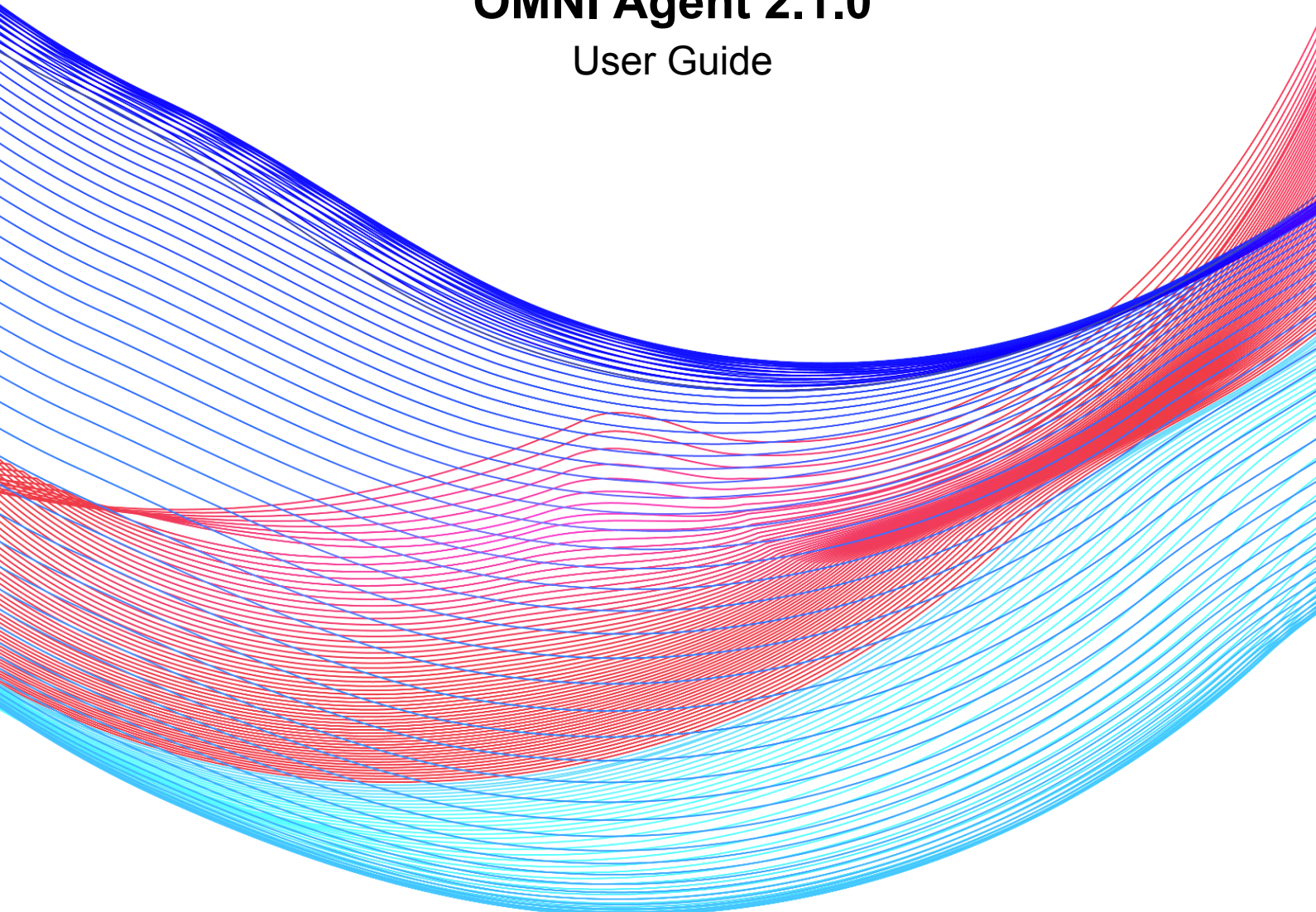




# OMNI Agent 2.1.0

## User Guide



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# 1. Introduction

OMNI Agent is native video analytics and video identification software that processes video files and video streams from cameras to detect, track and identify faces and silhouettes. The Agent sends output data to OMNI Platform or a third-party service for subsequent aggregation and centralized management.

## Key Features

- Detection, tracking and identification of faces and silhouettes;
- Recognition of gender, age, emotions and other face attributes;
- Synchronization with OMNI Platform or third-party service via webhooks.

