package.
3. DB – face database used for face recognition, also referred to as the Face Recognition Database.

2 Introduction

On this page:

2.1 The purpose and structure of the Guide

This Guide is an informational reference designed for users of the *Face Intellect* software package with "Operator" access rights.

The Guide contains the following material:

1. General description of the *Face Intellect* software package;
2. *Face Intellect* software operation;
3. Description of the *Face Intellect* user interface.

2.2 Purpose of Face Intellect software

Face Intellect software is designed for automated identification of people by comparing a captured face in a surveillance video frame with reference images for which a Face Recognition Database contains information.
Face Intellect software provides the following functional capabilities:

1. recognizes human faces in a video frame;
2. registers facial biometric parameters;
3. compares a captured face displayed in a video frame with reference images stored within the "<*Face Intellect* installation directory\Bmp\person>" folder based on biometric parameters;
4. maintains a database of recognized faces;
5. creates a photo- and video archive;
6. searches for faces in the database using a photo.

2.3 Recommendations for using the Face Intellect software package

Face Intellect software is installed as an extension to the Intellect software package.
The following is recommended for correct application of *Face Intellect* software:

1. carefully follow the instructions;
2. use the Software only for its intended purpose;
3. do not use third party software on computers installed with *Face Intellect* unless the software is a component of the *Face Intellect* software package.

3 General description of the Face Intellect software

On this page:

3.1 Structure of the Face Intellect software package

Face Intellect software includes the base version of the Intellect software package and additional software modules that directly perform face recognition functions.

Face Intellect includes the following software modules:

1. **Face Detection** system object;
2. **Face Recognition Server** system object;
3. **Face recognition and search** interface object.

3.2 Face Detection software module functionality

The **Face Detection** software module is designed to perform the following functions:

1. face detection in the video frame;
2. sending the captured face image to the face recognition server.

3.3 Face Recognition Server module functionality

The **Face Recognition Server** software module is designed to perform the following functions:

1. record a frame displaying a captured face;
2. register biometric parameters of a captured face;
3. recognize captured faces;
4. maintain a reference face database used for face recognition;
5. search for recognized faces in the database;
6. provide analytical data (including special reports generation in the Intellect Web Report System);
7. count number of passes.

3.4 Face recognition and search program module functionality

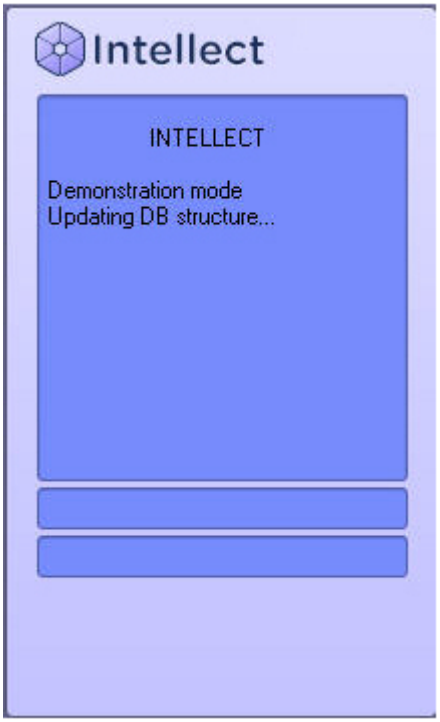
The **Face recognition and search** module is designed to perform the following functions::

1. Face search by image captured from video camera;
2. Face search by image loaded from a file;
3. Monitoring of captured faces in real-time mode.
4. Exporting the search results to the report file in **pdf** format.
5. Working with reference face databases;
6. Counting the number of passes;
7. Facial characteristics recognition with the appropriate license for the Tevian recognition module.

4 Face Intellect software operation

4.1 Launch and shutdown of the Software

Before starting work with the Software, it is recommended to check the operability of all system components: connections, video cameras, etc.



The Software can be launched in the following two ways:

1. Automatically. The software starts automatically after the operating system loads.
2. Manually. To start the Software manually, in the **Start** menu, select **Programs**, then **Intellect**, then **Client Workstation**, or use the corresponding shortcut on the **Desktop**.

Software startup may be password protected. In this case, enter your password to start the Software.

To shut down the Software, perform the following steps:

1. point the mouse cursor to the upper right corner of the screen. The program's main control panel will then appear;
2. click the  icon on the program's control panel;
3. select **Log off** in the menu that opens.

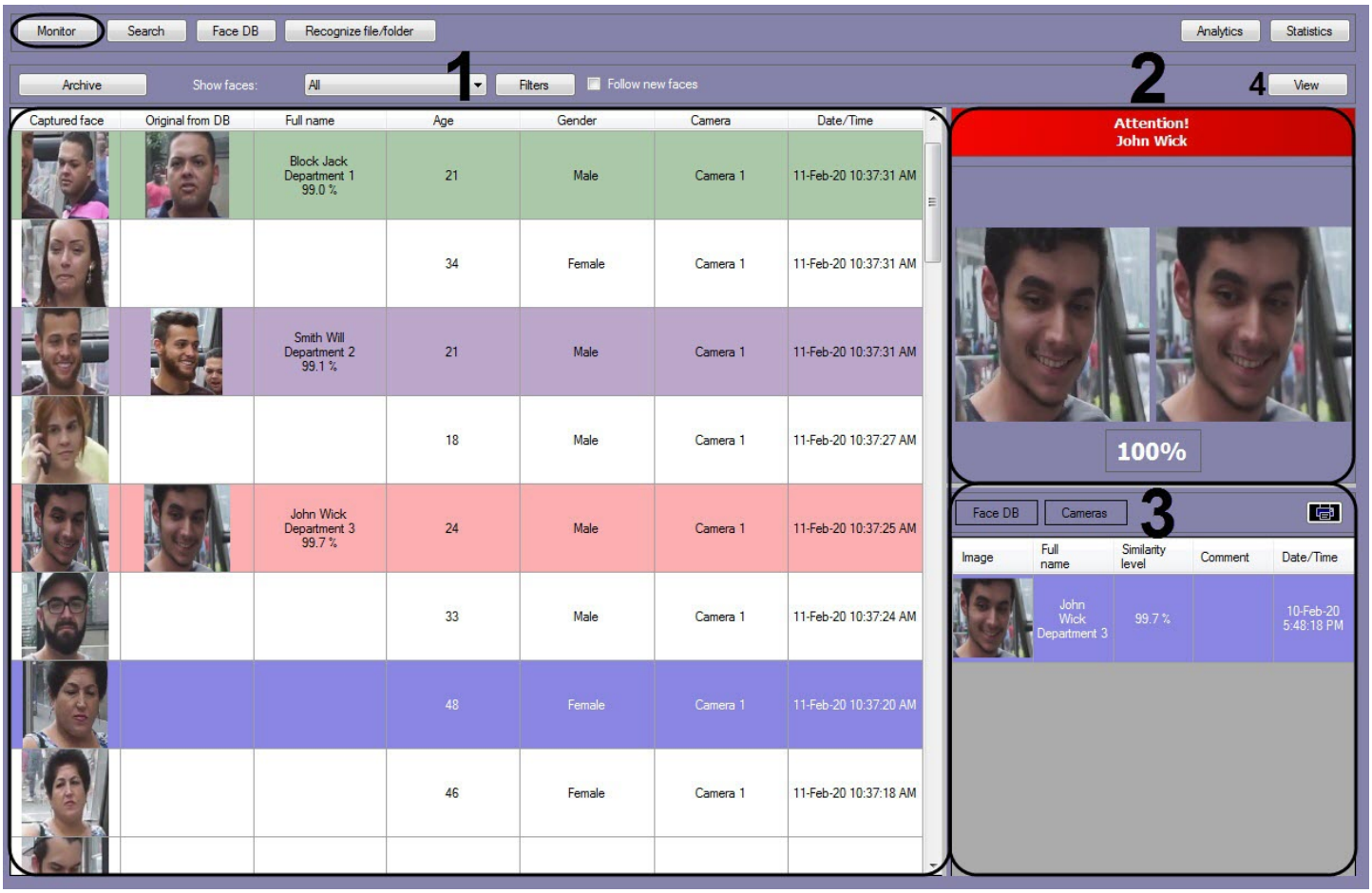
Program shutdown will begin, and a password will be required if one is set.

> **Note.**
>
> The Software can be configured to forbid shutdown. In that case, the **Log off** option will not be displayed in the menu.

4.2 Working with the Face recognition and search interface object

4.2.1 Monitoring of captured and recognized faces

To go to the monitoring mode of captured and recognized faces click the **Monitor** button in the **Face recognition and search** interface window.



The following information is displayed in the information field of each captured face (**1**):

Column name	Description	Face Recognition module used
Captured face	Captured face image *Note 1. As you increase the width and height of this column, the image size also increases. The specified column size does not change even if the* ***Columns auto width*** *checkbox is set (see* Configuring permissions and additional settings*).* *Note 2. Starting with Face-Intellect 7.3, the captured face image is not duplicated in the list of captured faces, but it is updated in the same cell while the tracker "sees" it. To change the mechanism of displaying faces, it is necessary to change the value of the* ***Face.RecognizeFacesSeparately*** *parameter to* ***1*** *(for details, see* Registry keys reference guide*, for information about working with the registry, see* Working with Windows OS registry*).* *Note 3. If the Face Recognition Server works with a thermal camera (see* Configuring the Face Recognition Server operation with thermal camera*), the image will also display the face temperature in degrees Celsius.* 	All recognition modules

Column name	Description	Face Recognition module used
Original from DB	The image from the reference face DB, if the face was recognized	All recognition modules
Full name	Full name, if the face was recognized	All recognition modules
Name of face characteristic	Selected face characteristics (see Configuring permissions and additional settings). By default, only Age, Gender and Temperature are displayed.	All modules except HUAWEI
Camera	The camera which is a captured face source	All recognition modules
Date/Time	The date and time of the face capture by the camera	All recognition modules
ID	The face ID, if the face was recognized	Only HUAWEI

The color of the information field of the recognized face may indicate the following:

- The level of similarity of captured face with the most corresponding face from the face recognition database. The conditional thresholds of similarity levels are set when configuring the **Face recognition and search** interface module (see Configuring the color highlighting by face similarity).
- The face belongs to a department for which an arbitrary color is set (see Setting color highlighting of faces that belong to selected departments).

If the **Follow new faces** checkbox is set, the list of faces is scrolled up to the top when a new face is captured even if some face is selected in it. To disable automatic list scrolling, unset the **Follow new faces** checkbox. You can also double-click the captured face to unset this checkbox. In this case the list is not scrolled up when new faces are captured.

> **Note**
>
> In order for the **Follow new faces** checkbox to be set automatically after a certain time, it is necessary to set the corresponding time in seconds in the **AutoFollowTimeSeconds** parameter of the face_client.run.config configuration file (for details, see XML-file parameters reference guide).

If the captured face was recognized, then in the upper right part of the captured faces monitoring panel (**2**), an alarm window is displayed with the following information:

- The title of the alarm window;

  > **Note**
  >
  > The alarm window color and title can be changed (see Alarm window title setting).

- Full name of recognized person;
- The image with the captured face and the corresponding image from the face recognition database;

  > **Note**
  >
  > If the Face Recognition Server works with a thermal camera (see Configuring the Face Recognition Server operation with thermal camera), the image will also display the face temperature in degrees Celsius.
  >
  > 
  >

- The similarity level as a percentage.

The lower right part of the captured faces monitoring panel (**3**) displays the following information:

- The **Face DB** section displays the information on the recognized face and contains the following information:

Column name	Description	Face Recognition module used
Image	The recognized face image *Note. As you increase the width and height of this column, the image size also increases. The specified column size does not change even if the **Columns auto width** checkbox is set (see* Configuring permissions and additional settings*)*	All recognition modules
Full name	The full name of the recognized person	All recognition modules
Similarity level	The similarity level between the recognized face and the face image	All recognition modules
Comment	The comment	All modules except HUAWEI
Date / Time	The date and time of the search	All recognition modules
ID	The recognized face ID	Only HUAWEI

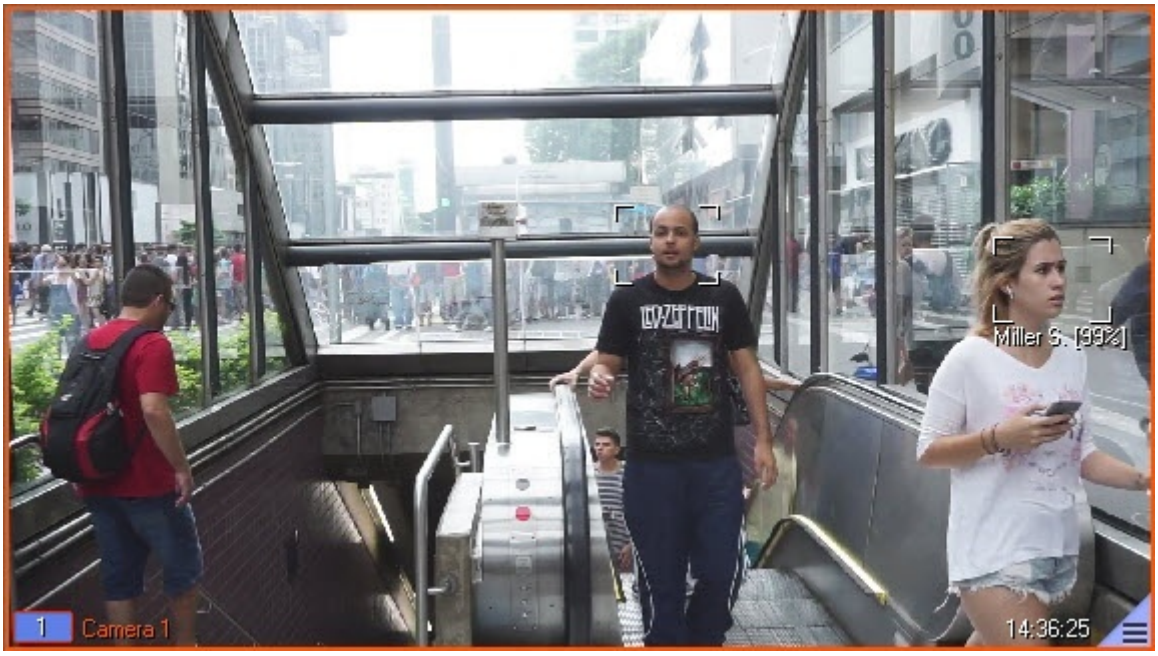
- The **Cameras** section displays the 10 recently captured faces that are similar to the selected face filtered by the specified filtering conditions (see Filtering the recognized and unrecognized faces). The field contains the following information:

Column name	Description	Face Recognition module used
Image	The captured face image *Note 1. If the Face Recognition Server works with a thermal camera (see* Configuring the Face Recognition Server operation with thermal camera*), the image will also display the face temperature in degrees Celsius.* 	All recognition modules
Similarity level	The similarity level between the captured face and the selected face	All recognition modules
Camera	The camera that captured the face	All recognition modules
Date / Time	The date and time of the search	All recognition modules

The **View** button (**4**) allows you to change the location of information panels 1-3 on the monitoring screen according to the preset.

> **Note**
>
> You can hide the **View** button. To do this, in the **face_client.run.config** configuration file, set the value of the **HideViewButton** parameter to **True** (for details, see XML-file parameters reference guide).

If the video from camera (used for face recognition) is transmitted to the **Monitor** interface object, then the full name is displayed below the face capture area (see Configuring video display on Video Surveillance Monitor).

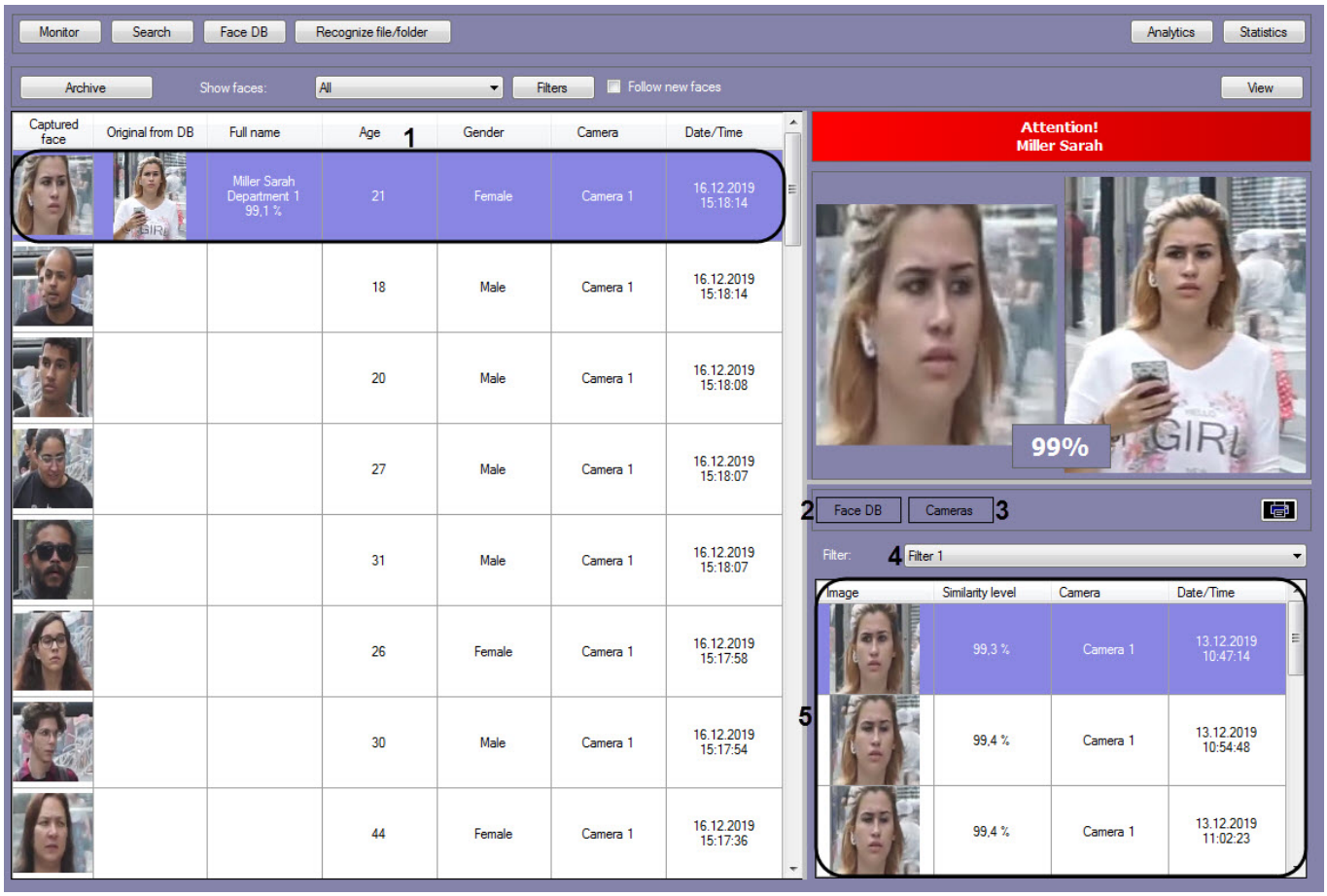


4.2.1.1 Viewing information on recognized and unrecognized faces

You can view the information on recognized and unrecognized faces on the captured faces monitoring panel as follows:

1. Double left-click the captured face, which information you need to view (**1**).
2. Select the required section by clicking on the appropriate button:
   - **Face DB** (**2**);
   - **Cameras** (**3**).
3. If the **Face DB** section (**2**) was selected, then the information on the recognized face received from the reference face database will be displayed in the lower right part of the captured faces monitoring panel (**5**).

> **Note**
>
> If you double left-click the face which was not recognized, the **Face DB** section will be empty.



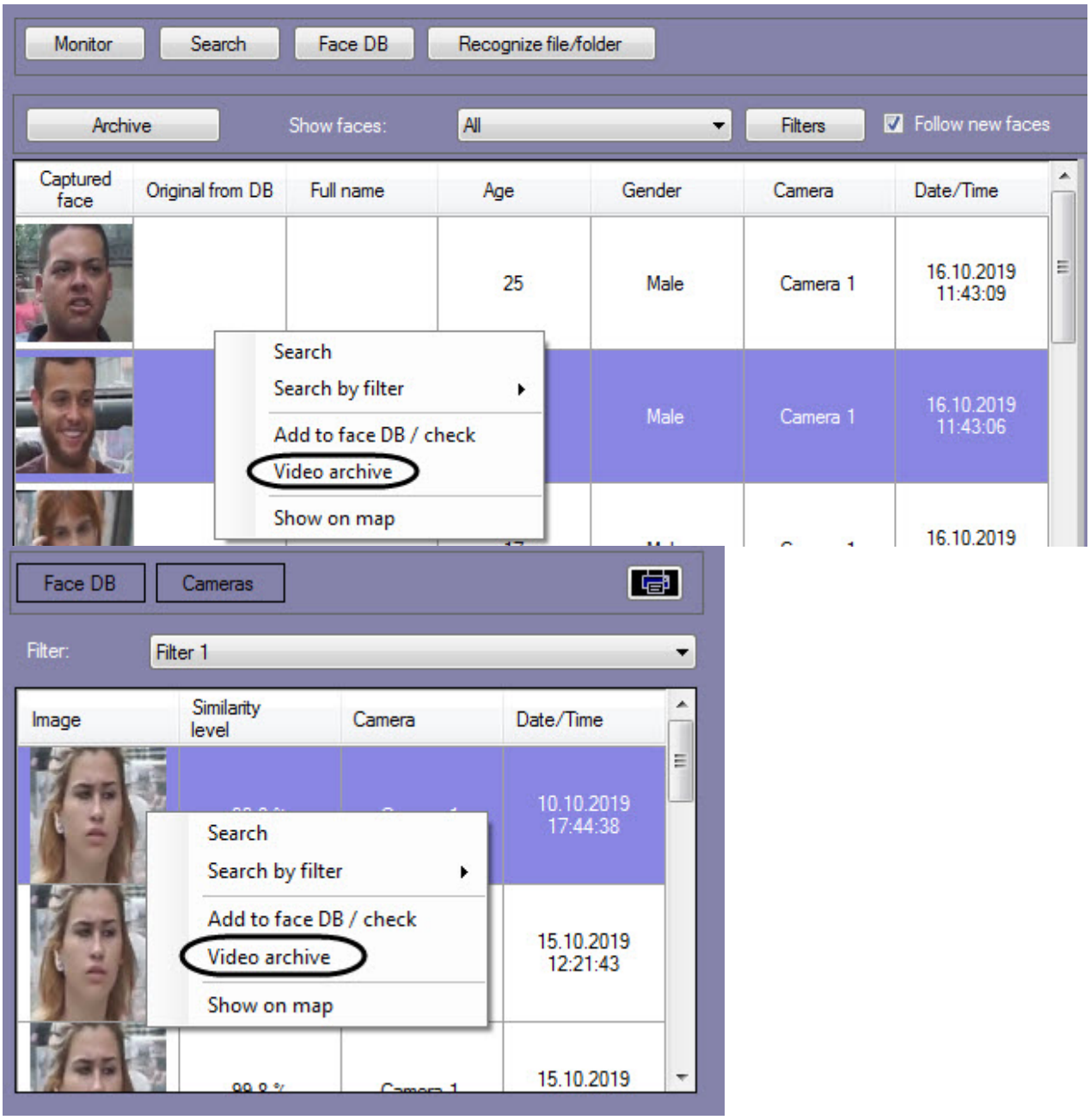
4. If the **Cameras** section (**3**) was selected, then 10 recently recognized faces that are similar to the selected person and filtered by the search filter specified in the **Filter** drop-down list (see Starting the face search process) will be displayed in the lower right part of the captured faces monitoring panel (**5**).

> **Note**
>
> When the filter is changed, the information is automatically updated according to the selected filter.

5. To view the video at the time when the selected person appears, use one fo the following ways:
   - Double left-click on the captured face (also applicable in the **Cameras** section in the lower right part of the captured faces monitoring panel);

     > **Note**
     >
     > As a result, the moment you select a captured face (see step 1), you are automatically transfered to the video archive.

   - Right-click on the captured face and select the **Video archive** menu item (also applicable in the **Cameras** section in the lower right part of the captured faces monitoring panel).



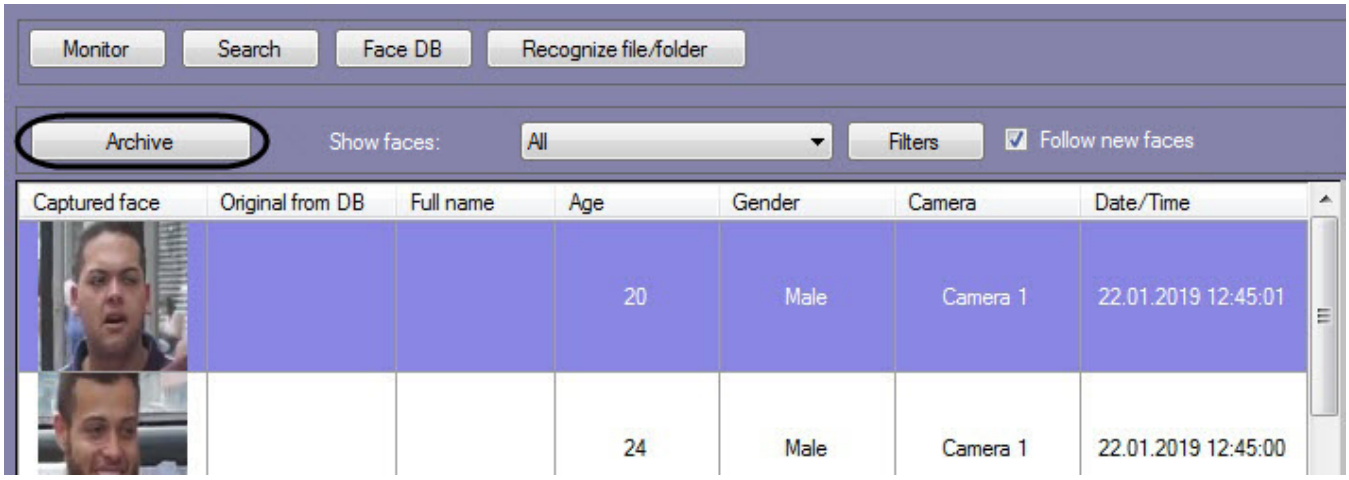
As a result, the video archive is displayed in the video archive playback monitor (see Configuring permissions and additional settings) with a paused moment of the selected person appearing on the video (for more information

about working with the video archive, see Working with the archives).