## 2. Installation and Activation

### 2.1 System Requirements

#### Supported OS:

- Windows 10 (64-bit)
- Ubuntu 20.04 (64-bit)

#### Hardware Requirements:

##### Minimum:

- CPU: 4 x 2GHz with AVX support
- RAM: 1GB
- HDD: 2.5GB

##### Recommended:

- CPU: 4 x 3.1 GHz with AVX support
- RAM: 2GB
- HDD: 2.5+GB

*Specified requirements correspond to 1 video stream in 1080p (Full HD) and 5 persons in the frame at the same time (database size up to 50K faces).*

### 2.2 Camera Recommendations

For video identification and video analytics, you are recommended to use cameras with a resolution of 1920x1080 @30fps and support for H.265/H.264 video compression.

#### General Recommendations:

- 1920x1080p (Full HD) resolution;
- Frame rate of at least 10 fps;
- Suitable resolution and lens: the distance between the eyes of a face in the frame should be at least 30 pixels in the far field (for example, at the entrance) and at least 50 pixels in the near field (when a person already passes by the camera and leaves the frame);
- Function of adjusting the exposure and shutter speed to prevent blurry frames of people passing by;
- If a camera supports WDR, Backlight compensation, Highlight compensation, it is recommended to turn these functions off, otherwise the image can be blurry.

### Camera Positioning and Shooting:

- The lighting must be sufficient for the camera to produce a clear image. The optimal value is from 300-500 lux (standard office lighting);
- Avoid back light whenever possible;
- Light should be diffused. Avoid harsh shadows on a face;
- It is recommended to place the camera at the face level;
- The camera should observe the face in a horizontal plane at an angle from 0 to 30 degrees, the optimum angle is from 0 to 15 degrees (see Fig. 1);
- The camera should observe the face in a vertical plane at an angle from 0 to 20 degrees, the optimum angle is from 0 to 15 degrees (see Fig. 1).

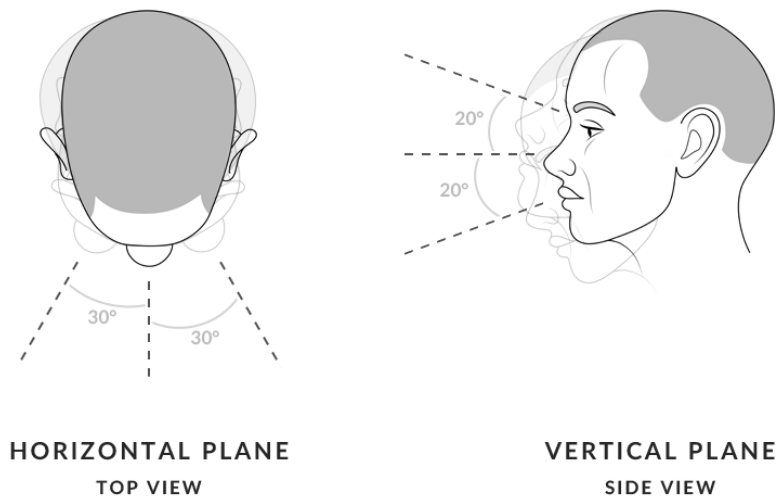


Fig. 1

## 2.3 Installation

### Notes:

1. If you use Windows, you might need to install [Microsoft Visual C++ Redistributable for Visual Studio](#) before installing OMNI Agent.
2. If you use Linux, you need to set up the execution permission for the installer before running. To set up the execution permission to the installer, follow the steps below:
  - Go to the directory, where OMNI Agent installer is downloaded to, and click the right button on the installation file.

- Open *Properties*, go to the *Permission* tab, and check *Allow execute* checkbox.

To install OMNI Agent to your PC, follow the steps below:

1. Sign in to your account at *cloud.3divi.ai*, go to *OMNI Agents* section of the *Settings* page, click the *+Create OMNI Agent* button and download the agent installation file for your OS (Linux/Windows). When you sign in to your account for the first time, you can download the installation files directly from the home page of the web interface in *Quick Start* widget.

**Note:** For on-premise version of OMNI Platform, the installation file is downloaded from the distribution kit.

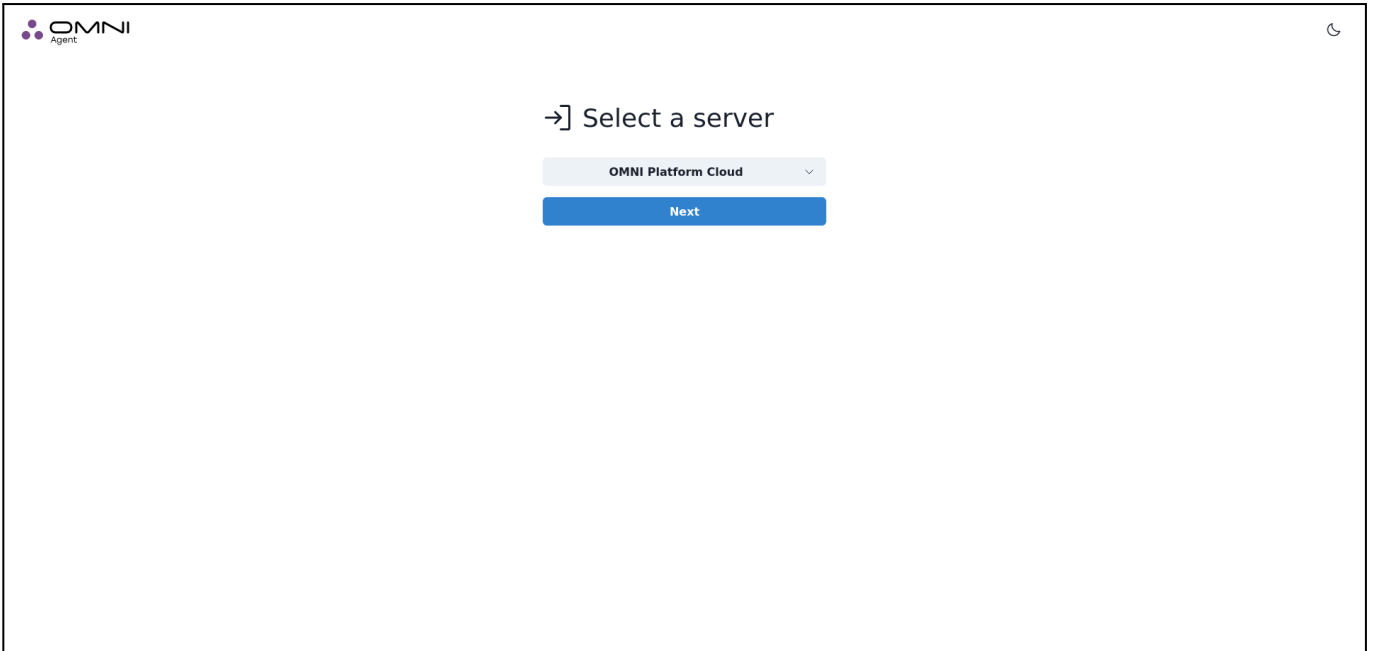
2. Once the downloading is completed, run OMNI Agent installer and follow the installation wizard's instructions.

## 2.4 Activation

To activate OMNI Agent, follow the steps below:

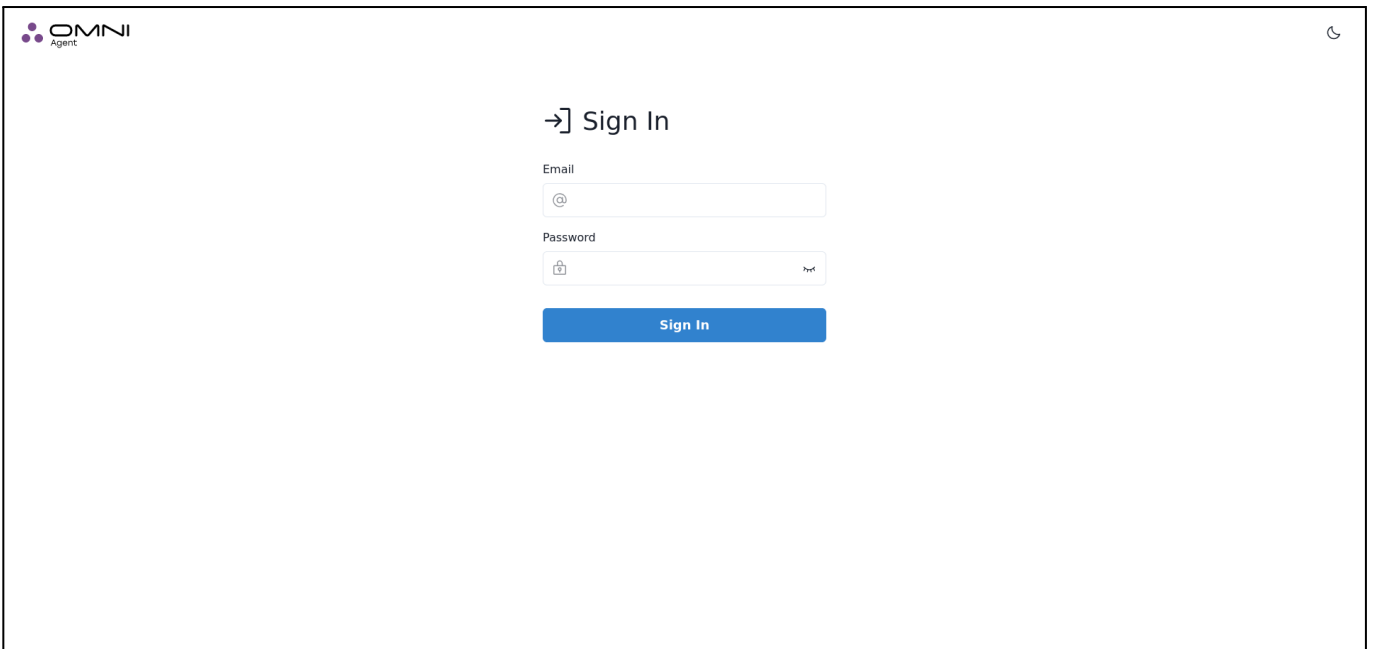
1. After completing the installation, run OMNI Agent, select the cloud (OMNI Platform Cloud) or on-premise (self-hosted) version at OMNI Agent web page and click on *Next* button.

**Note:** The domain for on-premise deployment is specified in the `settings.env` configuration file of the distribution kit in the `DOMAIN` variable. Thus, access to the platform is provided by the link: [http://platform.\\$DOMAIN](http://platform.$DOMAIN).



2. Sign in to OMNI Agent using the email and password of your OMNI Platform account.

**Note:** For the on-premise version of OMNI Platform, this data is specified in the `settings.env` file of the distribution kit in the `PLATFORM_DEFAULT_PASSWORD` and `PLATFORM_DEFAULT_EMAIL` variables, respectively.



3. Add an IP or USB camera:

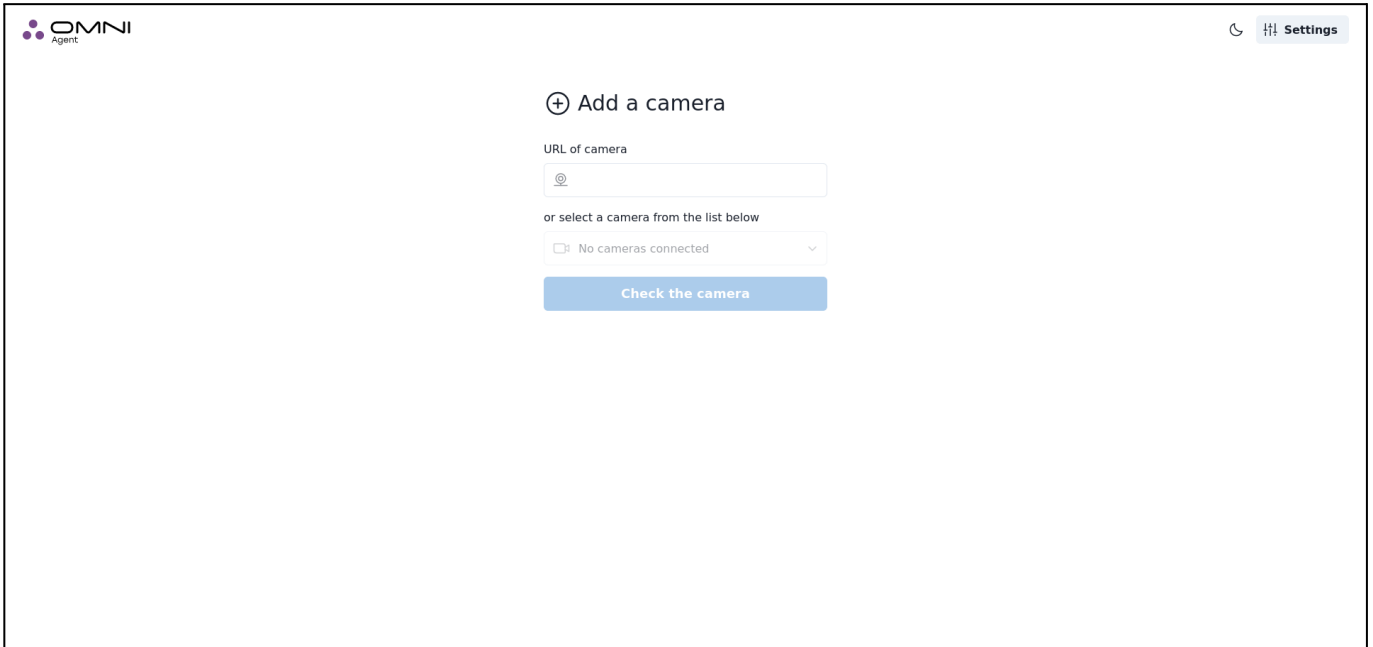
- To use an IP camera, enter the camera URL.