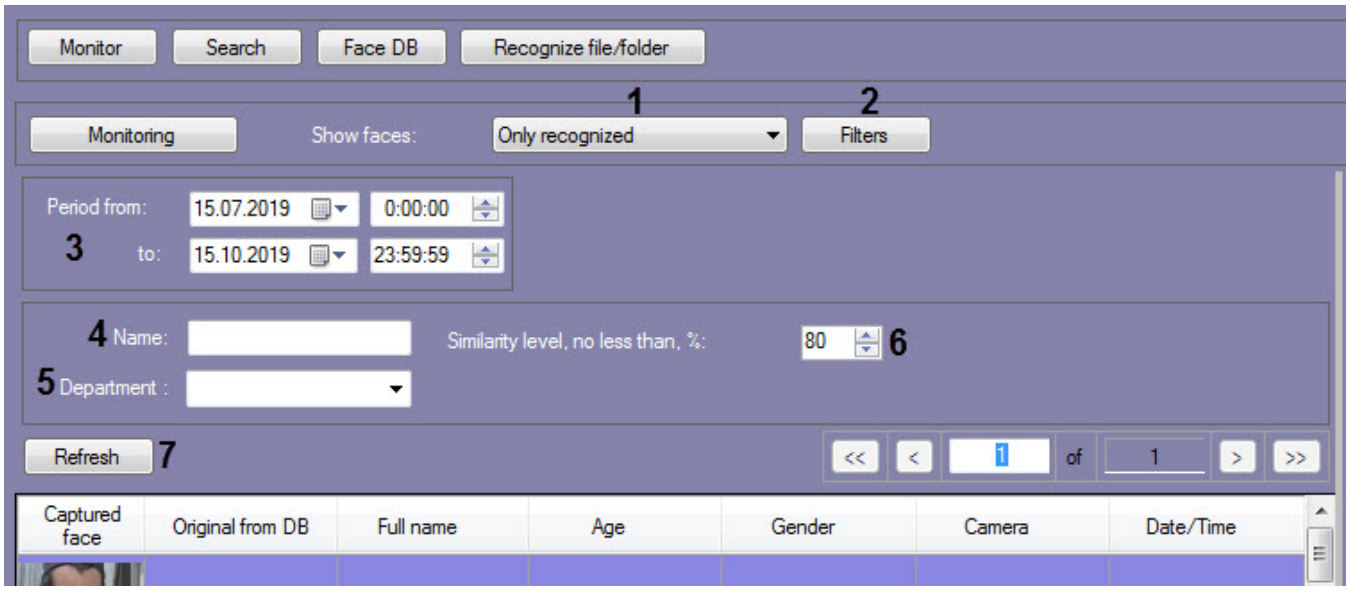
4.2.1.2 Filtering the recognized and unrecognized faces

It is possible to filter the recognized and unrecognized faces. To do this:

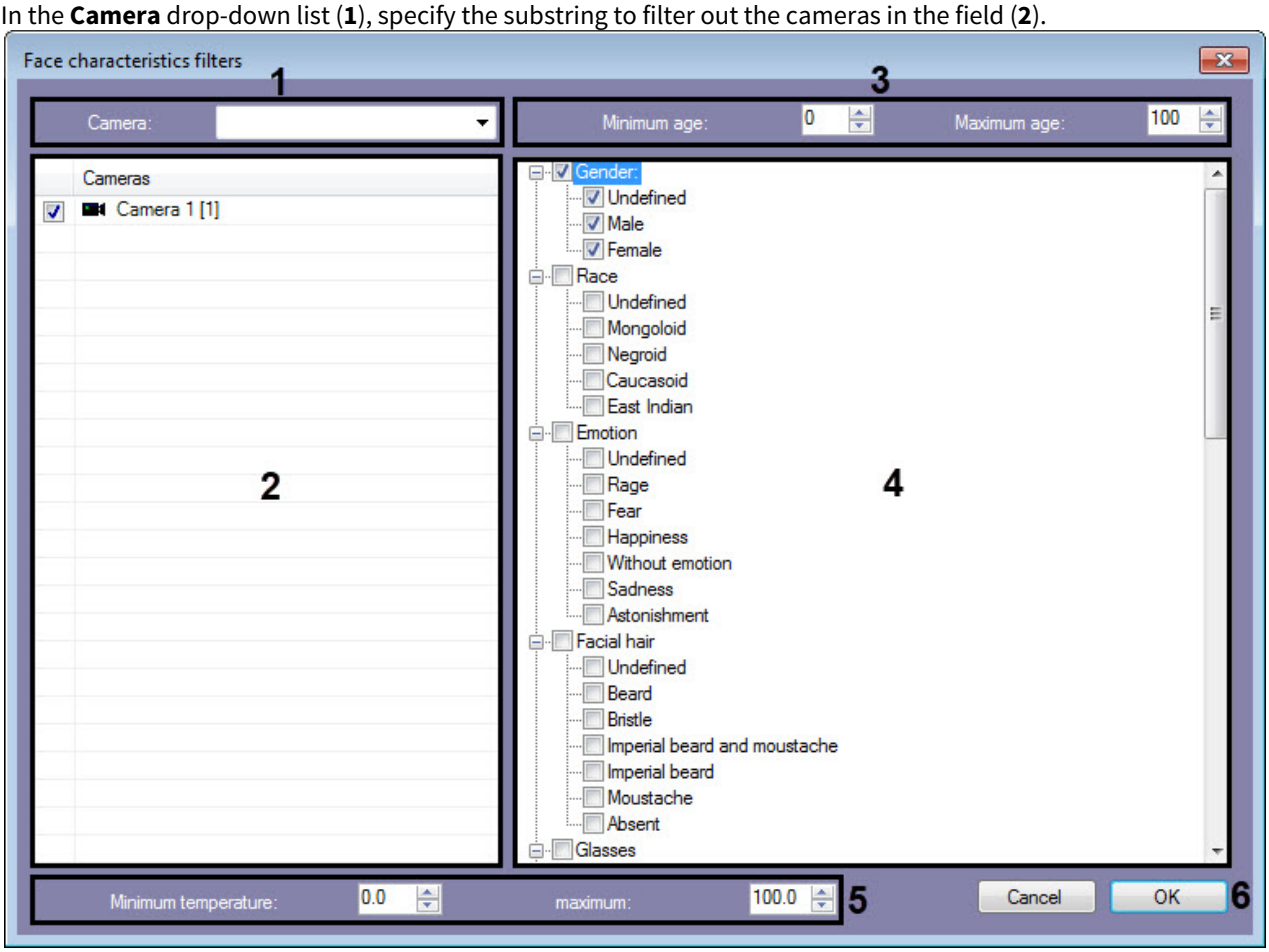
1. Click the **Archive** button.



2. In the **Show faces** drop-down list (**1**) select the required value:
   - **All**;
   - **Only recognized**;
   - **Only unrecognized**.



3. Click the **Filters** button (**2**) to specify the face characteristics filters:
   a. In the **Camera** drop-down list (**1**), specify the substring to filter out the cameras in the field (**2**).



   b. In the **Minimum age** and **Maximum age** fields (**3**) specify the minimum and maximum age of persons to be displayed in the search results, respectively.
   c. In the area (**4**), set the check boxes next to the corresponding face characteristics.

> **Note**
>
> Face characteristics (**4**) may not be displayed (see Configuring permissions and additional settings).

d. In the **Minimum temperature** and **maximum** fields, specify the minimum and maximum face temperature, respectively (**5**).
e. Click **OK** (**6**).

4. Enter the start and end of search period in the **Period from** and **to** fields correspondingly (**3**).
5. In the **Name** field, enter the name by which the search is to be performed (**4**).

> **Note**
>
> If the HUAWEI recognition module is used, then all recognized faces will be displayed when searching by name, and not just the ones with the specified name.

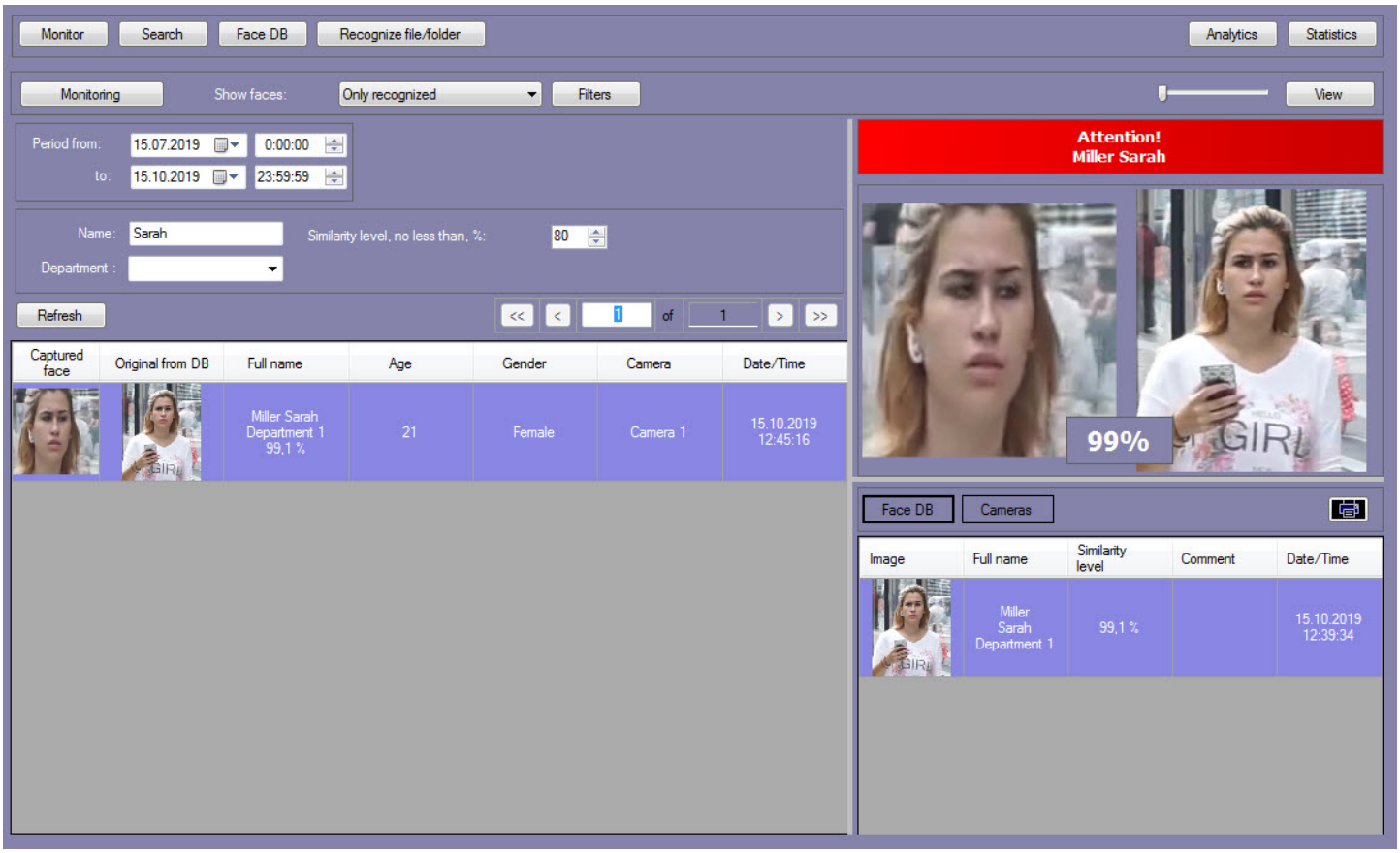
6. In the **Department** drop-down list select the department by which the search is to be performed (**5**).

> **Note**
>
> If the HUAWEI recognition module is used, you can specify several department names (Huawei repositories) or substrings in the **Department** drop-down list separation them with the "**;**" (semicolon). The letter case is not taken into account.

7. In the **Similarity level, no less than, %** field set the minimal similarity level between the reference face image and the captured face (**6**).
8. Click the **Refresh** button (**7**).

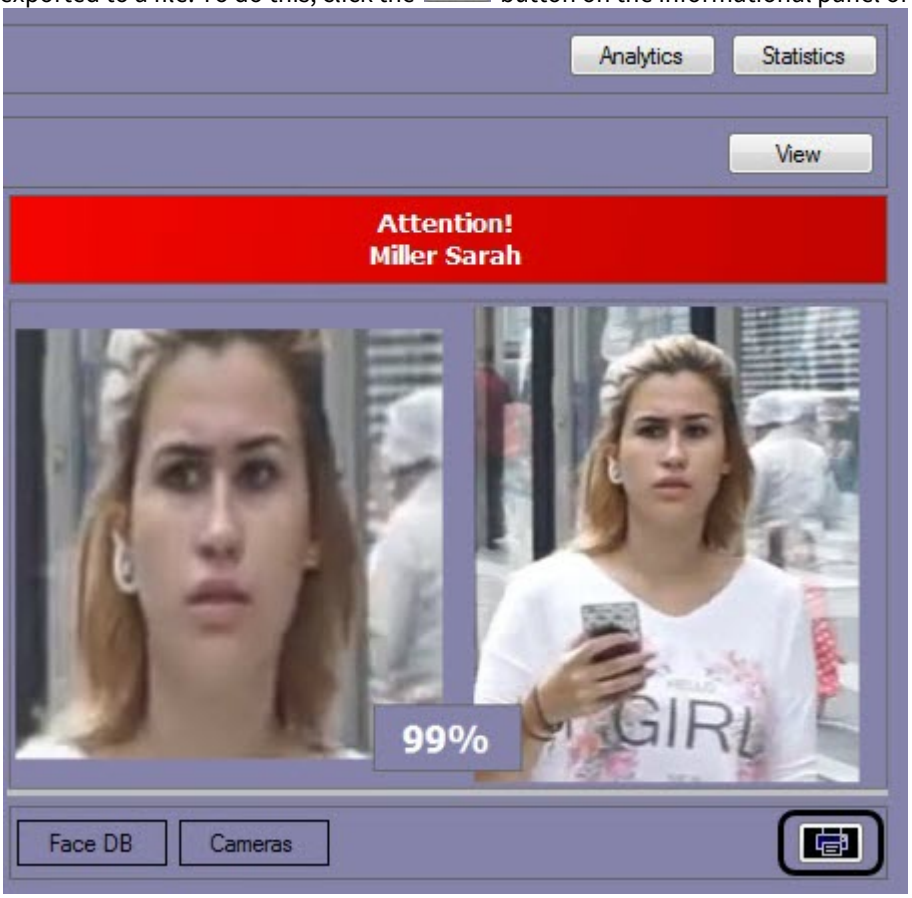
> **Note**
>
> The **Name**, **Department** and **Similarity level, no less than, %** fields are available only if the **Only recognized** value is selected in the **Show faces** drop-down list.

As a result, the faces with the specified filtering conditions will be displayed.

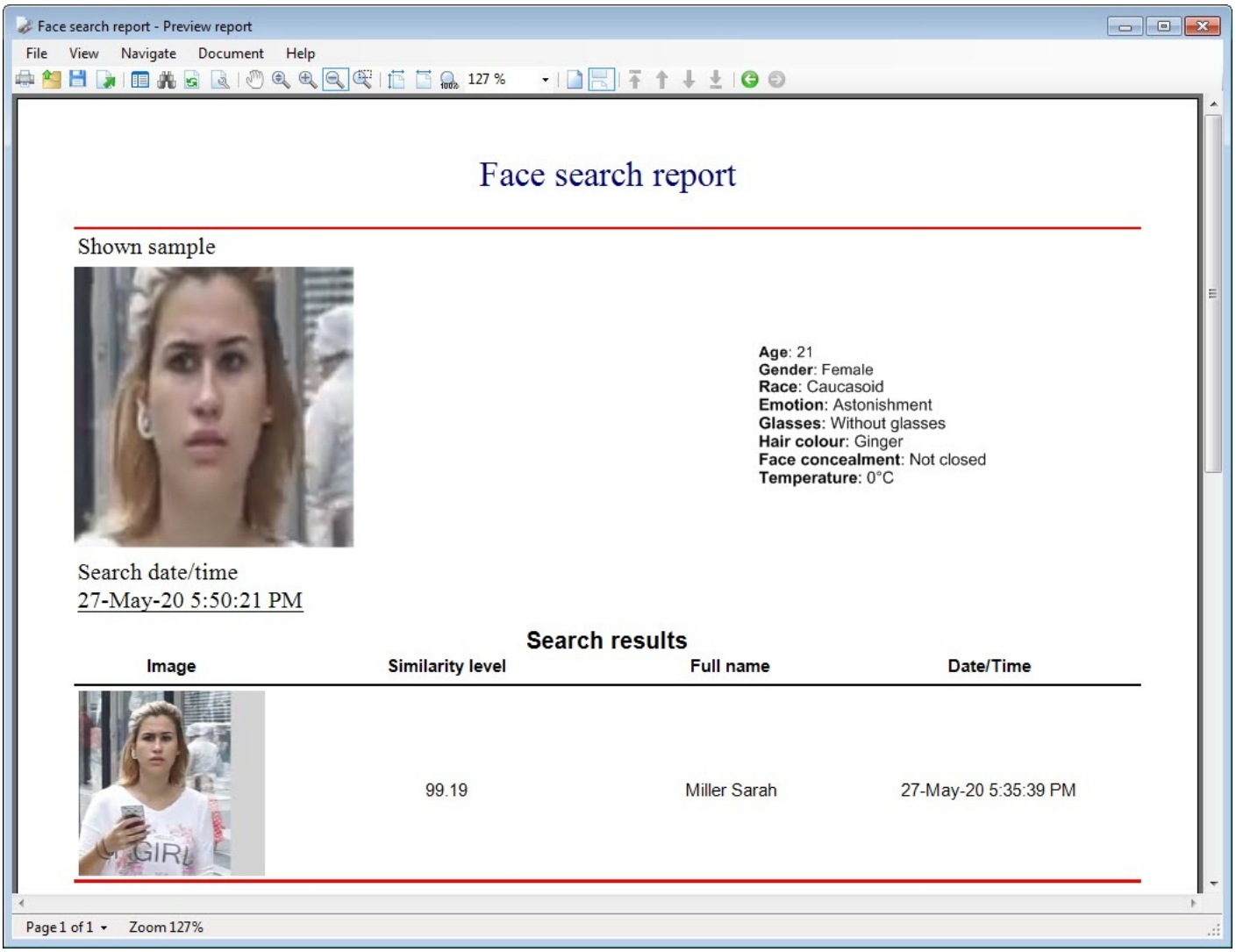


4.2.1.3 Exporting the results of the recognized face search to report file

If the recognized faces filtering was performed (see Filtering the recognized and unrecognized faces), then the filter results can be exported to a file. To do this, click the  button on the informational panel of the recognized face.



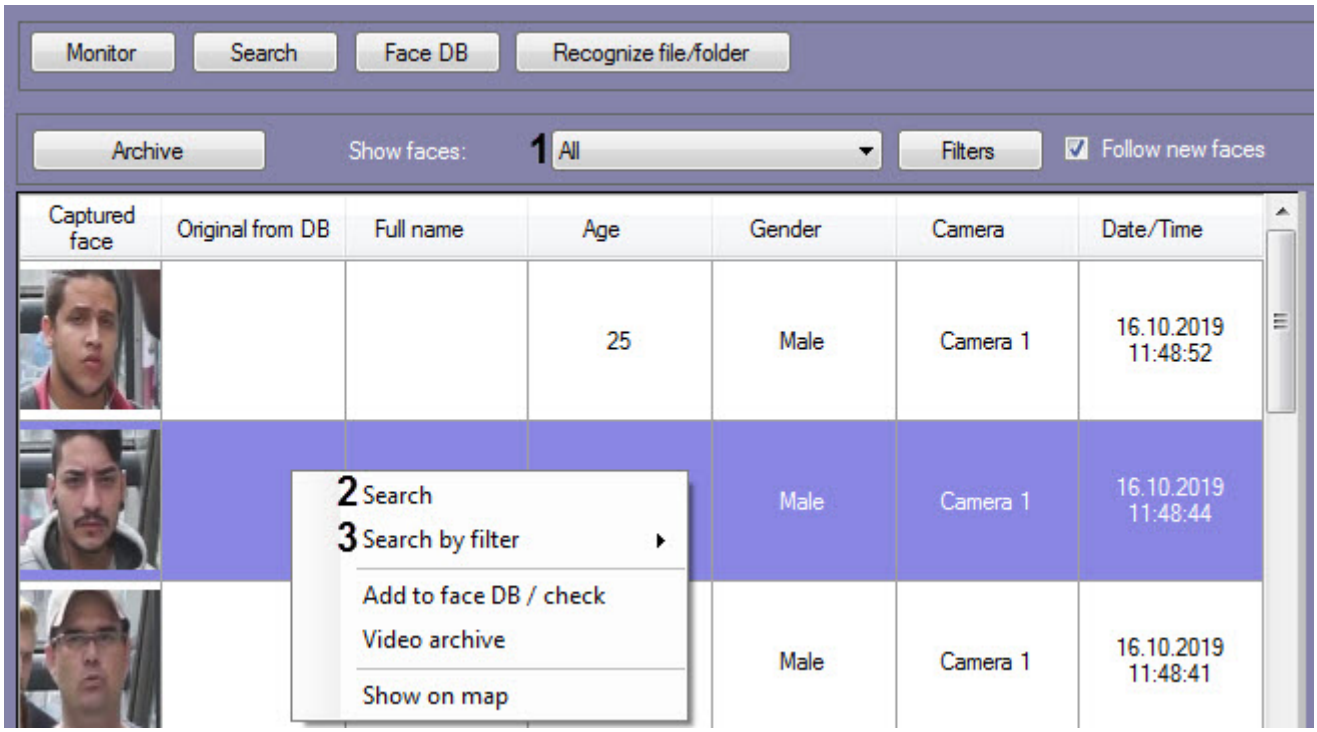
As a result, a report will be generated, which can then be saved to a file, or printed.



4.2.1.4 Go to face search

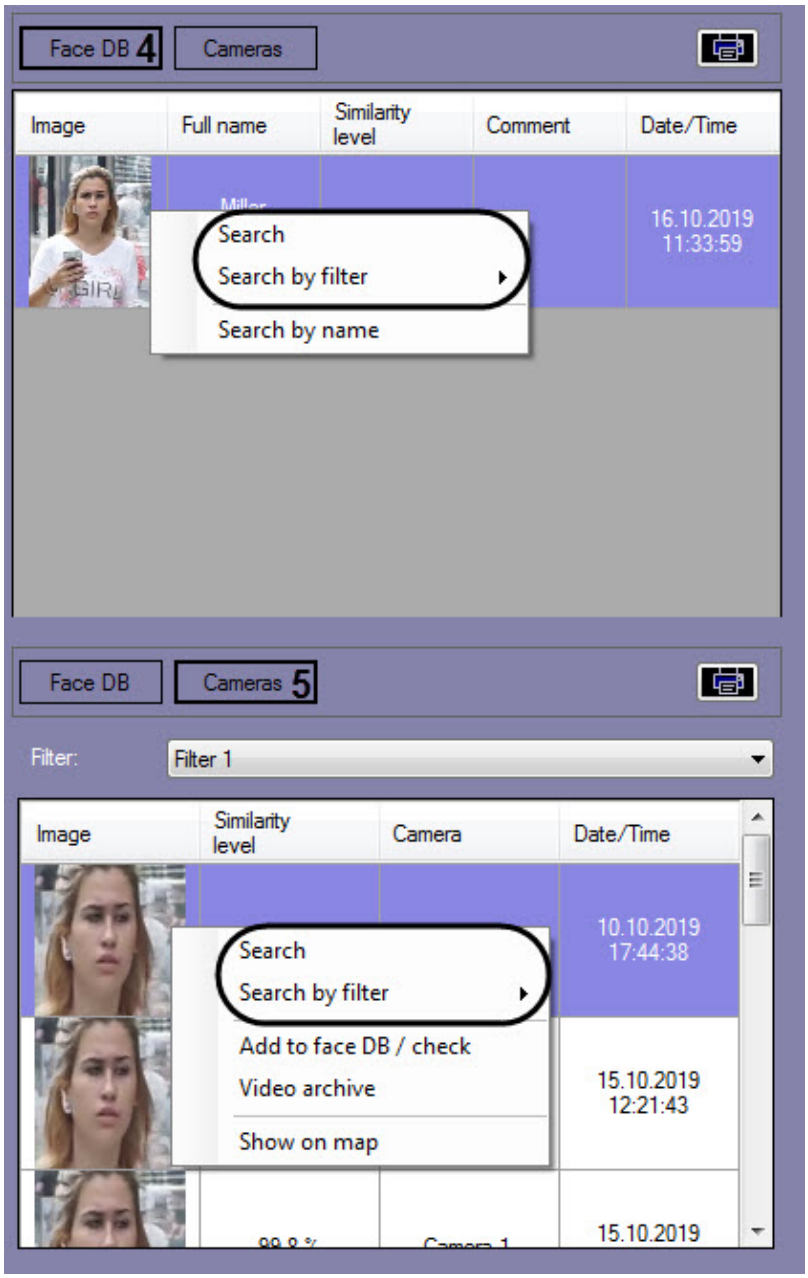
It's possible to go to face search from the monitoring panel of the detected faces. To do this:

1. From the **Show faces** drop-down list (**1**) select the required value:
    a. **All**;
    b. **Only recognized**;
    c. **Only unrecognized**.



2. From the list of detected faces select the image by which search will be performed.
3. Right-click the corresponding line in the list and select the **Search** from the menu (**2**) to search only by the image.
4. Right-click the corresponding line in the list and select the **Search by filter** from the menu (**3**) → "Filter name" to search the image using the specified filter.

> **Note**
>
> You can also go to the face search by right-clicking on the image in the **Face DB** (**4**) or **Cameras** (**5**) sections (see Viewing information on recognized and unrecognized faces) and selecting the corresponding item.
>
> If the recognized face was selected, the **Search by name** will be available after clicking on the **Face DB** button (**4**). When you search a recognized person by name, the **Name** field is automatically filled in according to the data from the Reference face database.



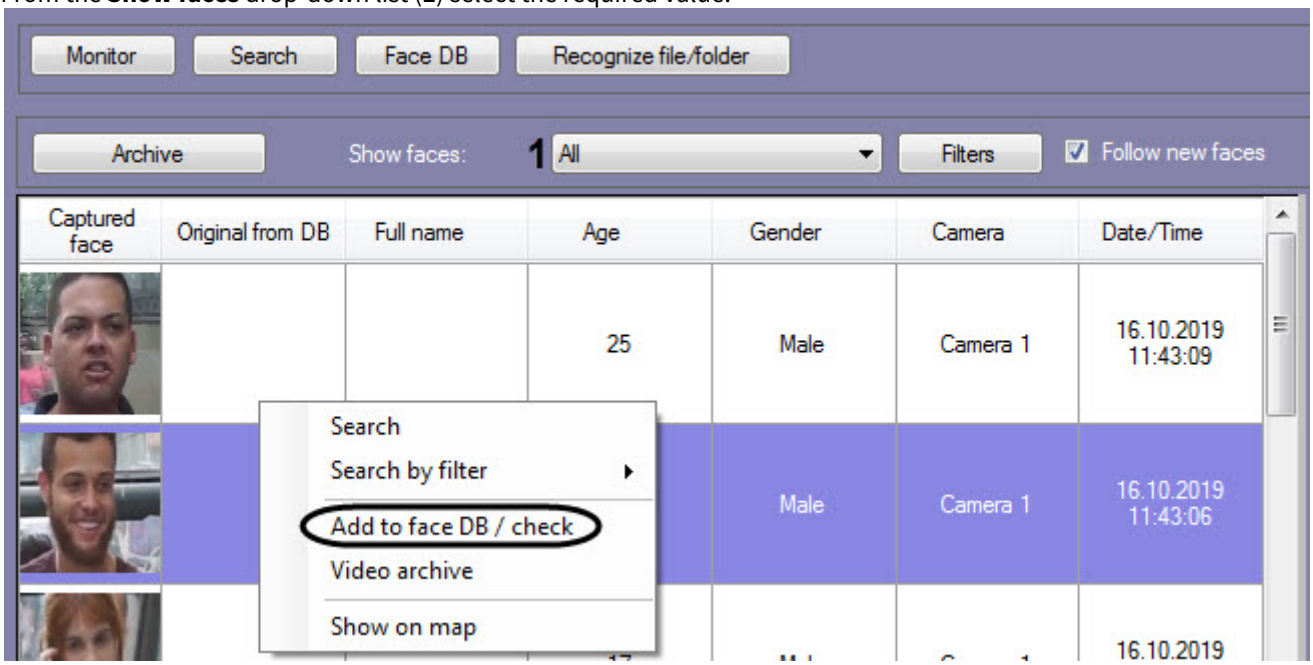
As a result, the face search window will be opened (see Face search), and the search for the selected face will be automatically performed. The captured face image will be loaded as the image for search.

> **Note**
>
> If there are more than one captured faces on the image, the automatic face search will not be performed.

4.2.1.5 Add captured faces to the reference face database

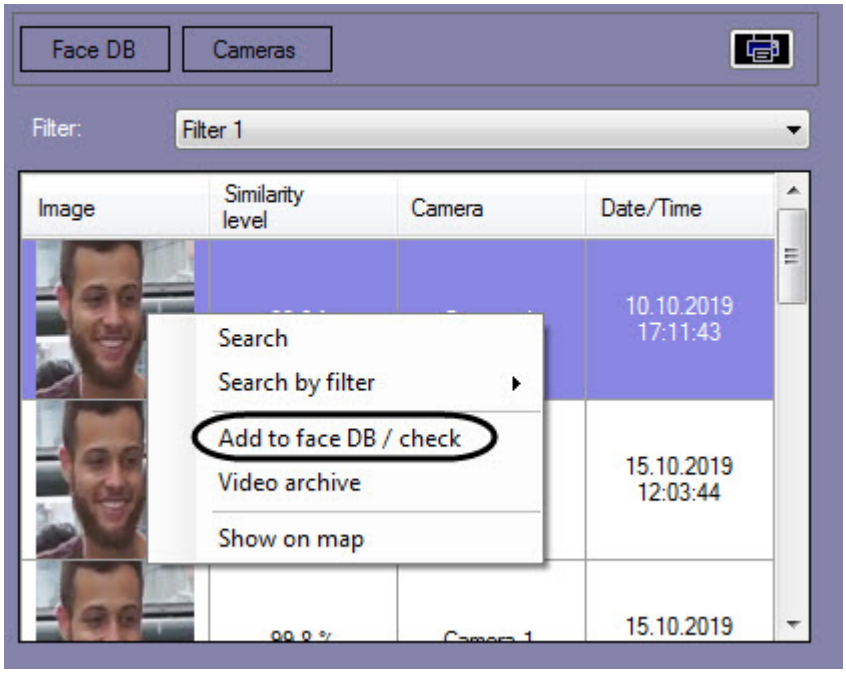
It's possible to add a captured face from the monitoring panel to the reference face database. To do this:

1. From the **Show faces** drop-down list (**1**) select the required value.



2. From the list of detected faces, select the image which is to be added to the reference face database. Right-click it and select the **Add to face DB/check** item (**2**) from the menu.

> **Note**
>
> You can also add the face to the reference face database by right-clicking on the image in the **Cameras** section in the lower right part of the captured faces monitoring panel and selecting the corresponding menu item.



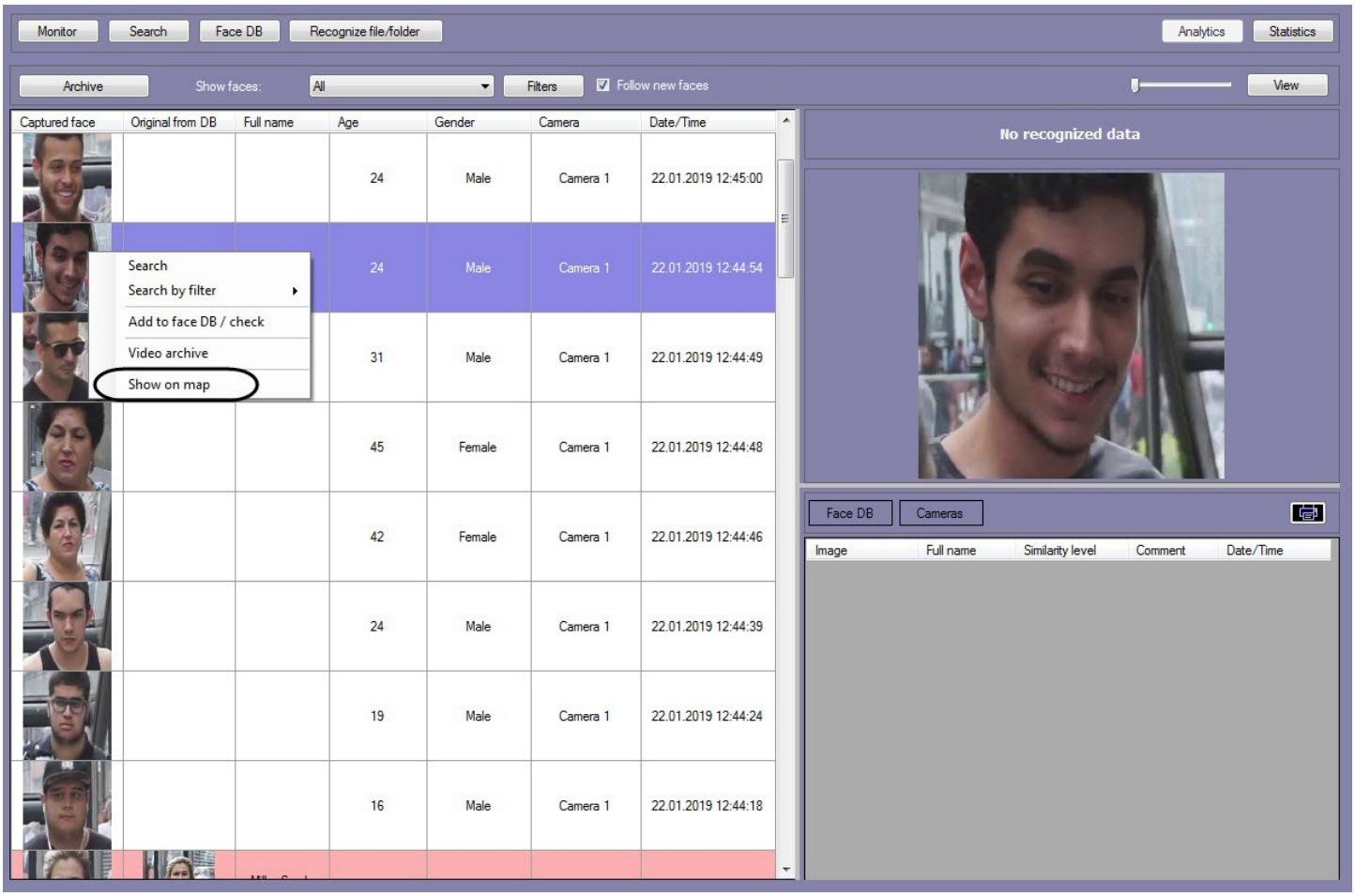
As a result, the window for adding the detected face to the face database will be displayed. The process of adding the detected faces to the face database is described in the Working with the reference face database section.

4.2.1.6 Displaying the camera that captured the face on the map

To display the camera that captured the face on the map, right-click the captured image and select **Show on map** from the menu.

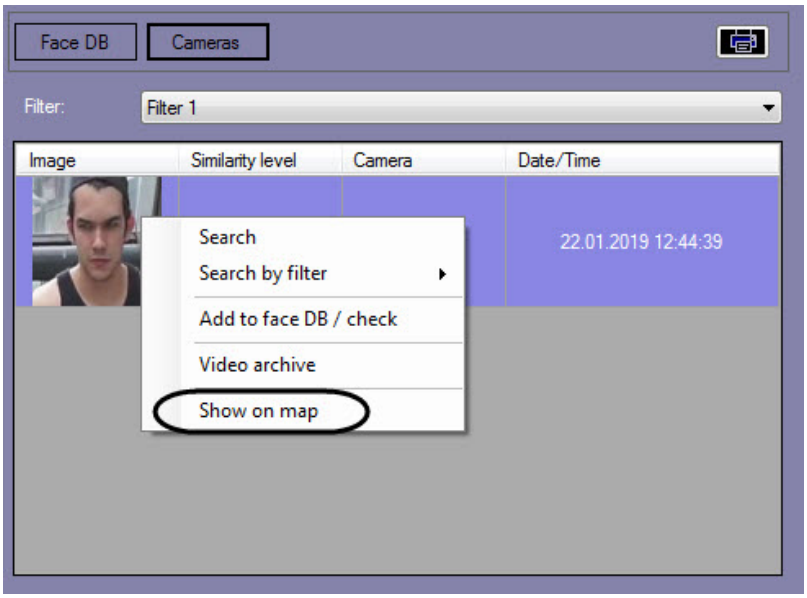
Note

To enable the **Show on map** item display in the menu, it is necessary to specify a control map in the **Face recognition and search** interface object settings (see Configuring permissions and additional settings).



Note

You can also display the camera that captured the face on the map by right-clicking on the image in the **Cameras** section in the lower right part of the captured faces monitoring panel and selecting the corresponding menu item.



As a result, the camera that captured the selected face will be displayed in the **Map** interface window.

4.2.1.7 Enabling the Simple mode of captured and recognized faces monitoring

Simple mode of monitoring is designed to view the captured and recognized faces in real time without the ability to switch to another mode and change the appearance of the interface window.

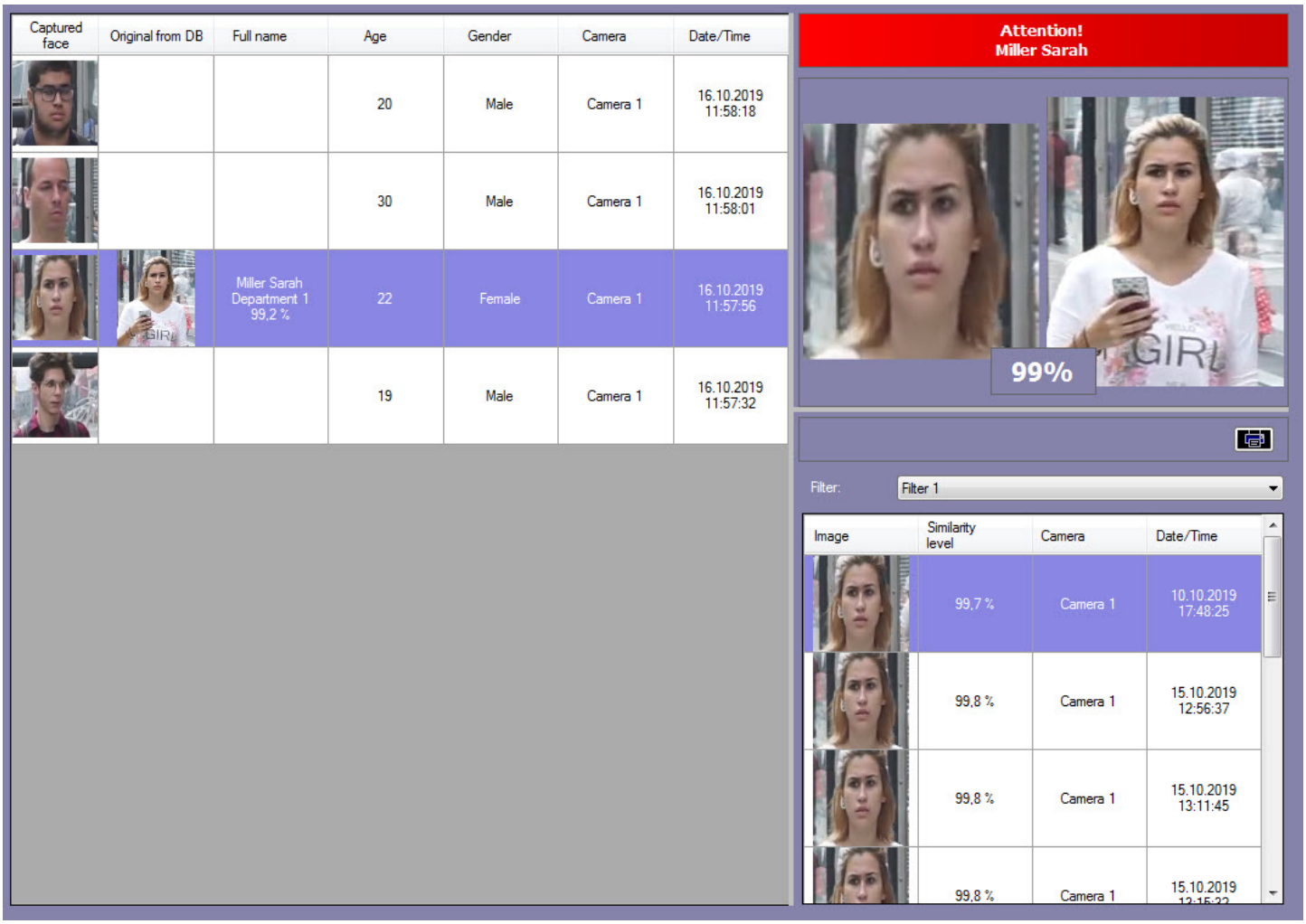
To enable the Simple mode, set the **True** value for the **SimpleMode** parameter in the face_client.run.config configuration file (for details, see XML-file parameters reference guide).

Attention!

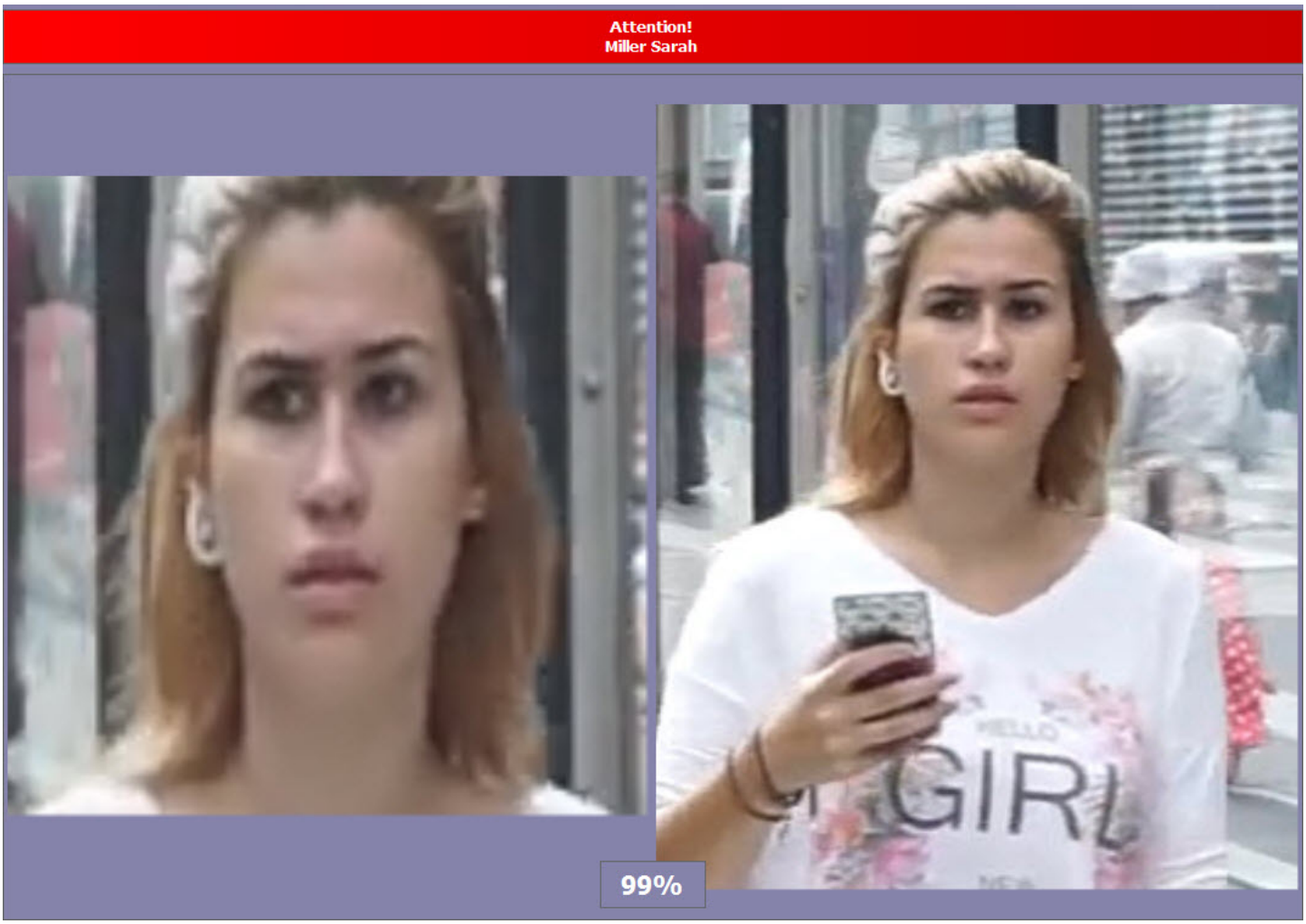
When the Simple mode is enabled, the upper part of the interface window is hidden, and such operations as working with the reference face database, face searching in the video archive, and some others become unavailable. The sizes of all elements, including the column size remain the same as before the Simple mode enabling. To disable the Simple mode, set the **False** value for the **SimpleMode** parameter.

Note

Since the upper part of the interface window is hidden in Simple mode, it is recommended to enable the automatic setting of the **Follow new faces** checkbox (see Monitoring of captured and recognized faces).

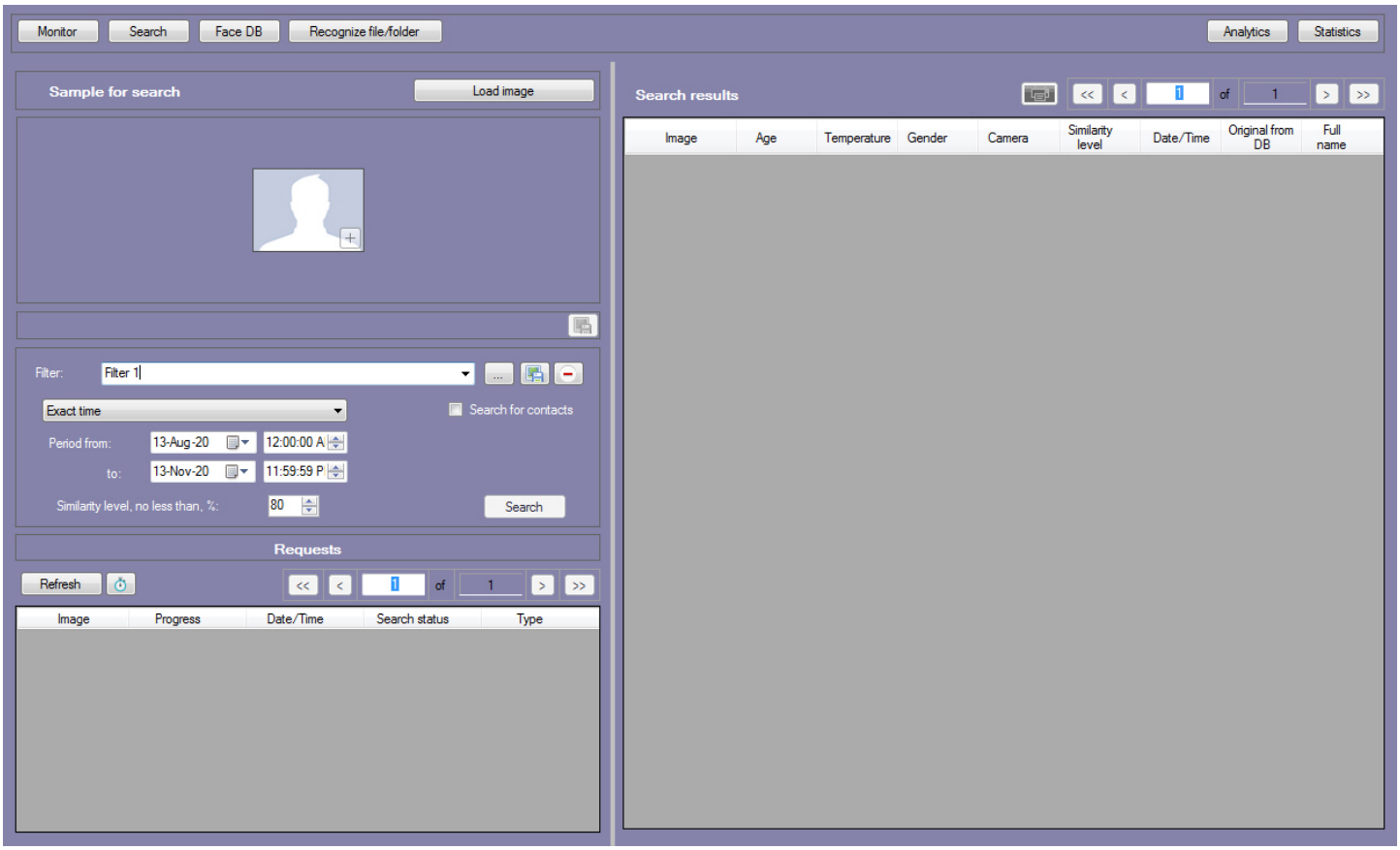


Double-click on the recognized face area to expand and minimize it.



4.2.2 Face search

To go to face search click the **Search** button in the **Face recognition and search** interface window. As a result the window for face search in video archive by photo will open.



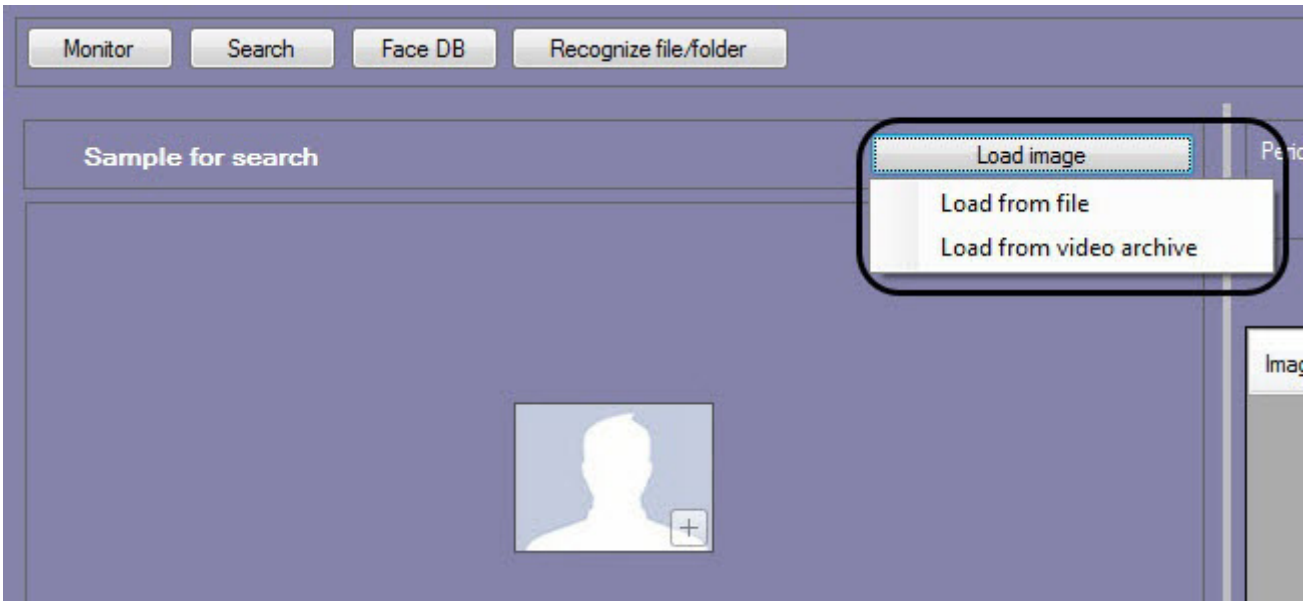
4.2.2.1 Loading an image for search

The image for search can be selected in two ways:

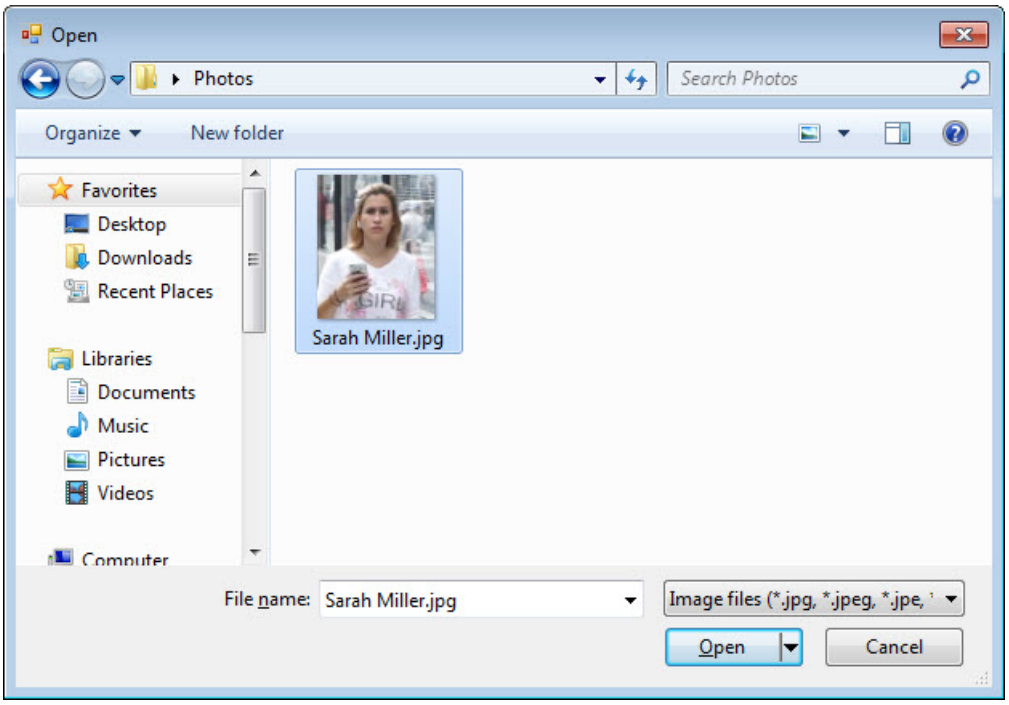
1. By uploading a file with the image.
2. By capturing the image from a video archive.

4.2.2.1.1 Uploading image from a file

To upload an image from a file, click the **Load image** button and select the **Load from file** value from the list.



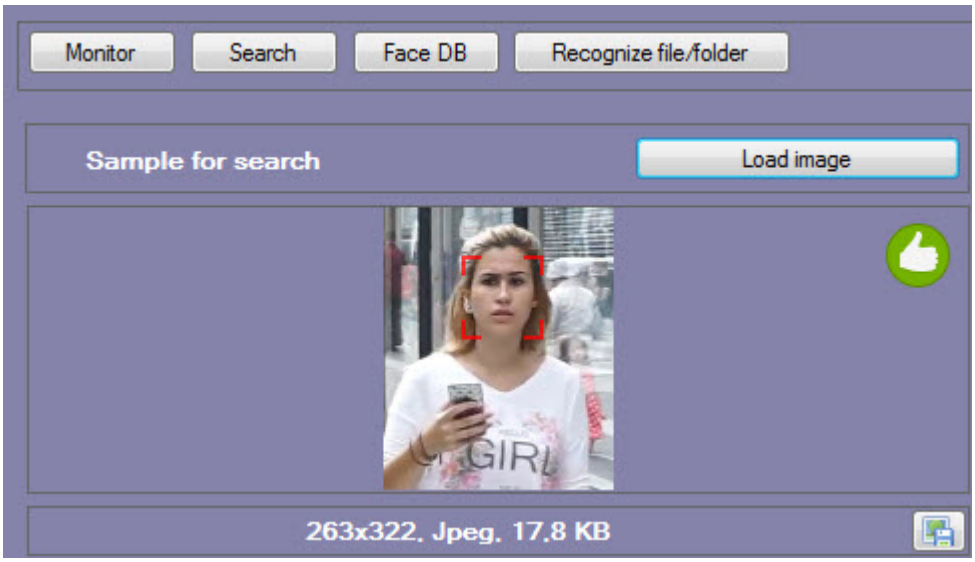
Standard window of files selection will open. Select the required file with image and click the **Open** button.



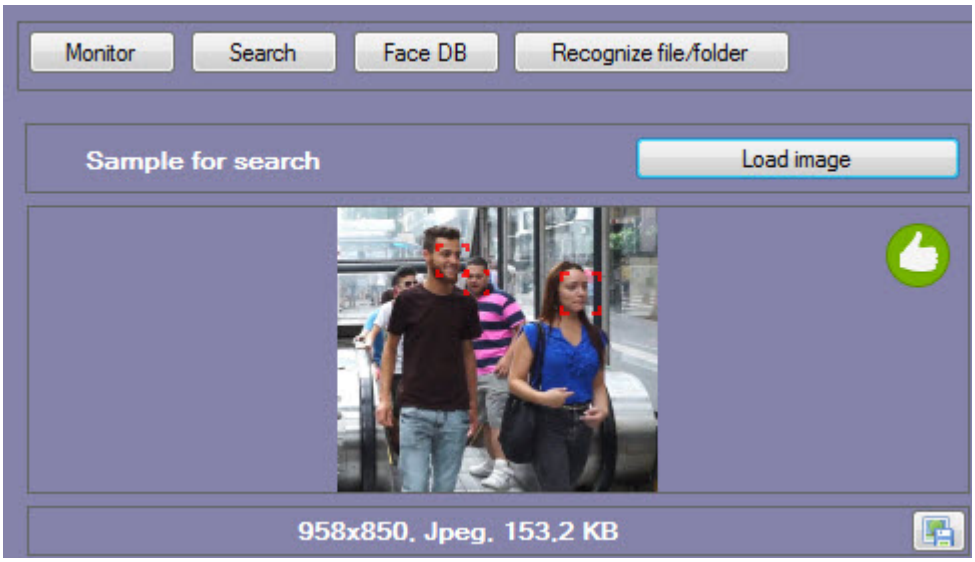
Note

The following image formats are supported for loading: JPG, JPEG, JPE, JFIF, PNG, GIF, BMP.

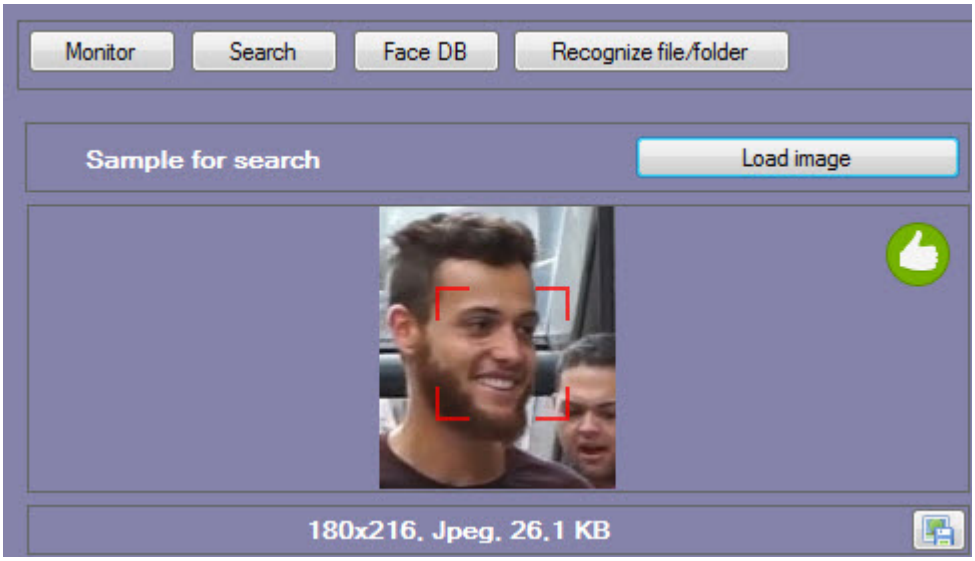
As a result an image from the selected file will display in the **Sample for search** field on the panel of specifying search conditions.