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- To use a USB camera, connect the camera to your PC and select it from the list of connected cameras.

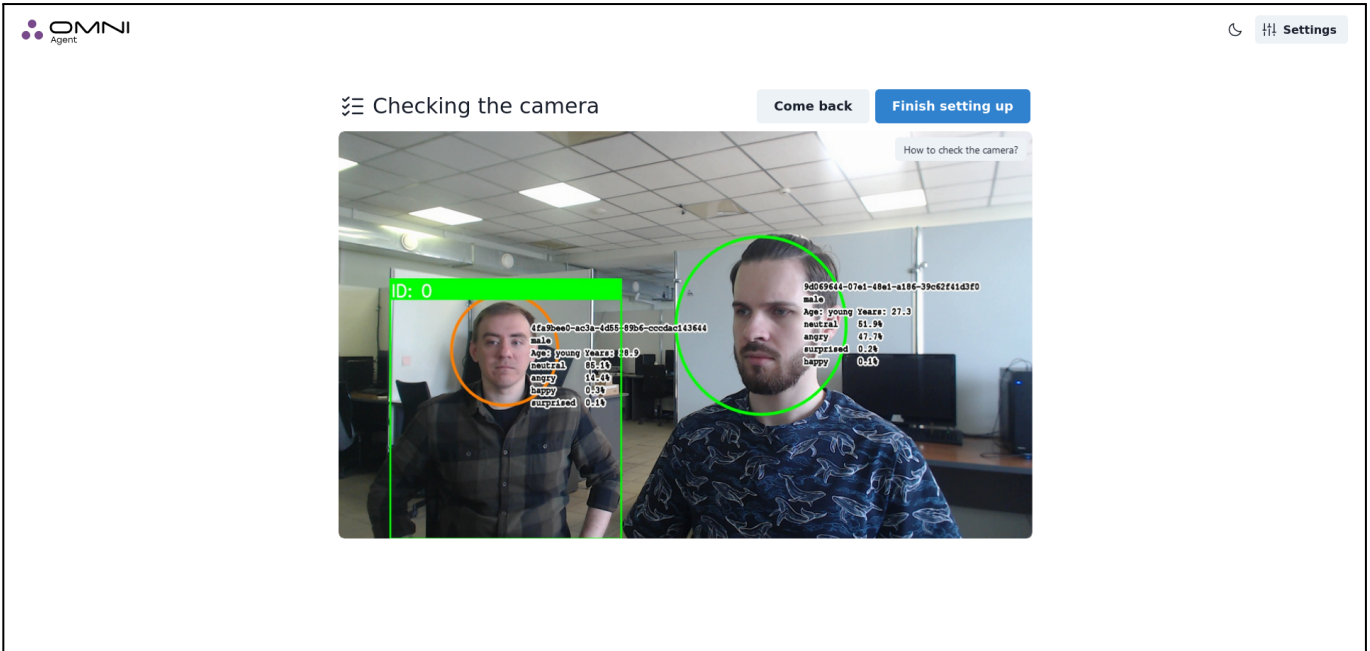
To apply settings, click on *Check the camera* button. As a result, the camera checking page will appear in your web browser.