Several faces can be captured on the sample for search.

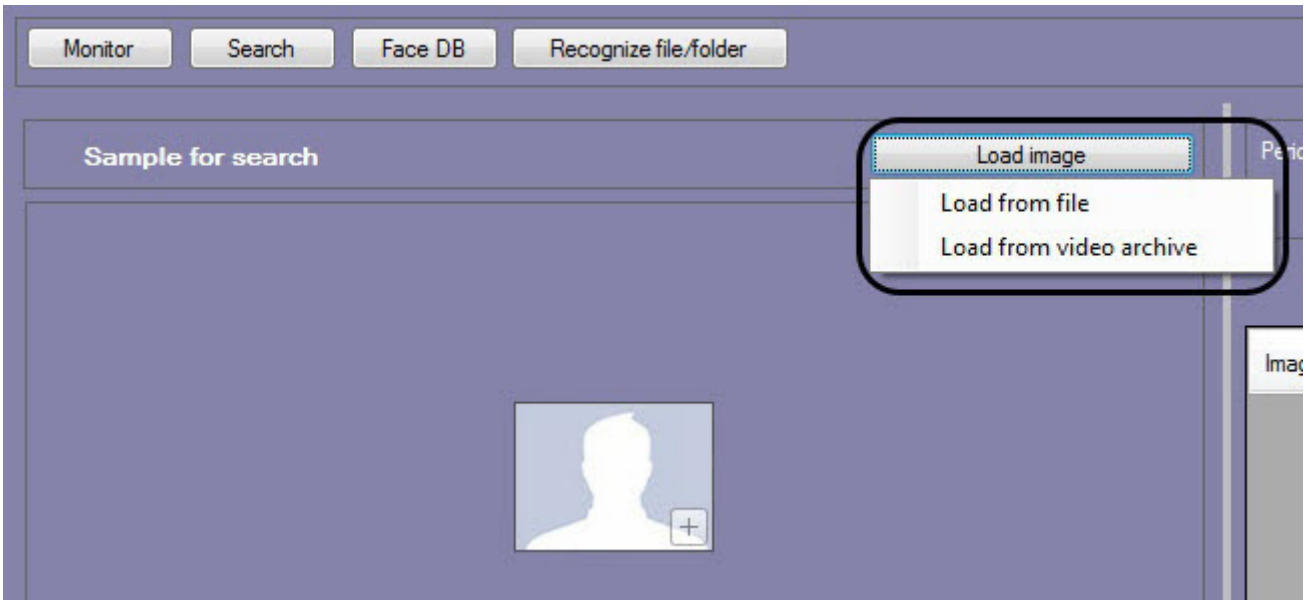


In this case, left-click on the face which is required for the search.



4.2.2.1.2 Uploading image from video archive

To upload an image from the video archive, click the **Load image** button and select the **Load from video archive** value from the list.



Window of capturing the image from the video archive will open.

1. Select video camera from video archive in which it's necessary to capture the image (**1**).

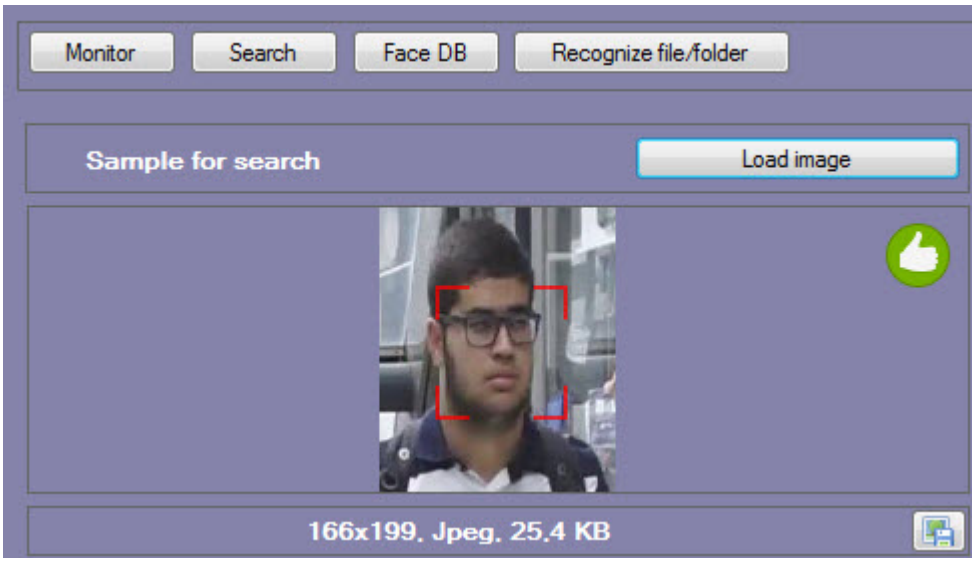
2. Select required video. To go to video records click left mouse button on the corresponding time marker (**2**).
3. Select required video frame. Use playback control board for video frame selection (**3**).

Note.

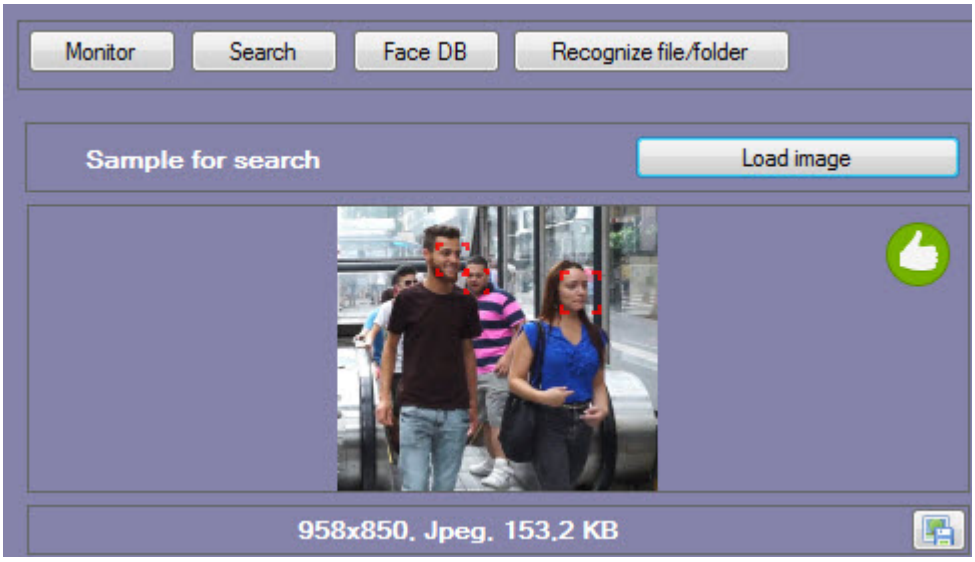
button is for starting playback of selected video recording, button stops playback. and buttons are used for going to video recording back and forth in playback mode and also for paging frames in pause mode. To go to pause mode button is used, button is used for restarting playback.

4. Click the **OK** button (**4**).

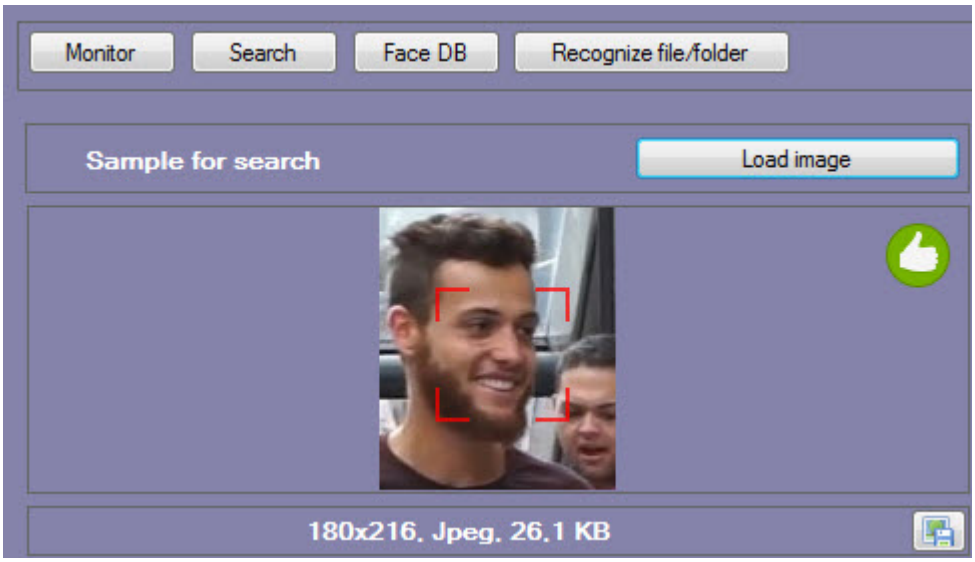
As a result the selected area is displayed in the **Sample for search** field on setting search conditions panel.



Several faces can be captured on the sample for search.



In this case, left-click the face which is required for the search.



Uploading image from the video archive is complete.

4.2.2.2 Starting the face search process

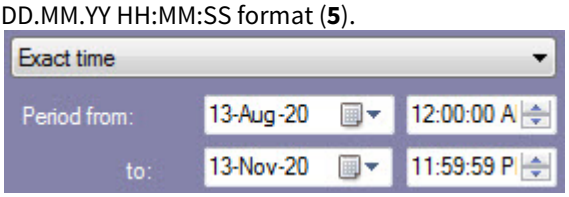
To search faces, do the following:

1. Upload an image for search (see Loading an image for search).

> **Note**
>
> The uploaded image is automatically verified with all faces in the reference face database and, if there is a match, then the name of the corresponding person and its similarity degree in percent are displayed on top of the uploaded image.

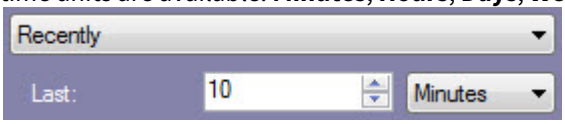
2. From the **Filter** drop-down list (**1**) select the existing face search filter or enter an arbitrary filter name if the filter is supposed to be saved.

3. From the (**2**) drop-down list, select the required type of search interval:
   - **Exact time** - in the **Period from:** and **to:** fields specify the beginning and end of the search interval in the DD.MM.YY HH:MM:SS format (**5**).

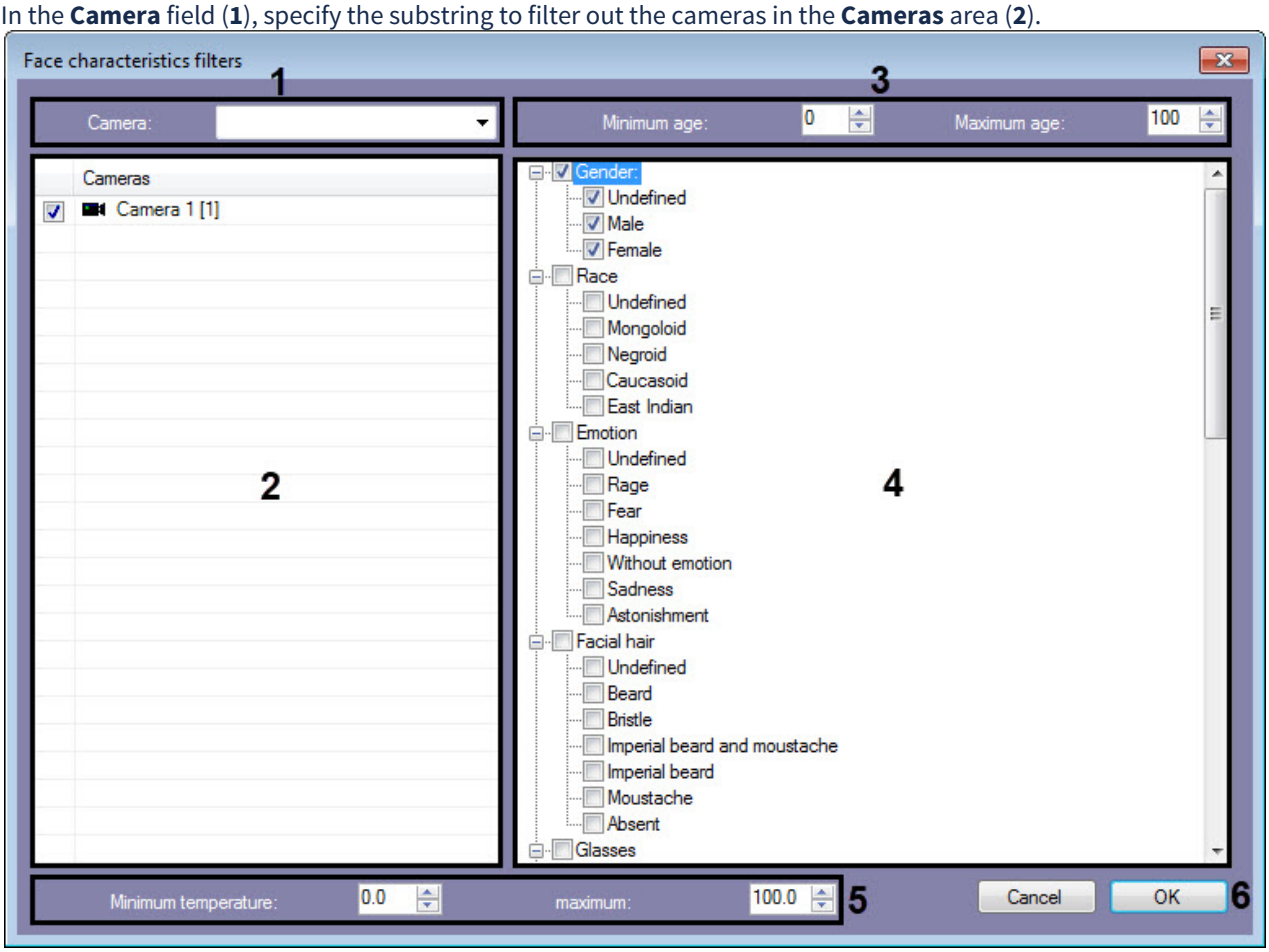


> **Note**
>
> The specified time period is not saved when the filter is saved.

- **Recently** - in the **Last:** field specify the time period from the current time to the specified time (**5**). The following time units are available: **Minutes**, **Hours**, **Days**, **Weeks**, **Months**.



4. In the **Similarity level, no less than, %** field (**3**), set the minimal similarity level between the reference face image and the captured face.
5. Click the ... button (**4**) to specify the face characteristics:
   a. In the **Camera** field (**1**), specify the substring to filter out the cameras in the **Cameras** area (**2**).



   b. In the **Minimum age** and **Maximum age** fields (**3**) specify the minimum and maximum age of persons to be displayed in the search results, respectively.
   c. In the area (**4**), set the check boxes next to the corresponding face characteristics.

> **Note**
>
> Face characteristics (**4**) may not be displayed (see Configuring permissions and additional settings).

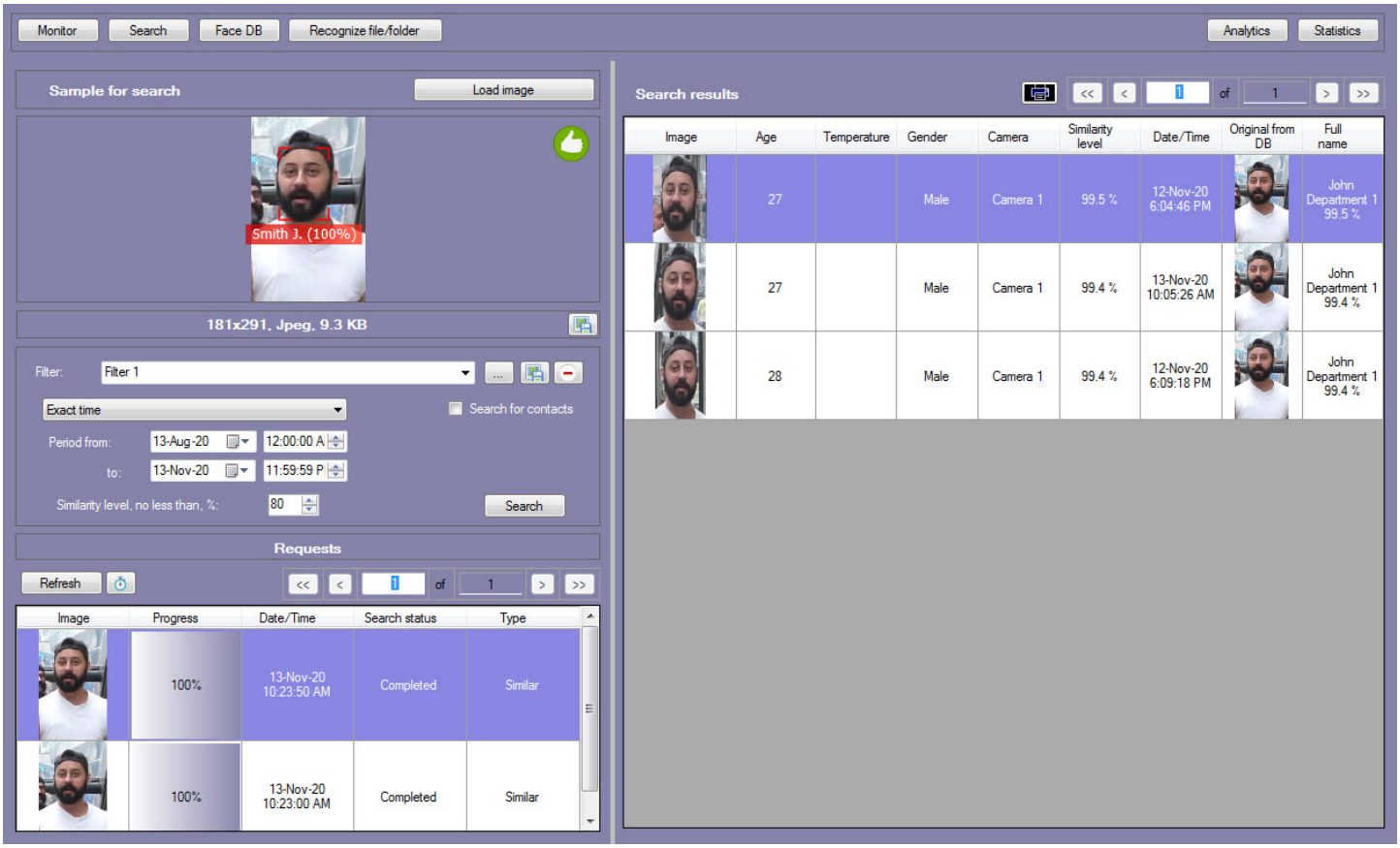
   d. In the **Minimum temperature** and **maximum** fields, specify the minimum and maximum face temperature, respectively (**5**).
   e. Click **OK** (**6**).
6. Click the button (**5**) to save this filter for the future use.

Note

To remove a filter, select it from the **Filter** drop-down list (**1**) and click the  button (**6**).

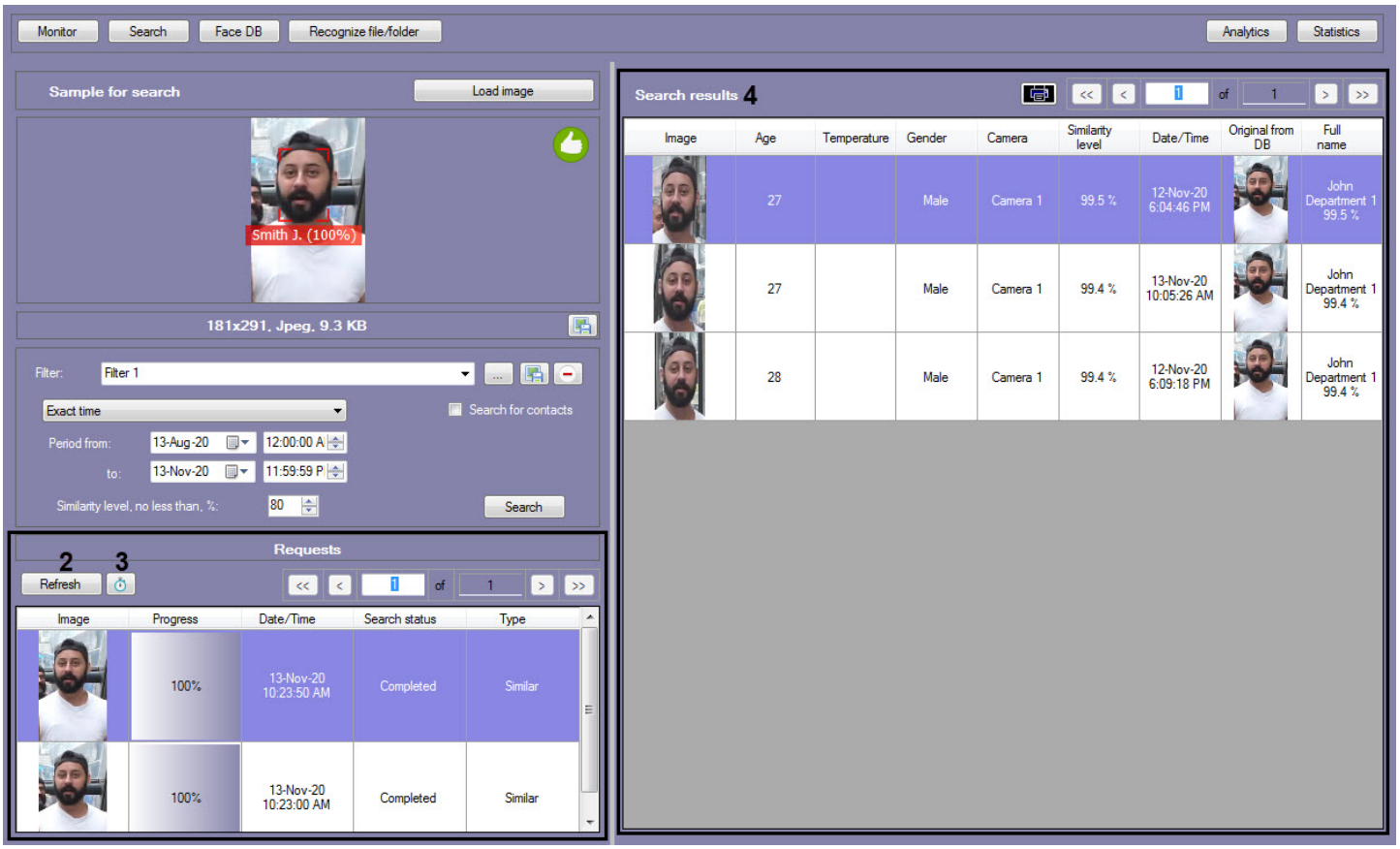
7. Set the **Search for contacts** checkbox (**7**) if it is necessary to find people who have been in contact with this person for the specified time period.
8. Click the **Search** button (**8**).

As a result, the selected face will be searched.



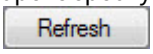
4.2.2.3 Viewing face search results

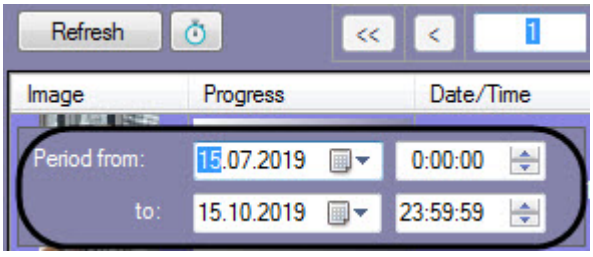
Search results are displayed in the **Face recognition and search** interface window after the search is performed (see Starting the face search process).



The list of all search requests is displayed in the **Requests** section (**1**). The following information is displayed for each record:

Column name	Description	Face Recognition module used
Image	The image for search *Note. As you increase the width and height of this column, the image size also increases. The specified column size does not change even if the **Automatic column width** checkbox is set (see Setting up the parameters for the Face recognition and search interface object)*	All recognition modules
Progress	The progress of the search completion	All recognition modules
Date/Time	The date and time of the search request completion	All recognition modules
Search status	The status of the search request	All recognition modules

In order to view the search requests and their results for a certain period of time, click the  button (**2**) and on the panel that opens specify the beginning and end of the time interval in the **Period from:** and **to:** fields, respectively, and click the  button (**3**).



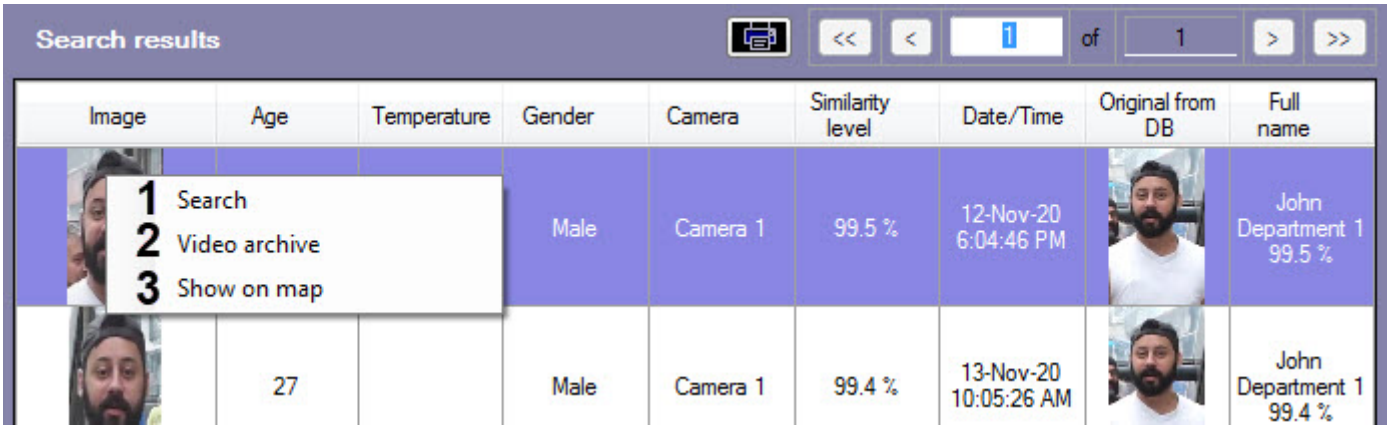
The search results of the selected request are displayed in the **Search results** section (**4**). The following information is displayed for each record:

Column name	Description	Face Recognition module used
Image	The face image from the video record *Note. As you increase the width and height of this column, the image size also increases. The specified column size does not change even if the **Automatic column width** checkbox is set (see Setting up the parameters for the Face recognition and search interface object)* *Note 2. In case of an emergency shutdown of the FACE-Intellect server, some images of faces may be damaged and displayed as . To hide such results, it is necessary to change the value of the **HideResultsWithoutImages** parameter to **True** (see XML-file parameters reference guide)*	All recognition modules
Name of face characteristic	Selected face characteristics (see Configuring permissions and additional settings). By default, only Age and Gender are displayed.	All modules except HUAWEI
Camera	The camera which is a video record source	All recognition modules
Similarity level	The similarity level between the reference face image and the captured face from the video record	All recognition modules
Date/Time	The date and time of the search	All recognition modules

Note

When using the HUAWEI recognition module, no more than 100 similar faces can be displayed in the **Search results** section.

To place a face image from the **Search results** section in the **Sample for search** window, double left-click the corresponding search result.



To perform the search using the image from the **Search results** section, right-click the corresponding image and select **Search** from the menu (**1**).

To veiw the video record from moment when the captured face appears, use one fo the following ways:

- Double left-click on the corresponding face search result;
- Right-click the corresponding face search result and select **Video archive** from the menu (**2**). After this the window for video record viewing will open (for details, see Working with the archives).

To display the camera that captured the face on the map, right-click the corresponding image and select **Show on map** from the menu (**3**).

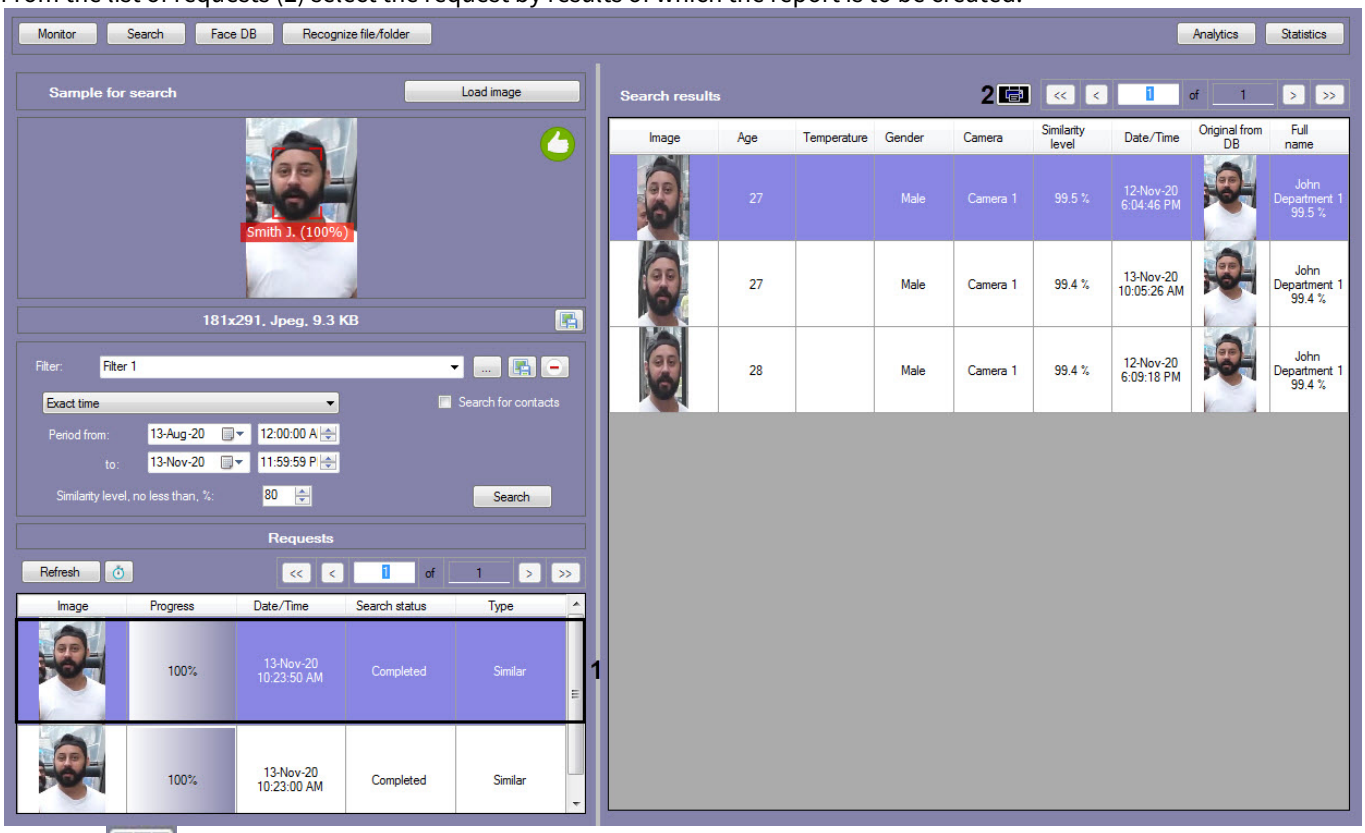
Note

To go to the previous and next page use >> and > buttons correspondingly. To go to the first page of search results use the << button. To go to the end page of search results click the >> button.

4.2.2.4 Exporting face search results to a report file

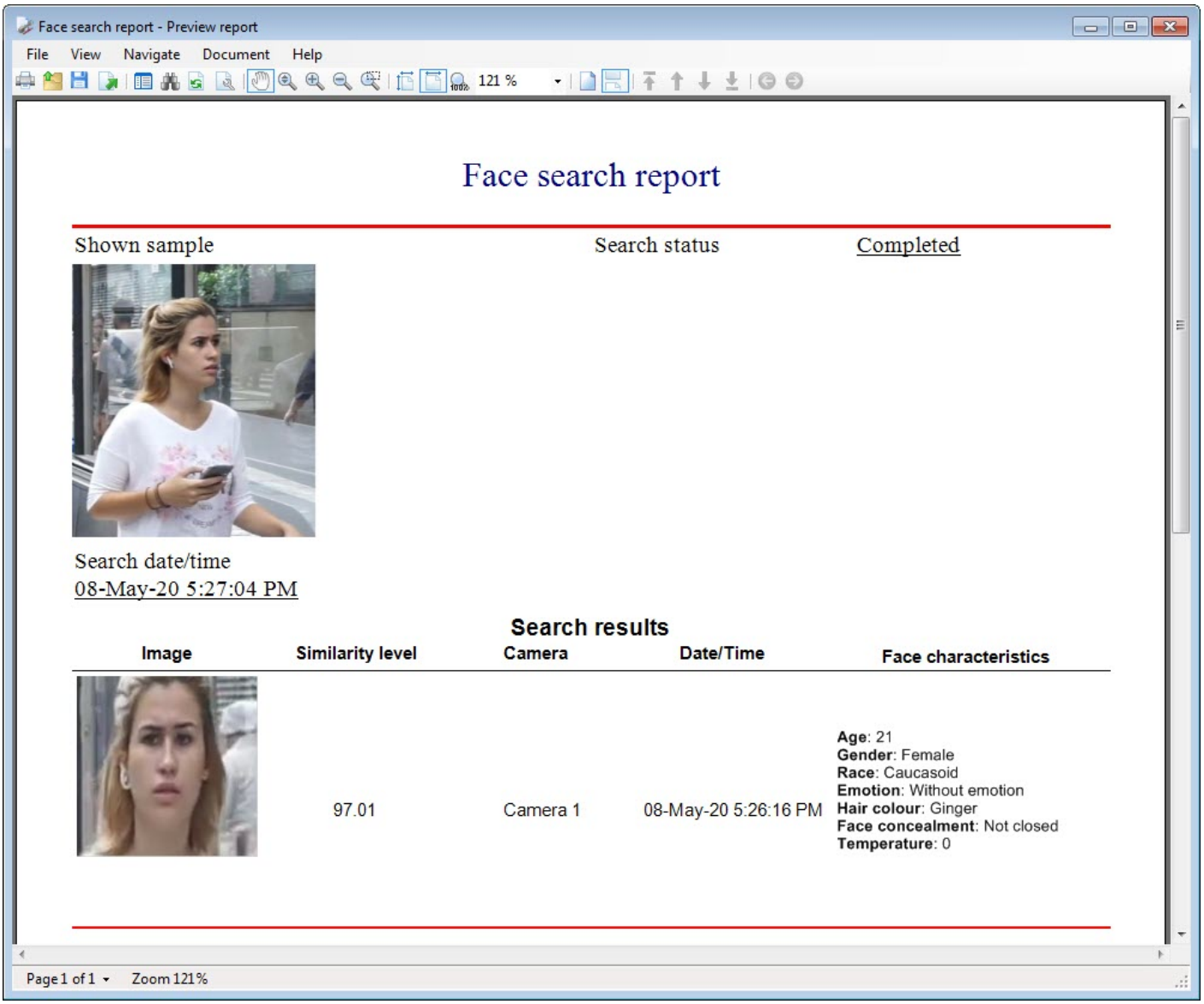
To export search results toa report file tin the PDF format, do the following:

1. From the list of requests (**1**) select the request by results of which the report is to be created.



2. Click the button (**2**).

As a result the report by results of the selected search request will be generated.

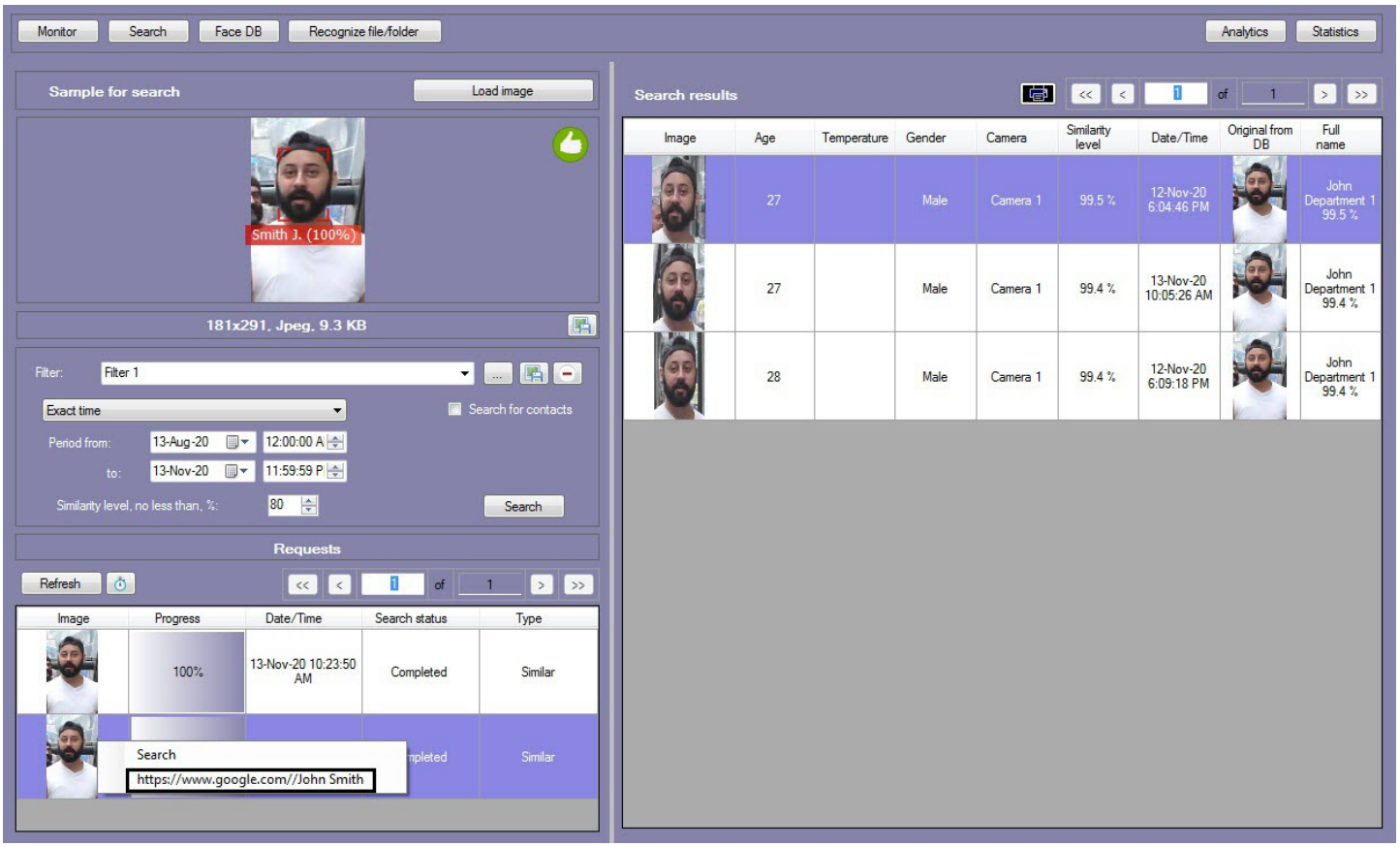


Exporting search results to report file is completed.

4.2.2.5 Web page opening upon a face search request

It is possible to open a Web page upon a face search request. To do this, right-click the corresponding search request and select the link to go to the web-page.

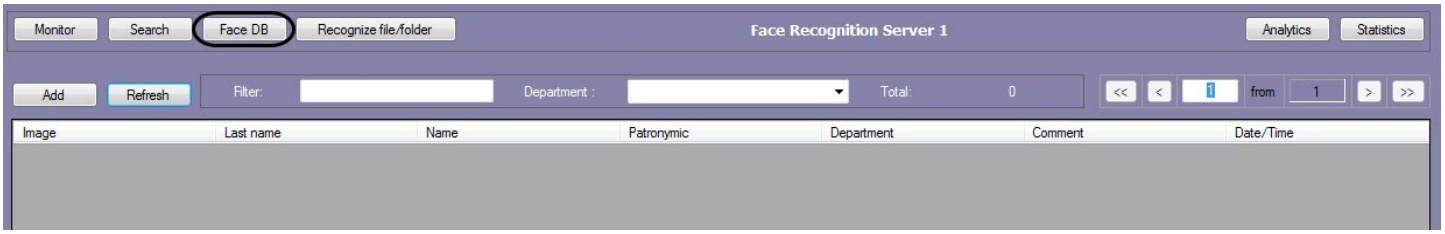
> **Note.**
>
> Opening a Web page upon a face search request is possible only for search by image loaded from file. Also, the Web page that opens should be specified on the settings panel of the **Face recognition and search** interface object (see Configuring permissions and additional settings).



As a result the specified link will be opened in the browser.

4.2.3 Working with the reference face database

To go to the reference face database, click the **Face DB** button in the **Face recognition and search** interface window.



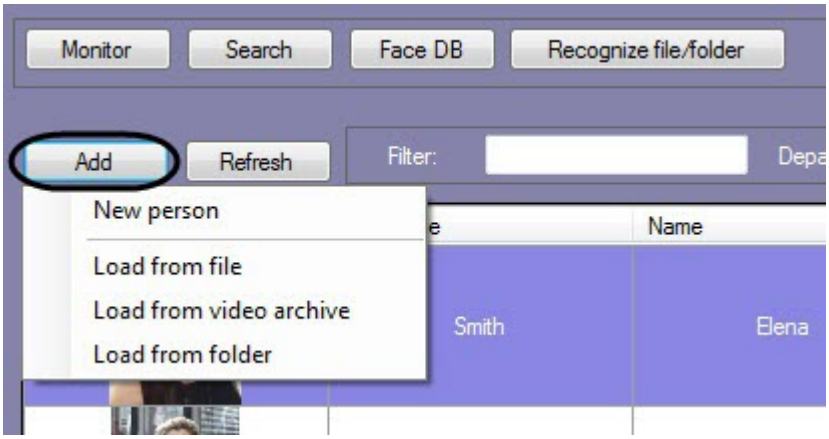
The information on faces in the reference face database is displayed in the columns, which depend on the recognition module used.

Column name	Description	Face Recognition module used
Image	Reference face image	All recognition modules
Last name	The last name of the person on the image	All modules except HUAWEI
Name	The first name of the person on the image	All modules except HUAWEI
Patronymic	The patronymic name of the person on the image	All modules except HUAWEI
Department	The department of the person on the image	All recognition modules
Comment	The comment	All modules except HUAWEI
Date/Time	Date and time of adding a face to the reference face DB	All recognition modules

Column name	Description	Face Recognition module used
Full name	The full name of the person on the image	Only HUAWEI
ID	The face ID	Only HUAWEI

4.2.3.1 Selecting a way to upload an image to the reference face database

To upload an image to the reference face database, click the **Add** button and select one of the ways of uploading an image.



There are following ways to upload the images:

1. **Load from file**.
   The process of uploading an image from the file to the reference face database is similar to uploading an image from the file for search (see Uploading image from a file).
2. **Load from video archive**.
   The process of uploading an image from the video archive to the reference face database is similar to uploading an image from the video archive for search (see Uploading image from video archive).
3. **Load from folder**.
   In the opened dialog window select the folder that contains the required images and click **OK**.

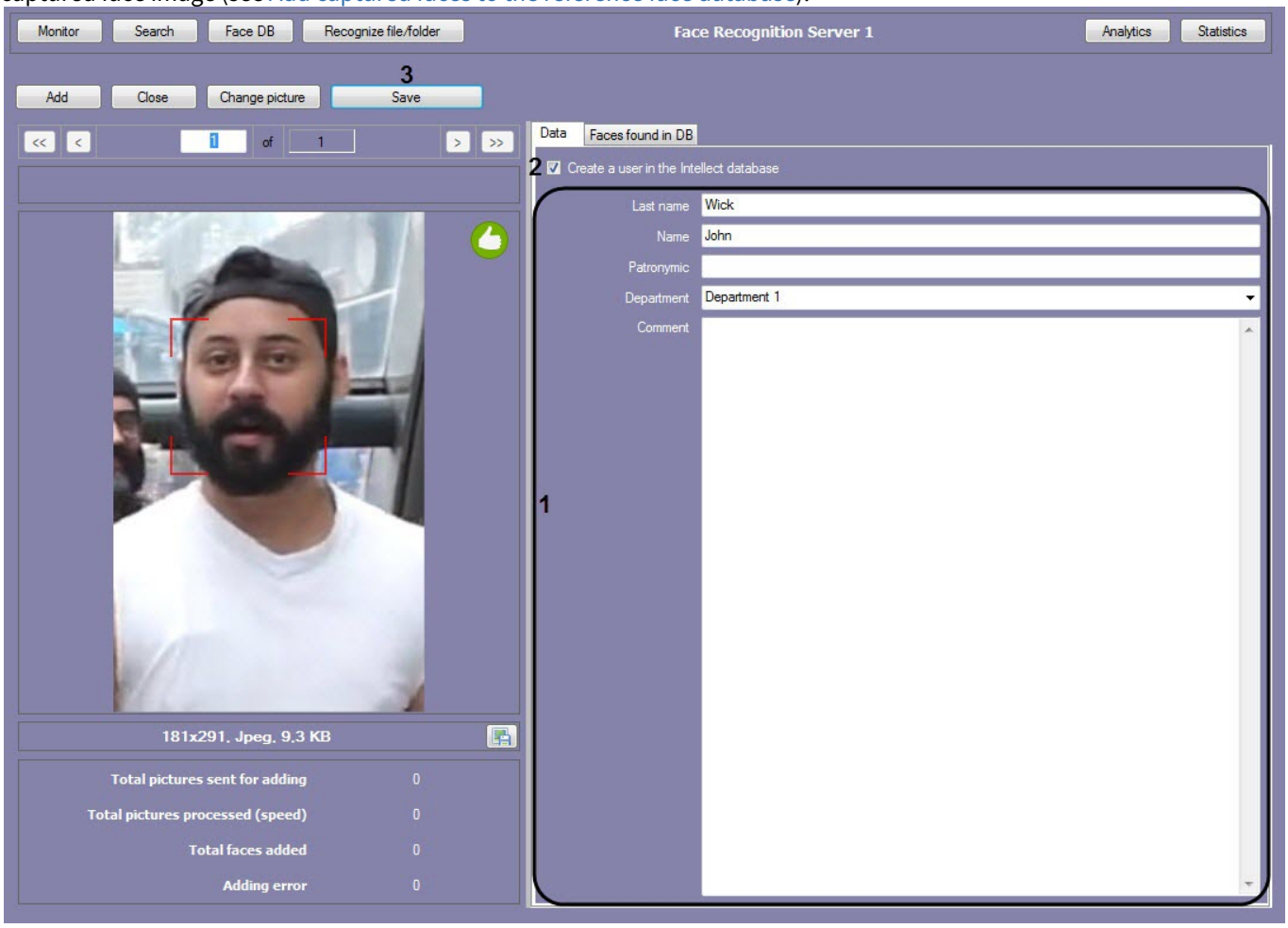
4.2.3.2 Adding images to the reference face database

Important!

Images uploaded to the reference face database should meet some requirements (see Requirements for images uploaded to the reference face database).

To add an image to the reference face database, do the following:

1. Upload an image in the preferred way (see Selecting a way to upload an image to the reference face database) or add the captured face image (see Add captured faces to the reference face database).



To the right of the image, the  or  icons are displayed.

The  icon means that the captured face can be added to the DB.

When the  icon is displayed, the **Save** button (**3**) is disabled and the captured face cannot be added to the DB. This may be caused by one of the following reasons:

- The reference face database editing is not enabled (see Configuring permissions and additional settings).
- The recognition module is not activated (see Activation of the recognition modules in Face Intellect).
- There is no connection to the Face recognition server.

2. Specify the required data about the face in the **Last name**, **Name**, **Patronymic**, **Department** and **Comment** fields (**1**).

Note

If the HUAWEI Recognition Module is used, the fields for specifying the data about the face differ from those presented above (for details, see Specific features of adding images to the reference face database using the HUAWEI recognition module).

Note

If the image was added to the reference face database using the **Load from file** or **Load from folder** way, the data about the person is generated automatically: the values of the **Last name**, **Name**, **Patronymic** and **Department** fields are taken from the name of the uploaded file. The following characters can be used as a separator: a period, a comma, a space symbol, a low line.

The format of the file name should be in on of the following formats:

- last name.name.patronymic.department.any following text will be ignored.image format
- last name,name,patronymic,department,any following text will be ignored.image format
- last name name patronymic department any following text will be ignored.image format
- last name_name_patronymic_department_any following text will be ignored.image format

Supported file formats: JPG, JPEG, JPE, JFIF, PNG, GIF and BMP.

Attention!

In case the **Load from folder** method was selected, the **Allow creating departments** checkbox is not set (see Configuring permissions and additional settings), and a non-existent department is specified in the file names, then the faces will be added to the currently selected department.

3. To create the user in the *Intellect* database, check the corresponding box (**2**).

Note

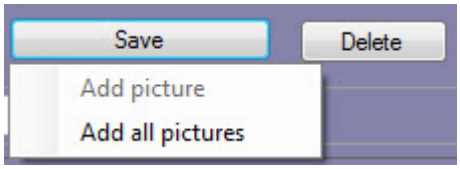
By default, if the checkbox is not set, then the **Person_ID = 0** parameter value is assigned to all faces when adding them to the reference face database. This may result in incorrect operation of scripts which use this database field. In order to hide the **Create a user in the Intellect database** checkbox and assign a unique **Person_ID** to each face when adding it to the reference face database, it is necessary to set the **True** value for the **HideCheckBoxIntellectPerson** parameter (see XML-file parameters reference guide).

4. Click the **Save** button (**3**) to accept the addition of the image to the reference face database.

Note

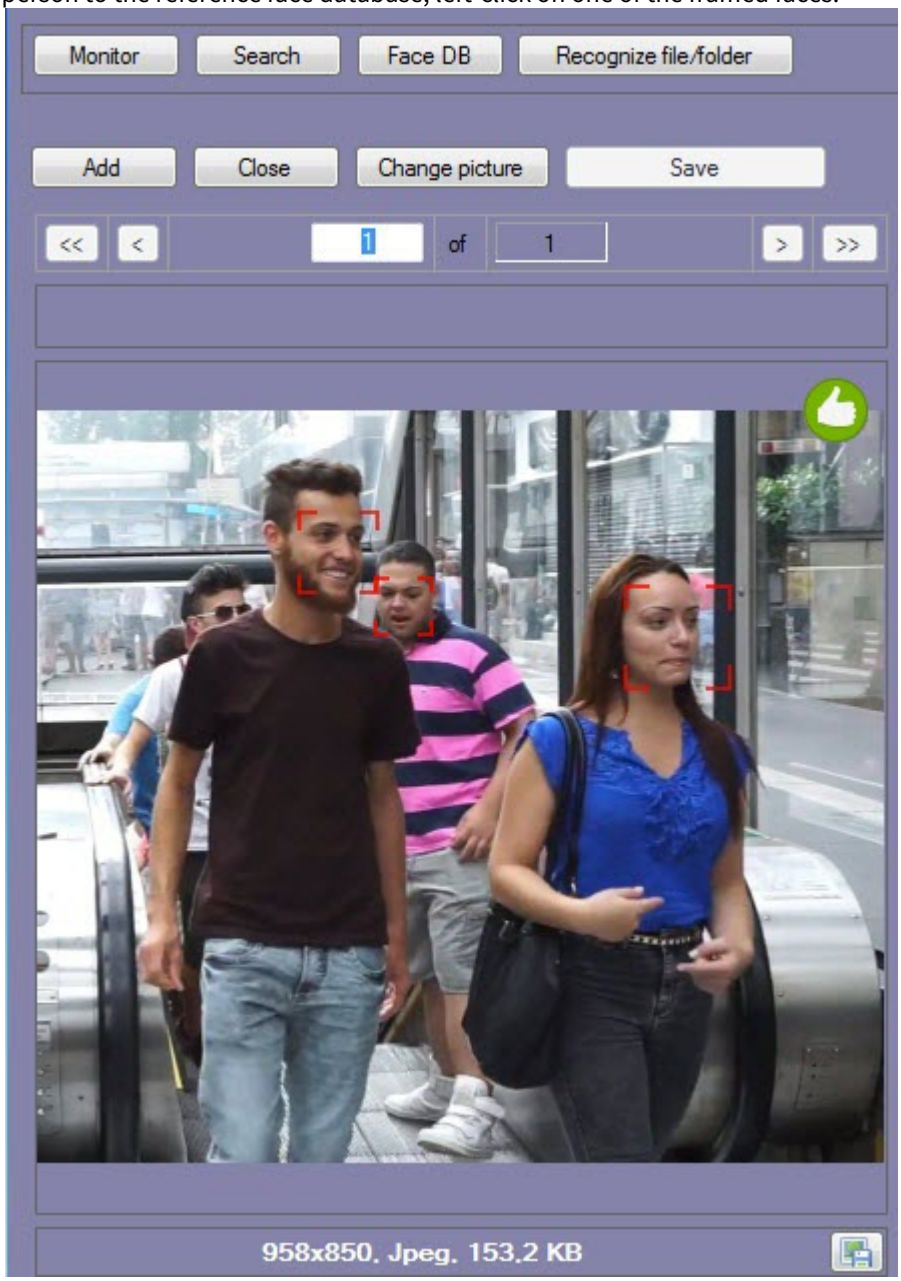
If the image was added to the reference face database using the **Load from folder** way, then after clicking the **Save** button, the menu will be displayed. In this menu, select one of the following:

- **Add picture** — to add only the current image;
- **Add all pictures** — to automatically add all images in the folder.



If there are several faces on the added image, they are framed with a red frame and the **Save** button is disabled. To add a

person to the reference face database, left-click on one of the framed faces.



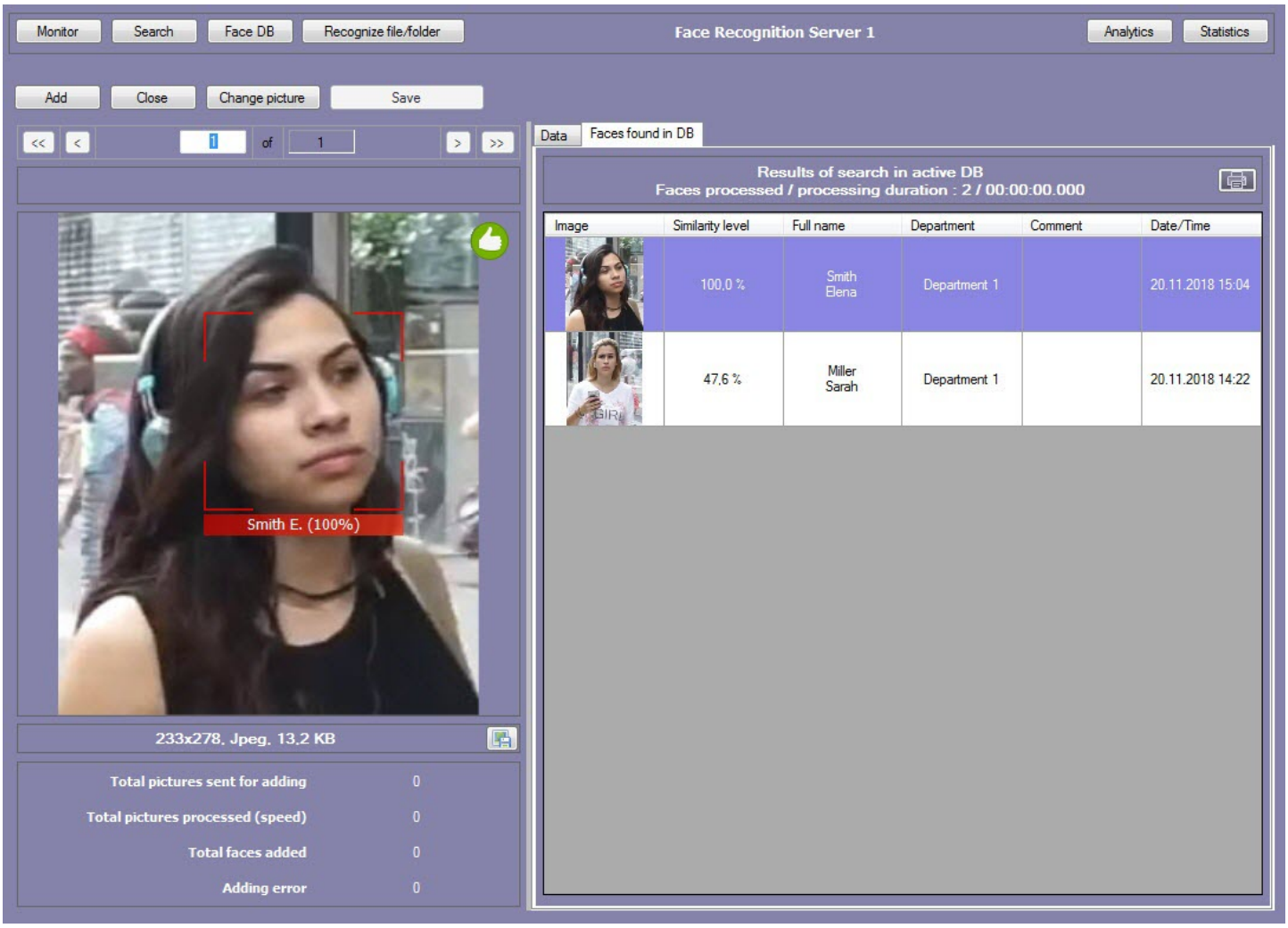
Important!

If you automatically add face images from the folder, it is necessary that every image contains only one face. If there are 2 or more faces in the image, or the face was not recognized due to the poor image quality, it will be skipped. It is possible to automatically move skipped images to a specific folder. To do this, specify the path to this folder in the *face_client.run.config* configuration file in the **ProblemImages** parameter (see XML-file parameters reference guide).

Column name	Description	Recognition module used
Image	Recognized face image	All recognition modules

Column name	Description	Recognition module used
Similarity level	The similarity level of the added image in comparison to the one existing in the reference face database. *Note. If the value of similarity level for image is more than the **Minimum similarity for identification** parameter value, then the percentage of similarity and the name of the corresponding person from the database will be displayed next to the image.*	All recognition modules
Full name	First, last and middle name	All recognition modules
Department	Department to which the face is related	All recognition modules
Comment	Comments and notes	All recognition modules except HUAWEI
Date/time	Date and time of face addition to the reference face database	All recognition modules
ID	Face ID	Only HUAWEI

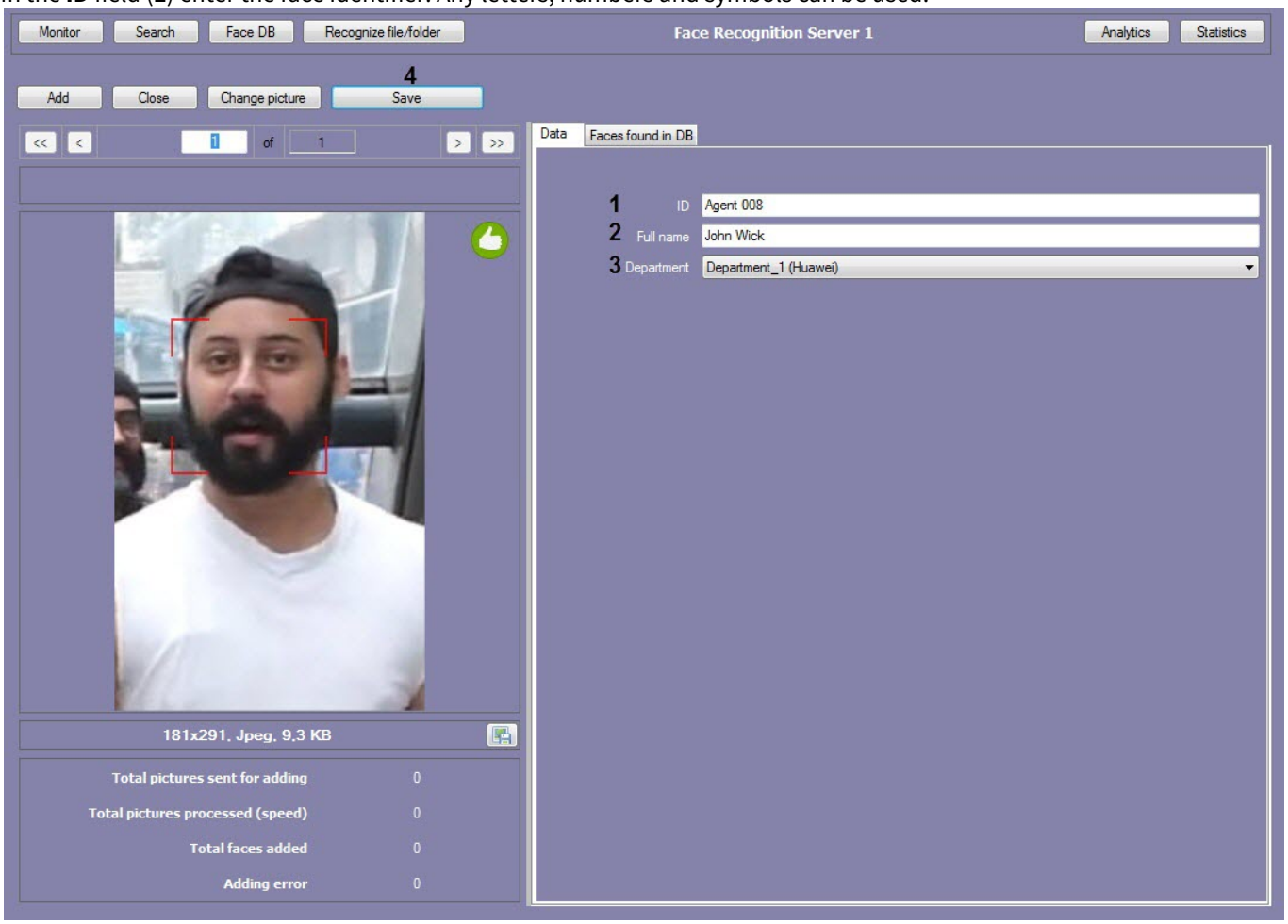
All images added to the reference face database are also listed on the **Faces found in DB** tab, which contains the following information:



4.2.3.2.1 Specific features of adding images to the reference face database using the HUAWEI recognition module

When using the HUAWEI recognition module, it is necessary to specify the following information about the face:

1. In the **ID** field (**1**) enter the face identifier. Any letters, numbers and symbols can be used.



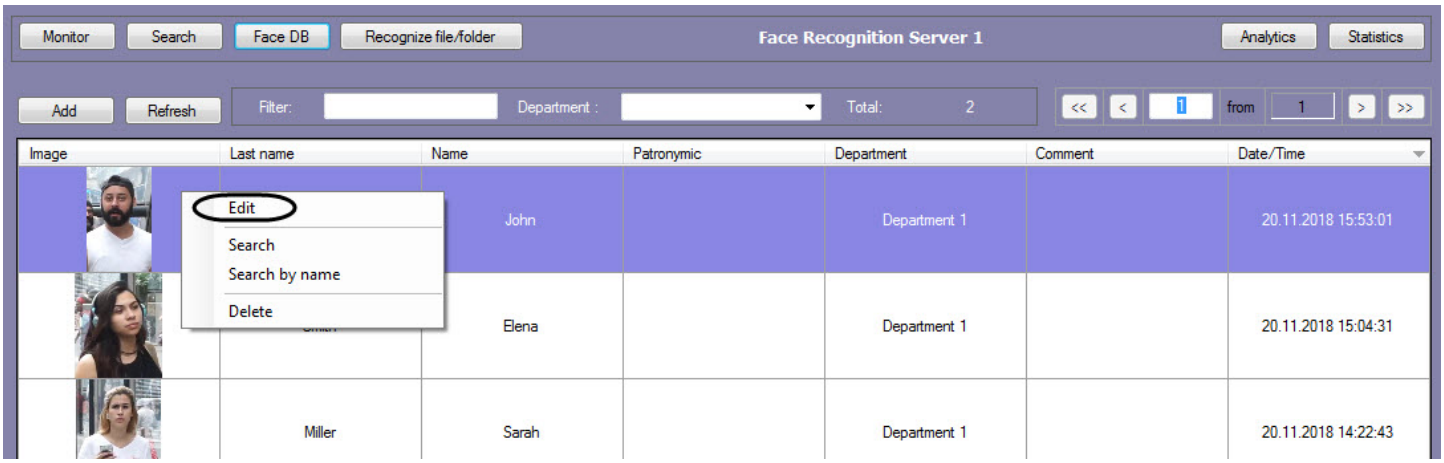
2. In the **Full name** field (**2**) enter the first, last and middle name of the face.
3. In the **Department** drop-down list (**3**), select the Huawei repository to which the face will be added (see Configuring the HUAWEI face recognition module).
4. Click the **Save** button (**4**) to add a face to the reference face database.

Important!

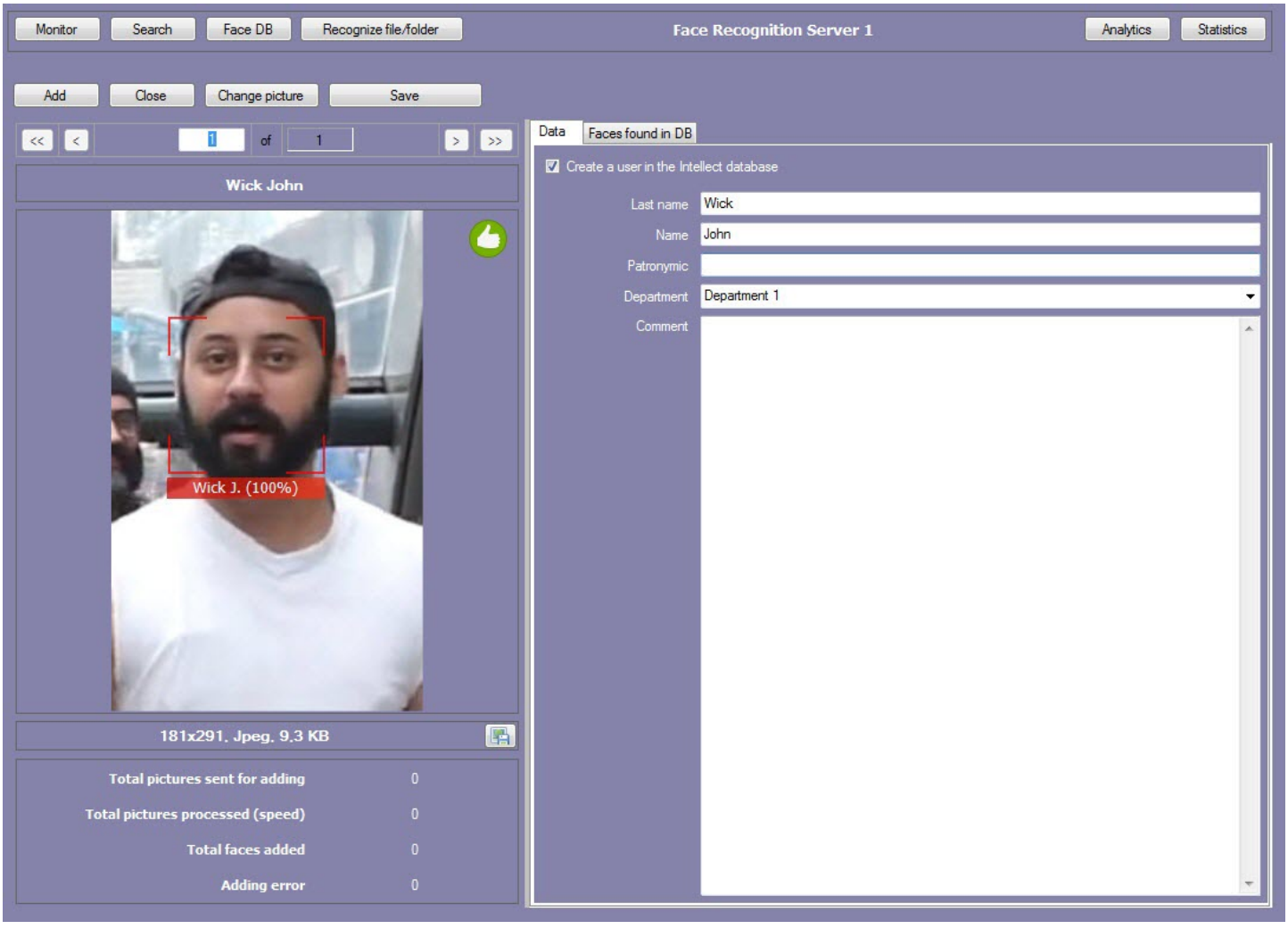
The detailed information on adding images to the reference face database is provided in the Adding images to the reference face database section.

4.2.3.3 User editing

To edit the users added to the face database, right-click the selected user in the list and select the **Edit** value.



As a result, the user editor will open.

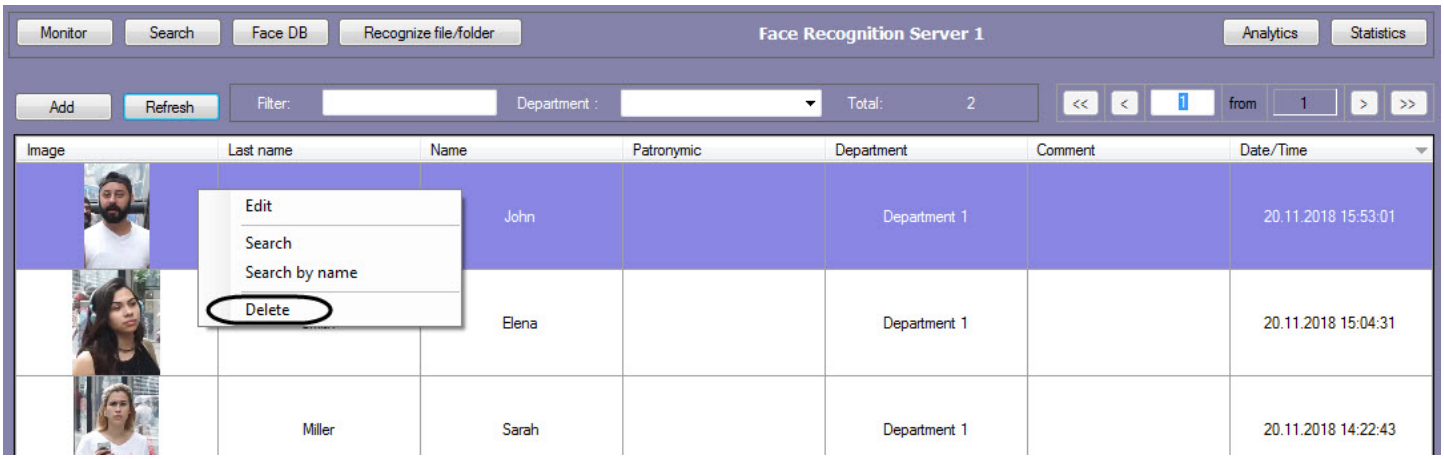


4.2.3.4 Deleting the faces and clearing the database

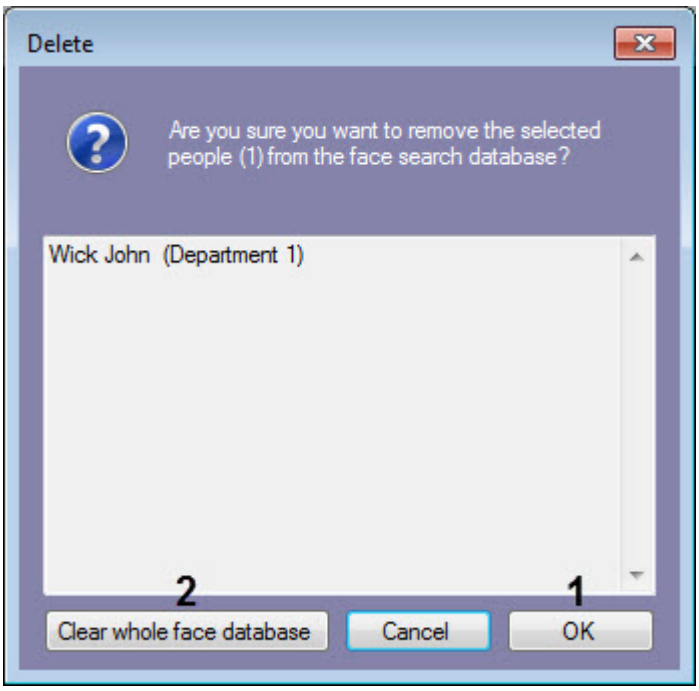
To delete the faces from the reference face database, right-click the selected image from the list and select **Delete** from the menu.

Note

Several faces can be selected and deleted at once.



In the opened **Delete** dialog window, click **OK** (**1**) to confirm the selected face deletion.



To delete all faces from the reference face database, click the **Clear whole face database** button (**2**).

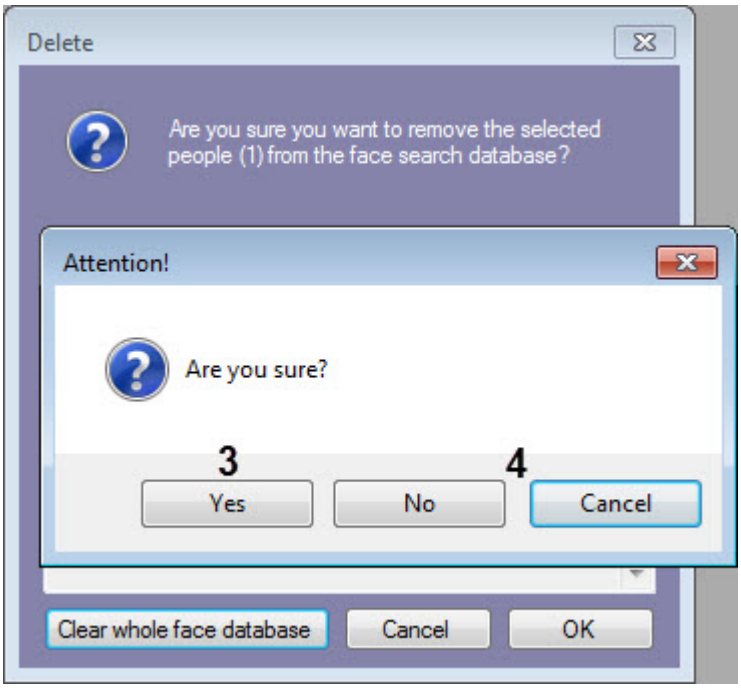
Note

The **Clear whole face database** button (**2**) is displayed only if there are several pages of faces in the database.

When you click the **Clear whole face database** button (**2**), the new **Attention!** dialog window will open.

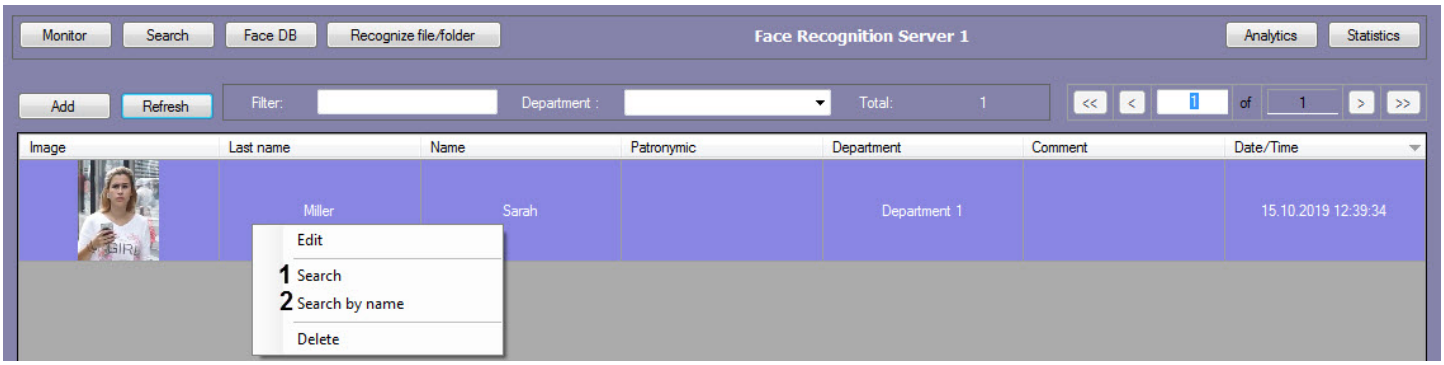
To confirm the deletion of all faces from the reference face database, click **Yes** (**3**).

To discard the deletion of all faces from the reference face database, click **No** or **Cancel** (**4**).



4.2.3.5 Running the face search

To search for captured faces in the database, right-click the selected user in the list and select **Search** (**1**).



As a result, the face search window will be opened (see Face search), and the search for the selected face will be automatically performed. The captured face image will be loaded as the image for search.

> **Note**
>
> If there are 2 or more captured faces on the image, the automatic face search will not be performed.

To search by the name of user, right-click the selected user and select **Search by name** (**2**). This process is described in the Filtering the recognized and unrecognized faces section.

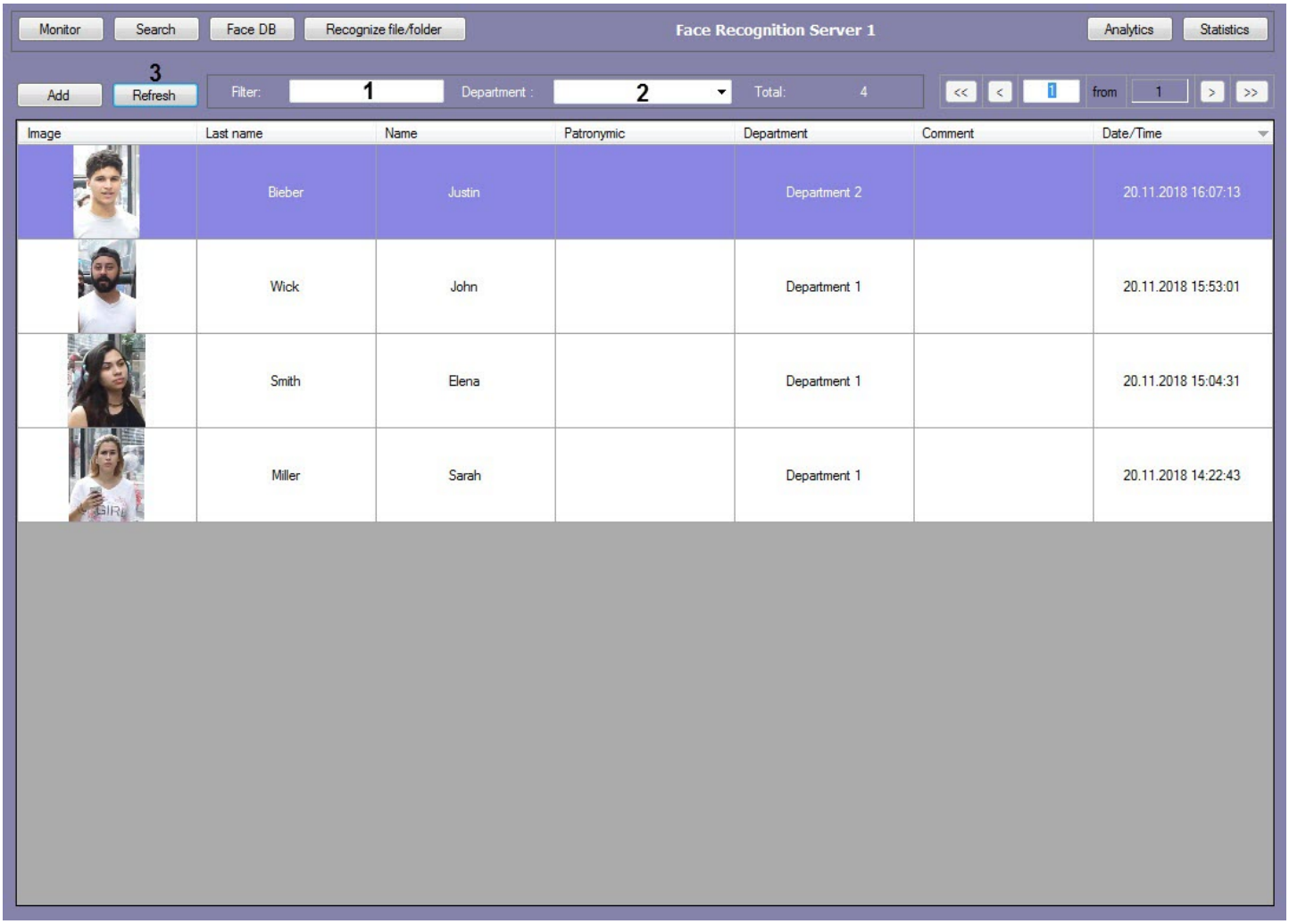
4.2.3.6 Filtering of the reference face images displayed on the screen

> **Attention!**
>
> If the **HUAWEI recognition module** is activated, then the filtering of the reference face images displayed on the screen is disabled.

You can filter the reference faces displayed on the screen by name, comments and departments.

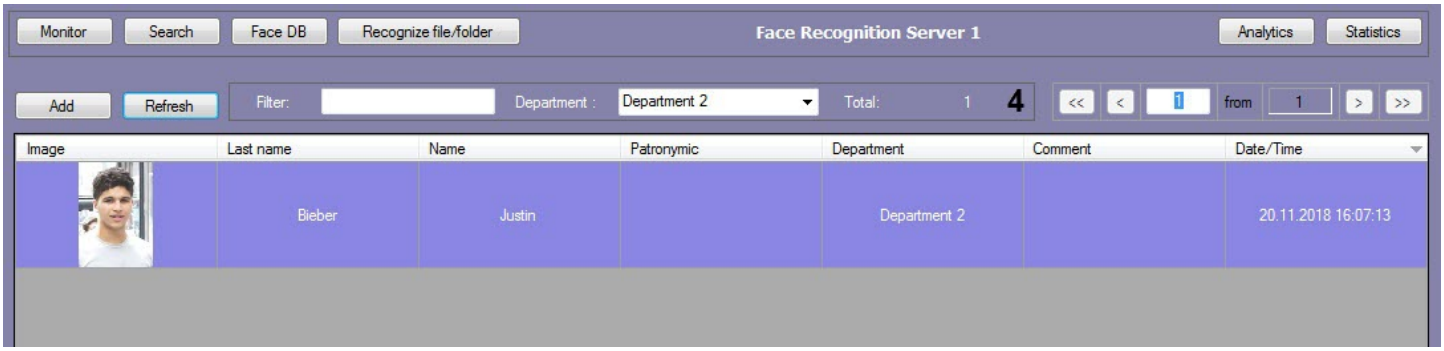
- To filter the faces by full name and comments, enter the appropriate substring in the **Filter** field (**1**).
- To filter the faces by department, enter the appropriate substring in the **Department** field (**2**) (or select the department from the drop-down list).

To apply the filter, click the **Refresh** button (**3**).



Note

In the **Total** field (**4**), the total number of reference face images that satisfy the specified filters is displayed.

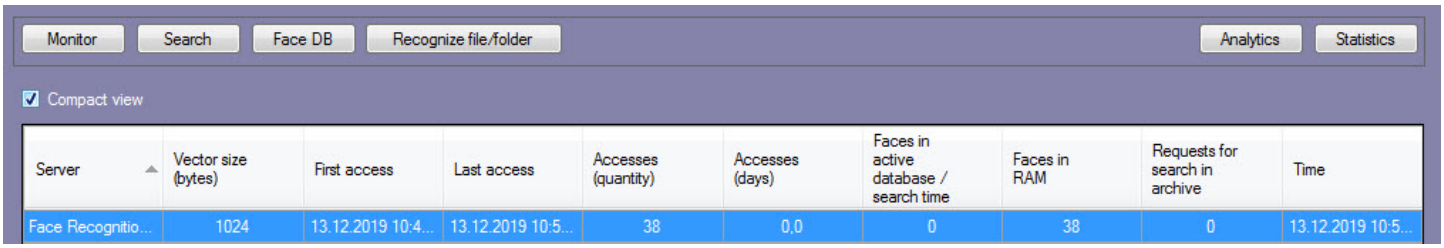


4.2.4 Displaying the statistics

In the **Face recognition and search** interface window it is possible to view the statistics for each face recognition server. Click the **Statistics** button (**1**) to display the statistics data.

The following statistics for each face recognition server will be displayed: the name and the version of the recognition module, the vector size in bytes, the number of faces in the RAM, the first and last access time, the total number of accesses, etc.

To view the statistics in compact view, set the **Compact view** checkbox (**2**).



4.2.5 Viewing the analytics

To view the analytics data of the **Face recognition and search** interface module click the **Analytics** button.

Note.

Analytics data are formed by the Visitor counting channel. If this channel was not activated at system setup, the **Analytics** button is disabled (see Activation of the recognition modules in Face Intellect).

To configure the displaying of the analytics data, do the following:

1. In the **Period from** and **to** fields (**1**) specify the time period for which the analytics data is to be displayed.

Attention!

It is not recommended to specify a period of more than 7 days, as this can cause an error in the analytics construction. It is also recommended to enable the grouping of similar faces (see Configuring the grouping of similar faces).

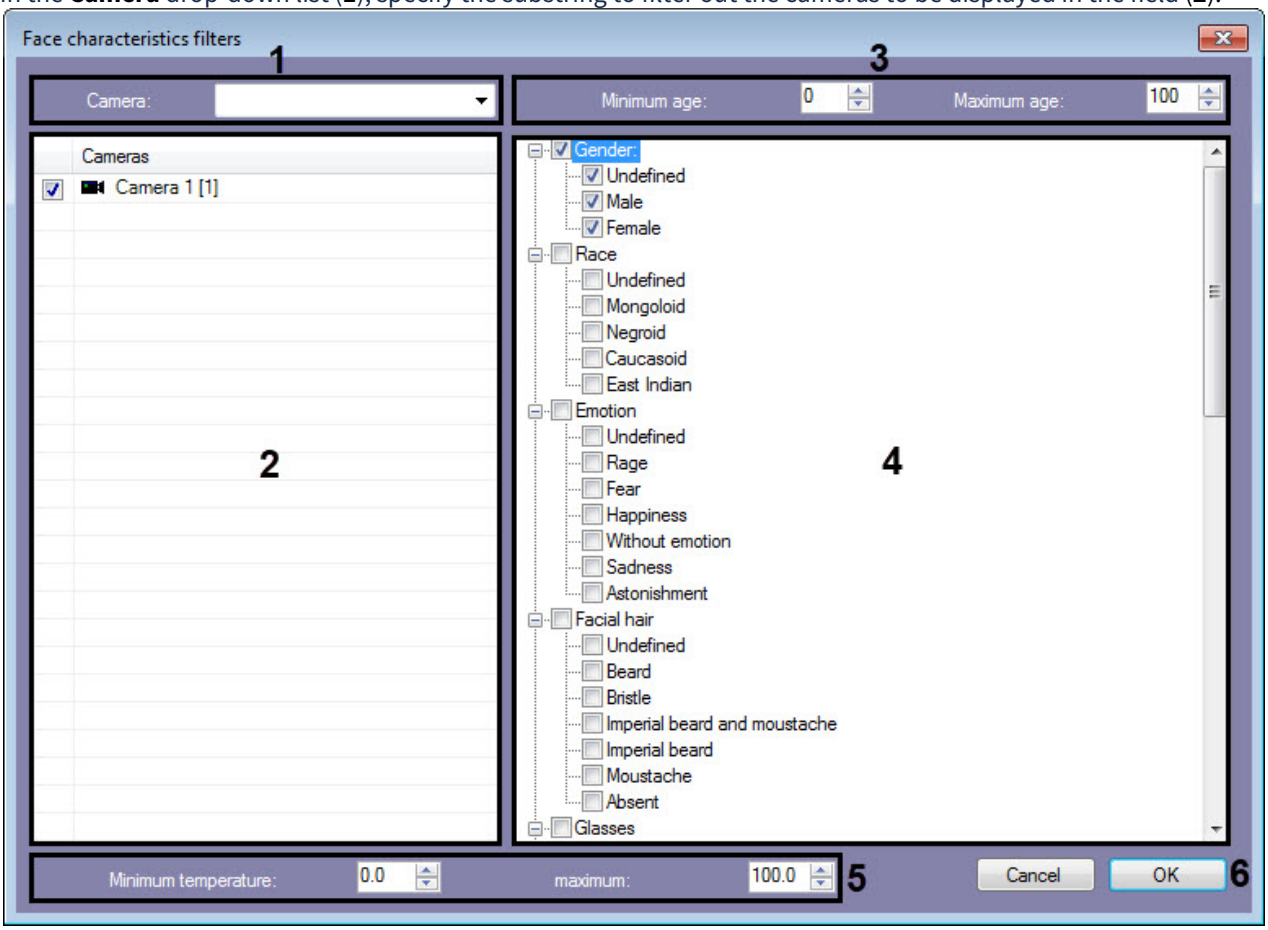
2. From the **Show faces** drop-down list select faces which are to be displayed: recognized, unrecognized or all (**2**).
3. In the **Accesses (min)** and **Accesses (max)** fields specify the values corresponding to minimum and maximum number of person passes (**3**).
4. In the **Similarity, %** field (**4**) specify similarity percent between the captured face and the reference image. If this value is exceeded, the face will be considered as recognized.

Note

The **Similarity, %** field can be hidden if the grouping of similar faces is enabled (see Configuring the grouping of similar faces).

5. Click the **Filters** button (**5**) to specify the face characteristics filters:

a. In the **Camera** drop-down list (**1**), specify the substring to filter out the cameras to be displayed in the field (**2**).



b. In the **Minimum age** and **Maximum age** fields (**3**) specify the minimum and maximum age of persons to be displayed in the search results, respectively.

c. In the area (**4**), set the check boxes next to the corresponding face characteristics.

> **Note**
>
> Face characteristics (**4**) may not be displayed (see Configuring permissions and additional settings).

d. In the **Minimum temperature** and **maximum** fields, specify the minimum and maximum face temperature, respectively (**5**).

e. Click **OK** (**6**).

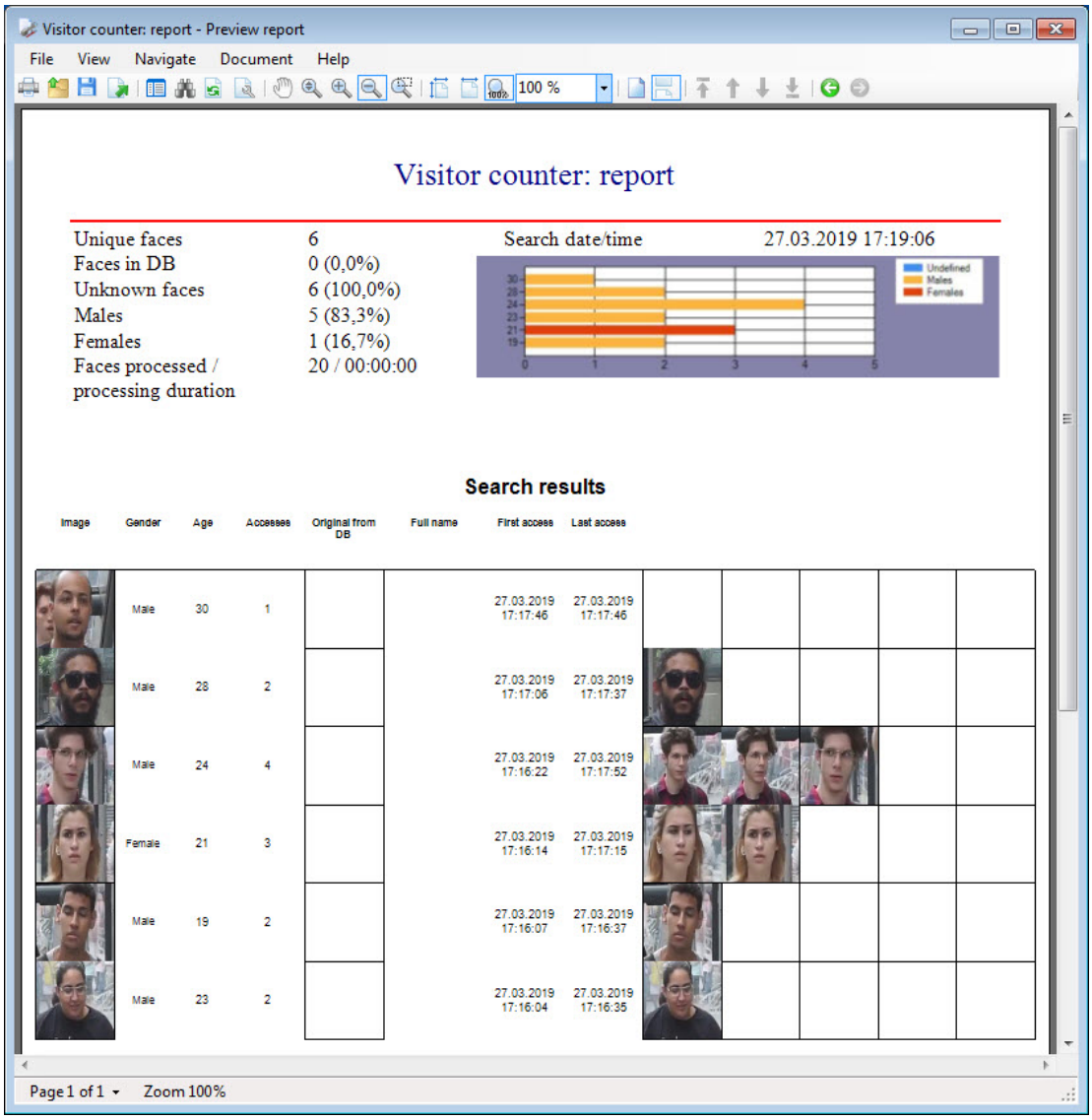
6. Click the **Refresh** button (**6**) to refresh the analytics.

> **Note**
>
> If a large number of unique faces is stored in the database, then refreshing the analytics may take a long time. If the **Operation has timed out** error occurs while the analytics is being refreshed, then it is necessary to increase the value of the **AnalitycTimeout** parameter in the **face_client.run.config** configuration file (for details, see the XML-file parameters reference guide).

7. Click the  button (**7**) to generate a report on the displayed analytical data. This report can be printed, saved to an rsd or xml file, or exported to PDF.

Note

You can also generate a report on gender analytics in the *Intellect Web Report System* (see Gender analytics report).

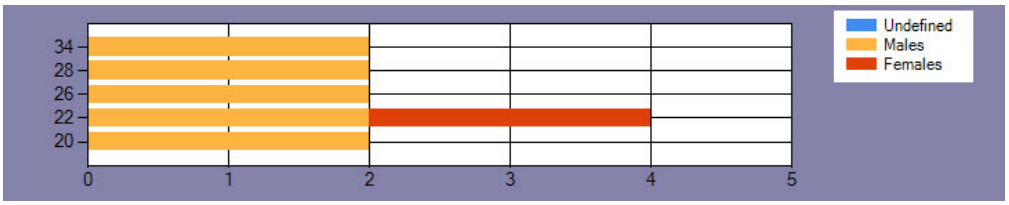


Note

To limit the number of rows (unique faces) in the generated report, it is necessary to change the value of the **CounterRowCount** parameter in the **face_client.run.config** configuration file (for details, see XML-file parameters reference guide).

In the section (**8**) the general analytics data about the captured faces is displayed.

In the diagram (**9**) the horizontal axis shows the total number of passes; the vertical axis shows the age of the captured faces. For example, the diagram below shows that two males and two females of age 22 passed through twice, which is 4 passes in total.



Note

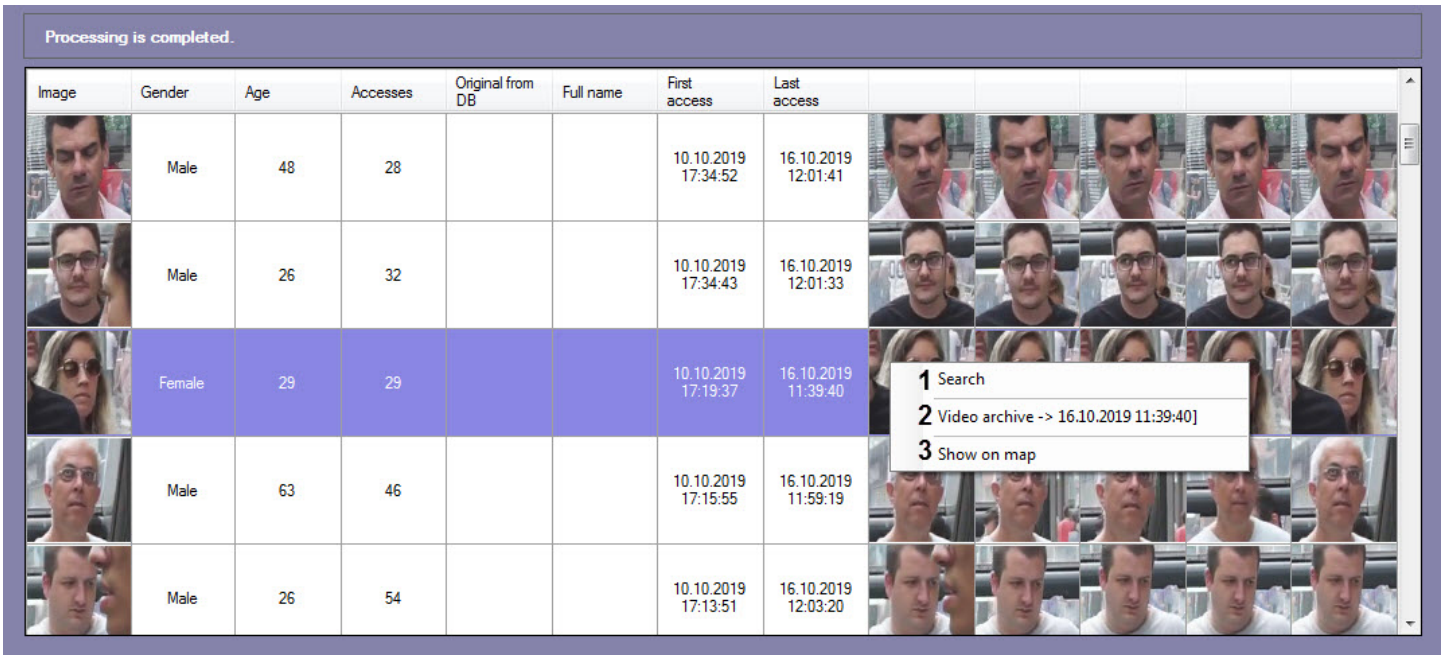
The **Undefined** gender is displayed in case the **Face characteristics recognition channel** was not activated by the time of the face capture (see Activation of the recognition modules in Face Intellect).

In the table (**10**) in the **Image** column the unique faces are displayed. Their quantity is equal to the **Unique faces** value shown in the section (**8**). The sum of the unique faces number and the number of all their passes equals to the **Faces processed** value shown in section (**8**). In the area (**11**), the images of the last five passages of faces similar to the unique faces from the table (**10**) are displayed.

To perform the search using the image from the **Search results** section, right-click the corresponding image and select **Search** from the menu (**1**). As a result, you will be redirected to the face search (see Face search), and the selected face will be automatically searched, and the captured face will be loaded as the search image.

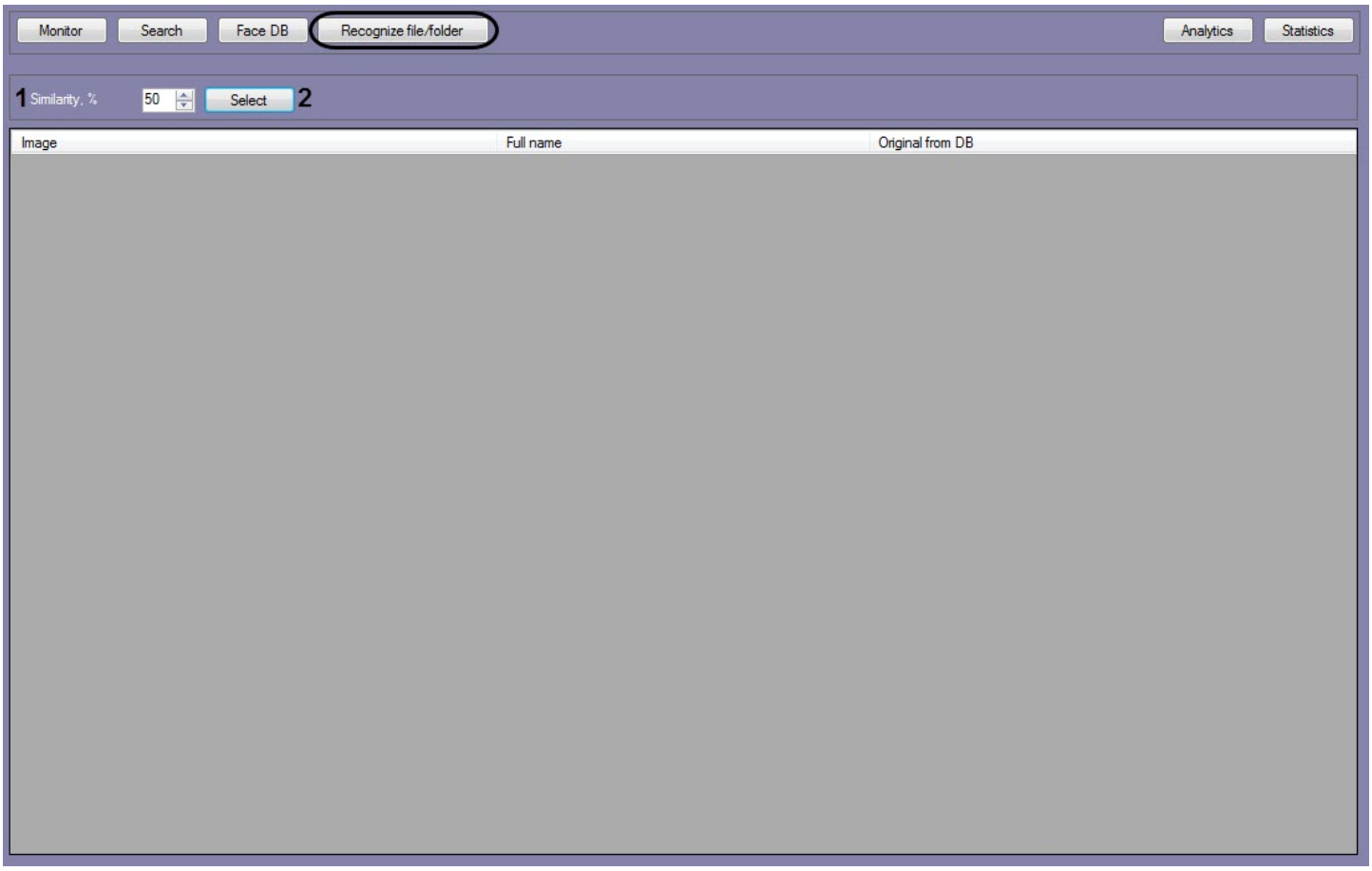
To view the moment when the found face appears on the video, right-click the corresponding image and select **Video archive -> <Date and time>** (**2**). As a result, a video archive with a paused video will be displayed in the monitor for video archive playback (see Configuring permissions and additional settings) (for details about working with video archives, see Working with the archives).

To display the camera that captured the face on the map, right-click the corresponding image and select **Show on map** from the menu (**3**).

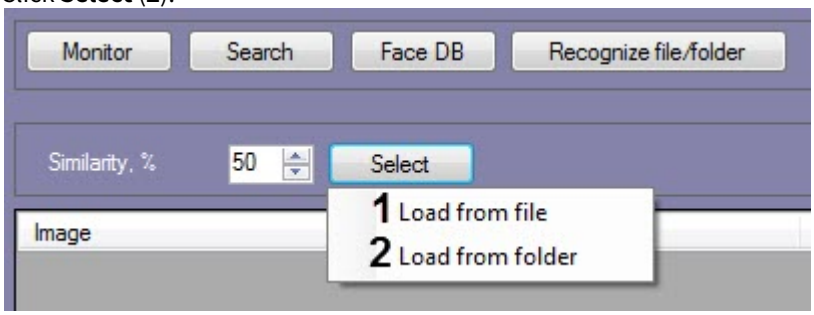


4.2.6 Searching by images in the reference face database

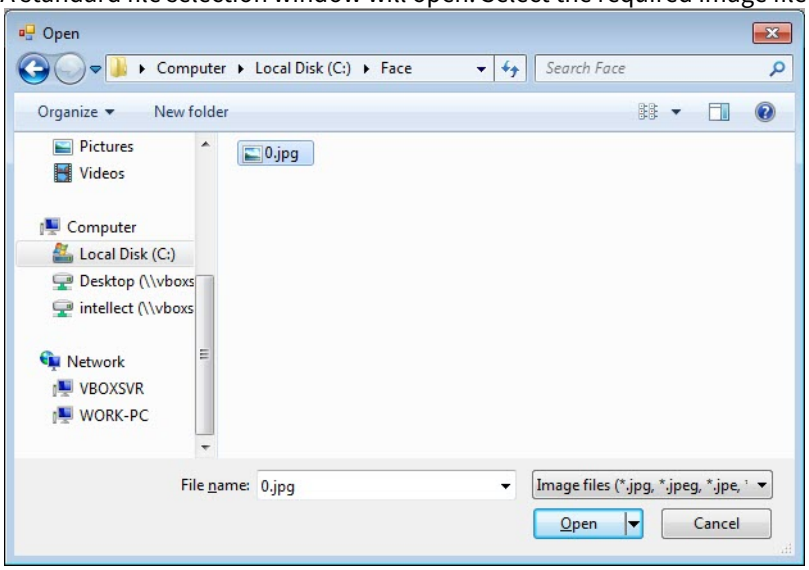
To perform the search by images in the reference face database, click the **Recognize file/folder** button in the **Face recognition and search** window and do the following:



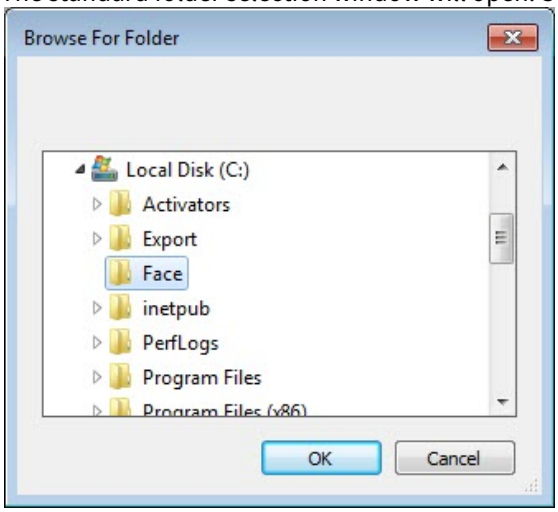
1. In the **Similarity, %** field (**1**) specify the similarity level between the recognized images and the faces from the reference database in percent.
2. Click **Select** (**2**).



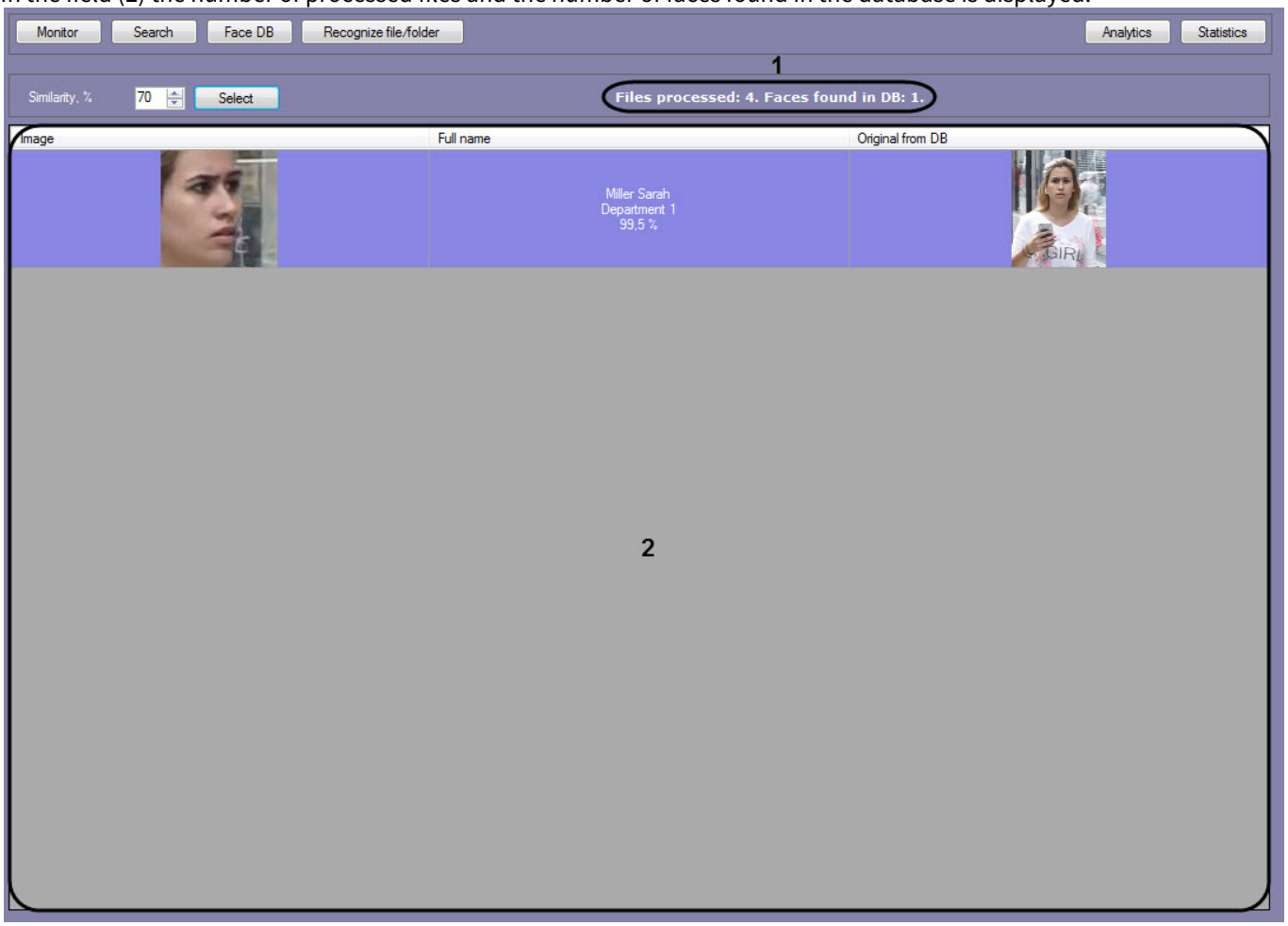
3. From the drop-down menu select **Load from file** (**1**) to search by only one image.
   A standard file selection window will open. Select the required image file and click **Open**.



4. Select **Load from folder** (**2**) if you want to search by multiple images.
   The standard folder selection window will open. Select the required image folder and click **OK**.



5. In the field (**1**) the number of processed files and the number of faces found in the database is displayed.



6. The image search results in the reference face database is displayed in the columns of the field (**2**), the list of which depends on the recognition module used.

Column name	Description	Recognition module used
Image	The image loaded for search	All
Full name	The full name from the reference database	All
Original from DB	The photograph from the reference database (see Working with the reference face database)	All
ID	The face ID	HUAWEI only

> **Note**
>
> If no images in the reference database match the image loaded for search, then no data is displayed in the field (**2**).

The search by images in the reference face database is completed.

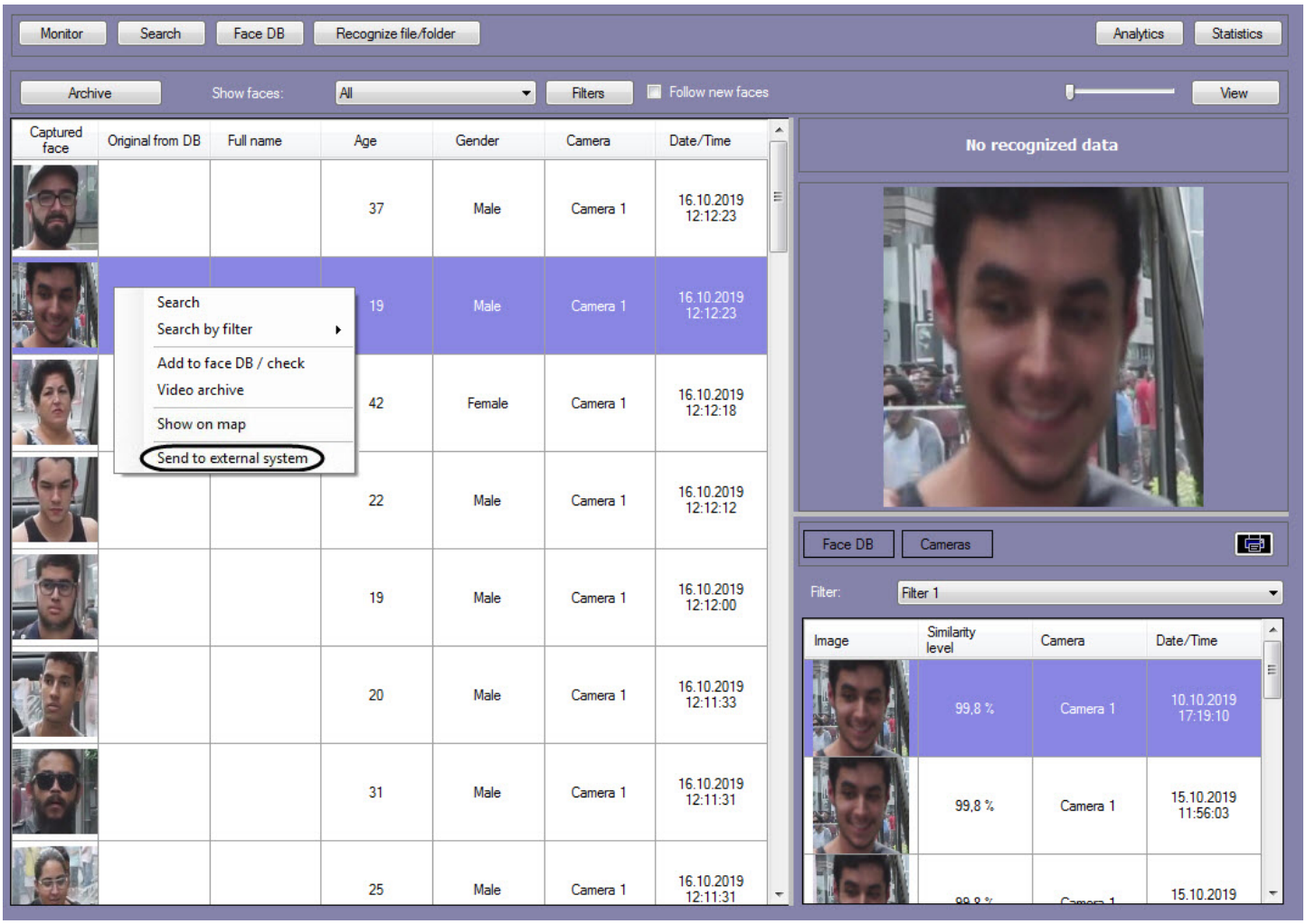
4.2.7 Transferring images to an external system

It is possible to transfer images to an external system by sending an HTTP POST request. To enable the images transfer to an external system, this feature should be pre-activated (see Configuring the images transfer to an external system).

To transfer images to an external system, on the **Monitor**, **Search**, or **Face DB** tab, right-click the required image and select the **Send to external system** option.

Note

In the HTTP POST request, the **imageBase64** json parameter which contains the specified image is automatically added as the parameter.



Note

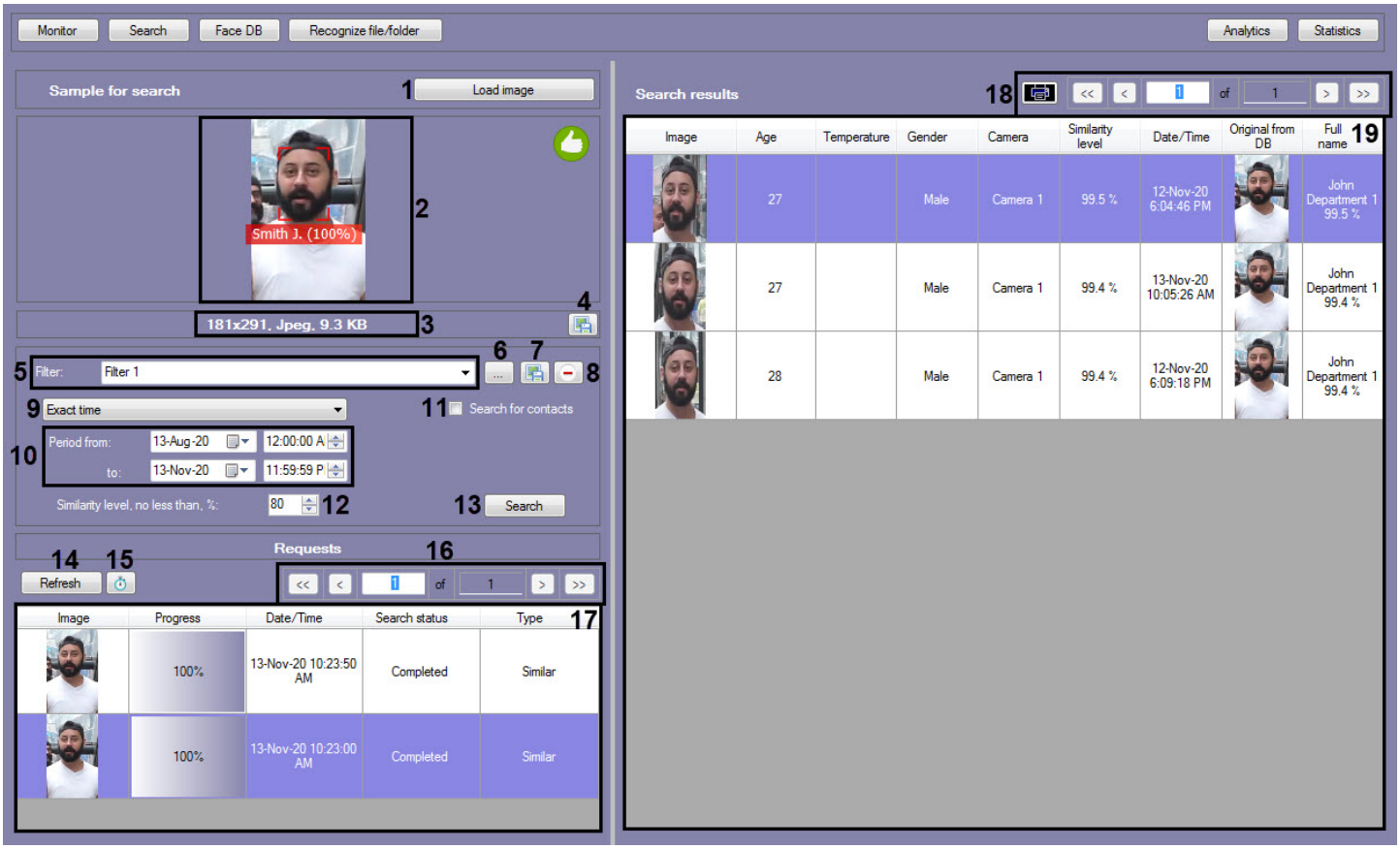
Image transfer is performed asynchronously and without visual confirmation.

5 Description of the Face Intellect user interface

5.1 The Face recognition and search window interface

5.1.1 The Face Search window

The following figure shows the **Face search** window interface:



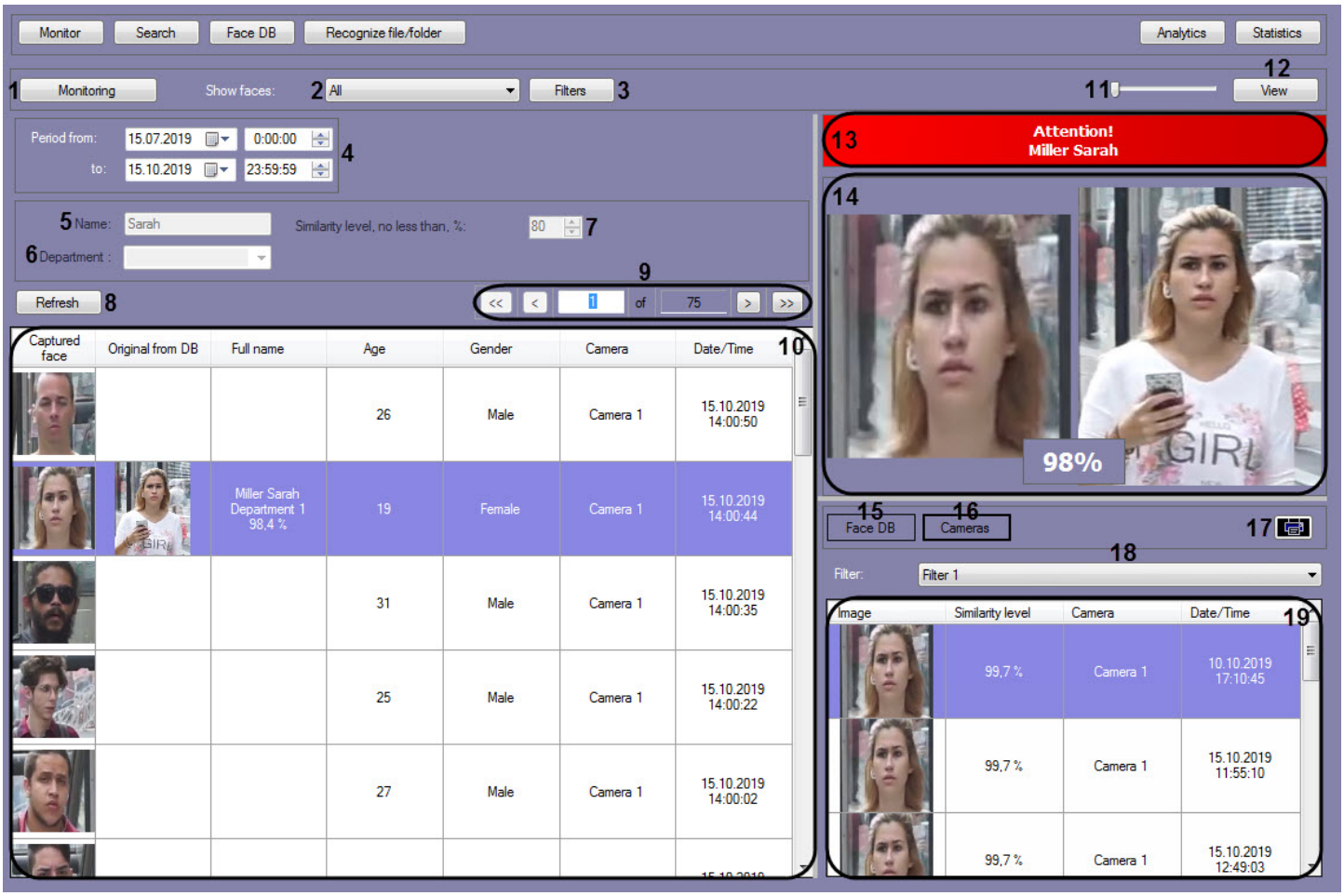
The components of the **Face search** interface are described in the following table.

Number of component	Comments
1	The **Load image** button (image loading for search)
2	The field for displaying the loaded image
3	The loaded image parameters
4	The button for saving the image
5	The field for specifying the new filter name or selecting a previously saved filter
6	The field for specifying the filter
7	The button for saving the specified filter
8	The button for removing the selected filter
9	The list for selecting the search period type

Number of component	Comments
10	The elements for setting the time interval for face search. The depend on the selected search period type.
11	The **Search for contacts** checkbox for searching people who have been in contact with the specified person within the specified time period
12	Field for setting a minimal similarity level
13	The **Search** button for searching for the selected face
14	The **Refresh** button for refreshing the list of search queries
15	The elements for setting the date and time for the beginning and end of the time interval for search results displaying
16	Elements for navigation through search requests
17	Field for displaying the search requests The following columns are displayed: • Image; • Progress; • Date/Time; • Search status.
18	Elements for navigation through search results
19	Field for displaying the search results The following columns are displayed: • Image; • Names of the face characteristics (see Configuring permissions and additional settings). By default, only Age and Gender are displayed. • Camera; • Similarity level; • Date/Time.

5.1.2 The Monitoring of captured and recognized faces window

The following figure shows the **Monitoring of captured and recognized faces** window interface:



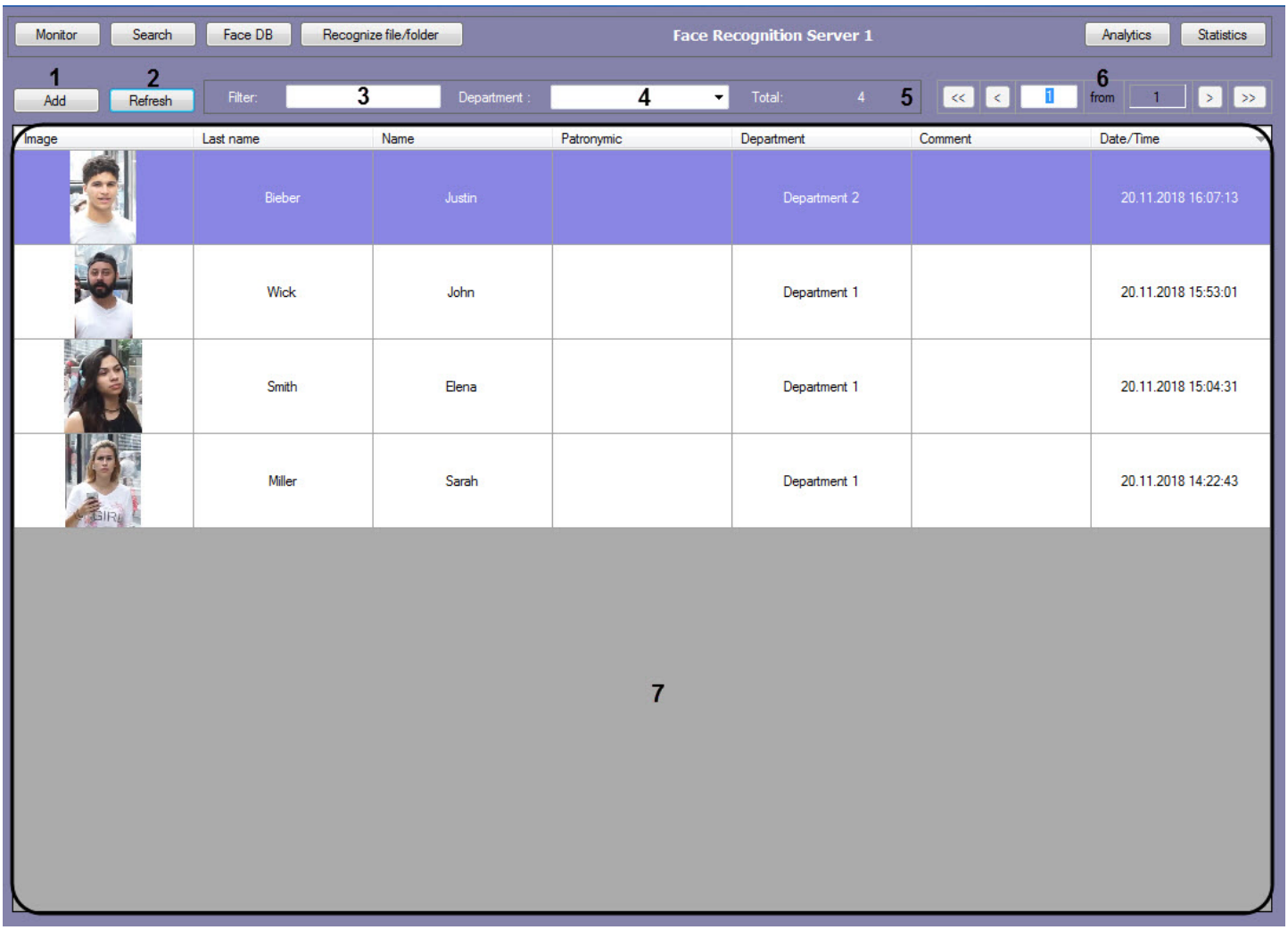
The components of the **Monitoring of captured and recognized faces** interface are described in the following table.

Number of component	Comments
1	The **Monitoring** button
2	**Show faces** drop-down list to select the captured persons display option: **All**, **Only recognized**, **Only unrecognized**
3	The **Filters** button for filtering by cameras and additional face characteristics
4	Elements for setting the start and end date and time of the time interval for face search
5	The field for entering the name of a recognized person *Note. The field is editable if the **Only recognized** option is selected in the **Show faces** drop-down list.*
6	The field for selecting the department of a recognized person *Note. The field is editable if the **Only recognized** option is selected in the **Show faces** drop-down list.*
7	The field for setting the minimal similarity level *Note. The field is editable if the **Only recognized** option is selected in the **Show faces** drop-down list.*
8	The **Refresh** button for updating the displayed data
9	Elements for navigation through captured faces

Number of component	Comments
10	Filtered list of captured faces The following columns are displayed: • Captured face; • Original from DB; • Full name; • Names of the face characteristics (see Configuring permissions and additional settings). By default, only Age and Gender are displayed; • Camera; • Date/Time. When the HUAWEI recognition module is used, the following columns are displayed: • Captured face; • Original from DB; • Full name; • ID; • Camera; • Date/Time.
11	Element for adjustment of line height in the list of captured faces
12	The **View** button for configuring the view of the monitoring window
13	The field for displaying the full name of the recognized person
14	Photos of the captured face and the reference image, the information on which is stored in the face database
15	The **Face DB** button for displaying in the area (19) the information on the selected recognized face
16	The **Cameras** button for displaying in the area (19) the ten last captured faces according to the selected search filter (18)
17	The **Print** button for exporting the filtered data to a report file
18	A drop-down list for selecting the search filter (see The Face Search window)
19	The area for displaying search results with the specified filtering conditions. When the Face DB section is selected using the **Face DB** button (**15**), the following columns are displayed: • Image; • Full name; • Similarity level; • Comment; • Date/Time. When the HUAWEI recognition module is used, the following columns are displayed: • Image; • ID; • Full name; • Similarity level; • Date/Time. When the Cameras section is selected using the **Cameras** button (**16**), the following columns are displayed: • Image; • Similarity level; • Camera; • Date/Time.

5.1.3 The Face database window

The following figure shows the **Face database** window interface:



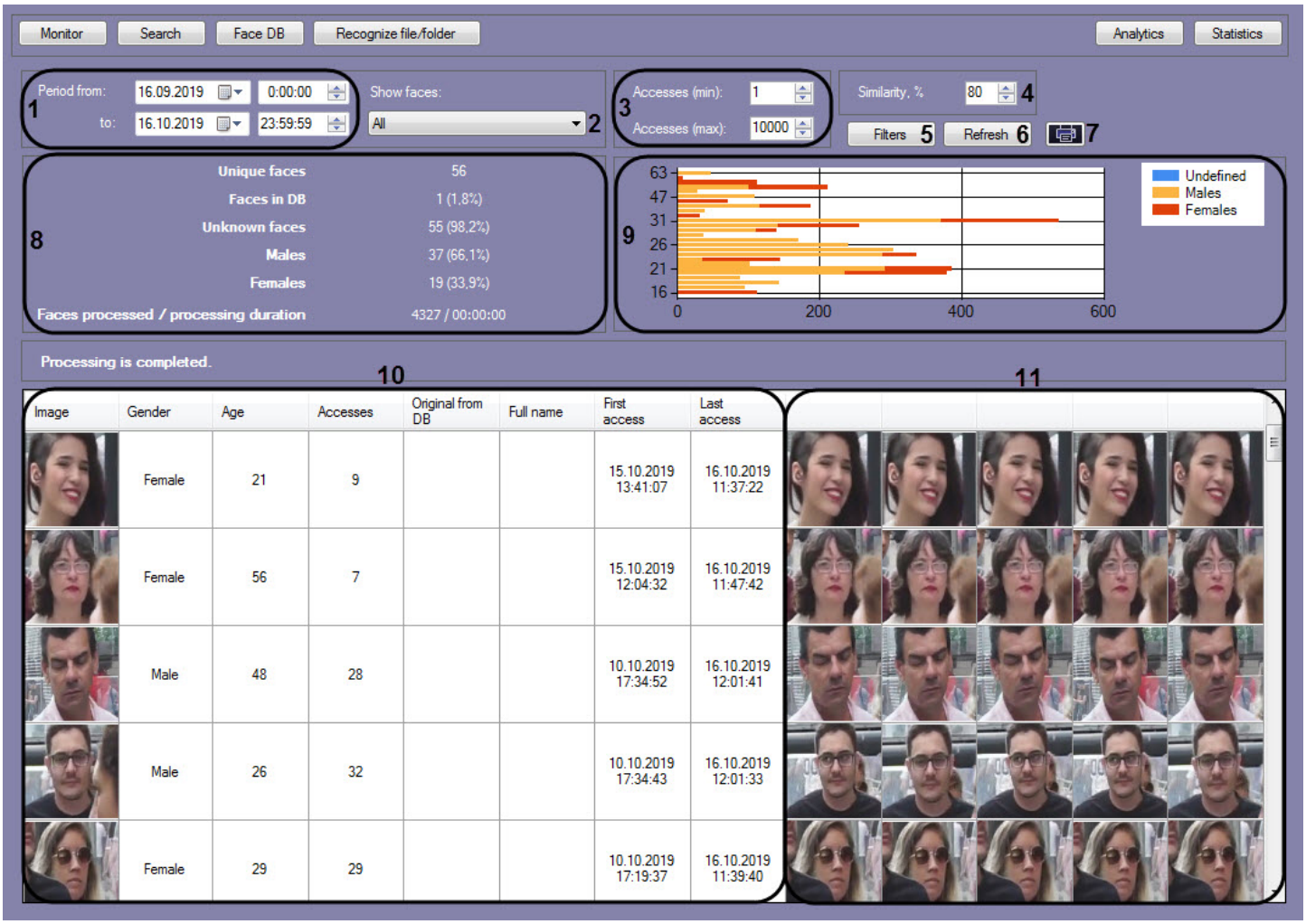
The components of the **Face database** interface are described in the following table.

Element number	Description
1	The **Add** button for adding the images to the reference face images database.
2	The **Refresh** button for refreshing the list of added reference images.
3	The **Filter** field for adding the text to filter by name and comments.
4	The **Department** field for adding the text to filter by the department.
5	The **Total** field for displaying the total number of reference images that satisfy the specified filters.
6	Navigation elements.

Element number	Description
7	The list of reference images that satisfy the specified filters. The following columns are displayed: • Image; • Last name; • First name; • Patronymic; • Department; • Comment; • Date/Time. When using the HUAWEI recognition module, the following columns are displayed: • Image; • ID; • Full name; • Department; • Date/Time.

5.1.4 The Analytics window

The following figure shows the **Analytics** window interface:

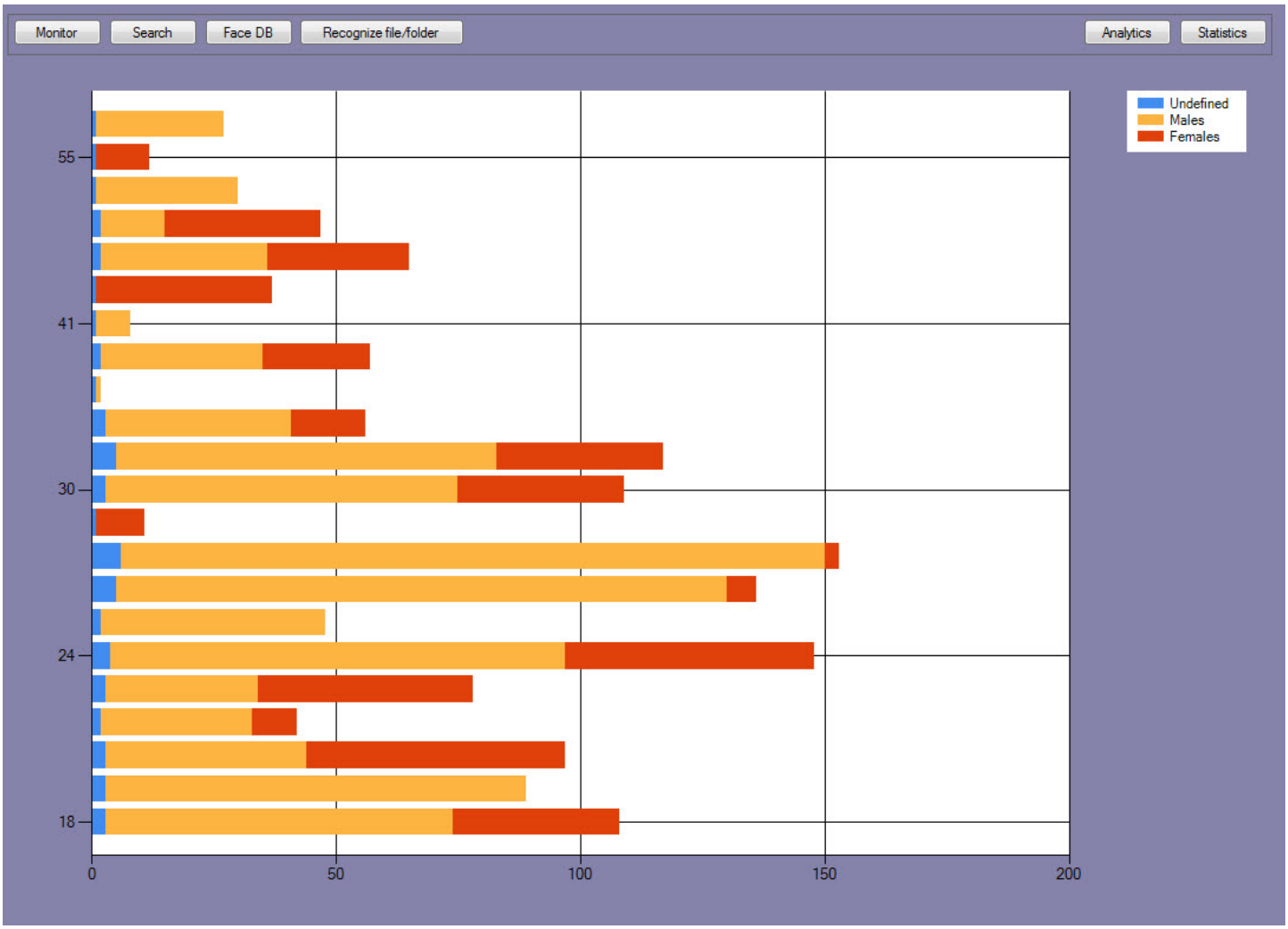


The components of the **Analytics** interface are described in the following table.

Component number	Comments
1	The elements for specifying the time period of the analysis.
2	A drop-down list for face filtering: **All**, **Only recognized**, **Only unrecognized**.
3	The elements for specifying the minimum and maximum number of passes of a person.
4	A field for specifying the similarity level between the captured face and the reference face in percent. If the specified value is exceeded, the person is considered as recognized.
5	A button for specifying the filter.
6	A button for updating the displayed data.
7	A button for exporting the displayed analytical data to the report file.
8	The information panel for displaying the general data on all faces.
9	The diagram: the horizontal axis shows the total number of passes; the vertical axis shows the age of the detected faces.
10	The **Image** column displays the unique faces. Their quantity corresponds to the **Unique faces** parameter displayed in the section (**8**).
11	The area displayed the duplicates of the unique faces.

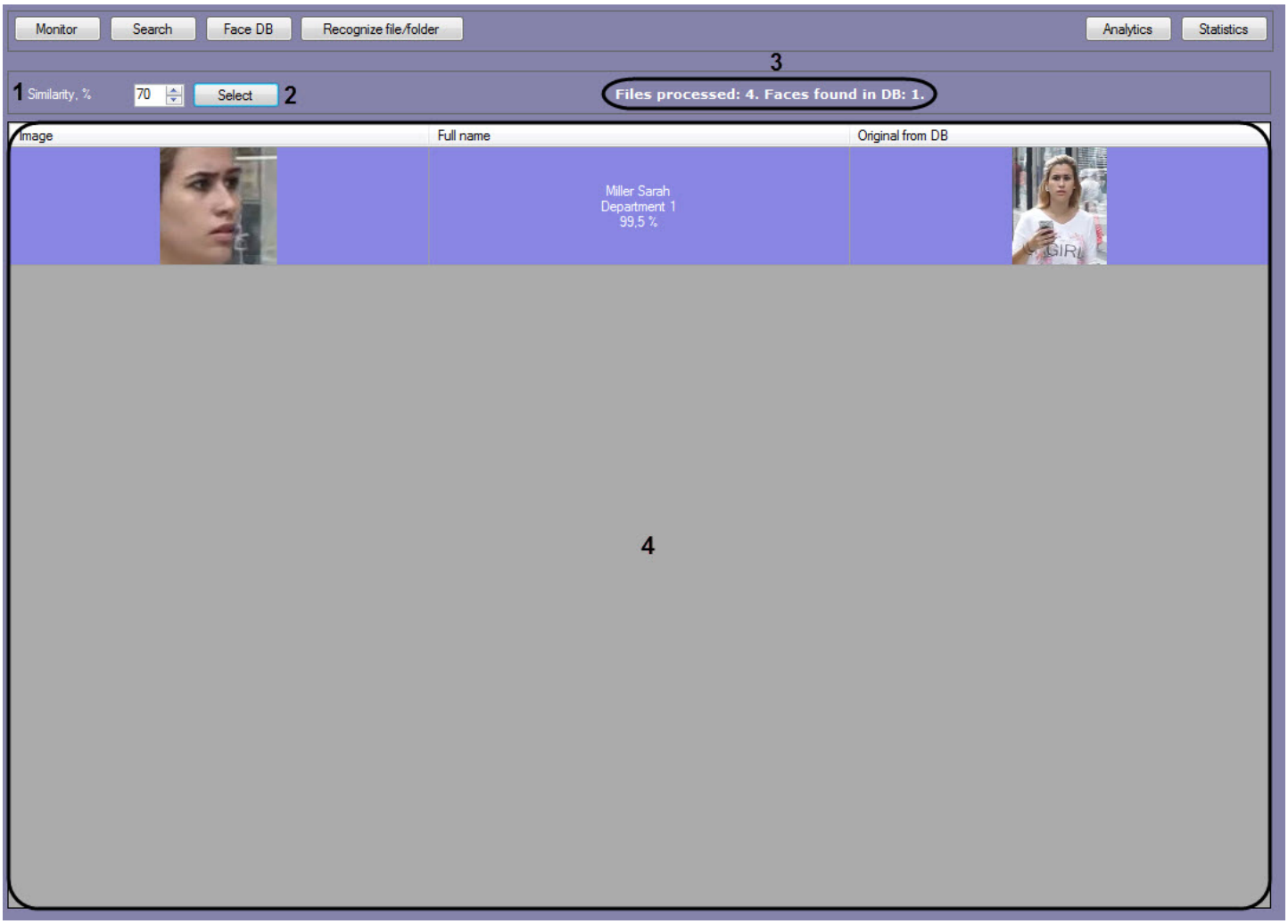
Note

Double left-click the diagram (**9**) to zoom it in, and double right-click it to zoom it out.



5.1.5 The Recognize file/folder window

The following figure shows the **Recognize file/folder** window interface:



The components of the **Recognize file/folder** interface are described in the following table.

Component number	Comments
1	The **Similarity, %** field for specifying the similarity level between the captured face and the reference image in percent.
2	The **Select** button for loading the image file or image folder for the search.
3	The field for displaying the number of the processed files and the number of faces found in the reference database.
4	The field for displaying the image search results in the reference face database. The following columns are displayed: • Image • Full name • Original from DB When using the HUAWEI recognition module, the following columns are displayed: • Image • ID • Full name • Original from DB