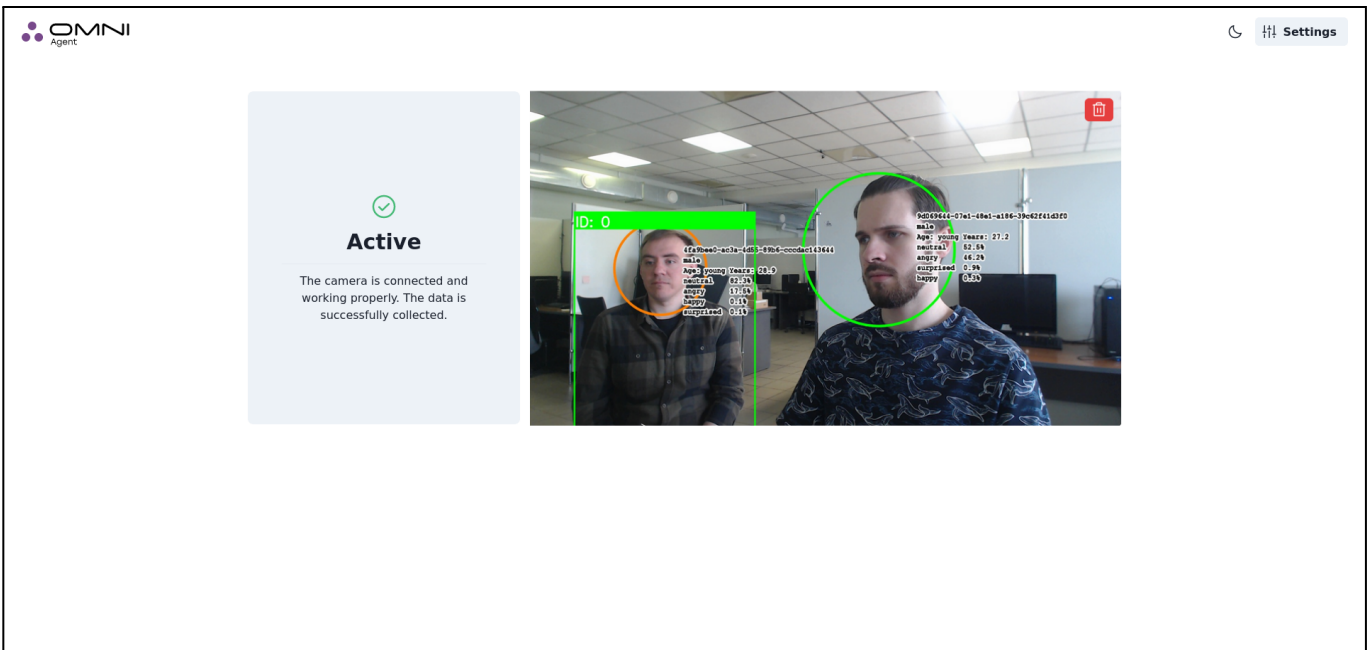
4. At the camera checking page you can see the video from the camera and the information about the detected persons (their gender, age, emotions, etc.). The detected faces and silhouettes can be highlighted as follows:
- *Red circle*: a face is detected but the person attention is none;
  - *White circle*: both a face and the person attention are detected;
  - *Dotted circle*: image quality is insufficient or head rotation angle is not applicable for proper detection;
  - *Green circle*: a face is detected and recognized but the person attention is not registered;
  - *Orange circle*: a face is detected and recognized and the person attention is registered;
  - *Green bounding box*: a human silhouette is detected and has an ID;
  - *Red bounding box*: a human silhouette is detected, but an ID is not assigned yet.



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5. To save the camera settings, click on *Finish setting up* button. As a result, you'll see OMNI Agent status page.



**Note:** If necessary, you can delete your current camera and connect the new one to the same OMNI Agent. Just click on the *red Recycle Bin* icon at the top right corner of your OMNI Agent status page. You will be redirected to the camera adding page to choose and check another camera.

### 3. Configuration

You can configure OMNI agent through the web interface or manually through the workspace folder, which stores configuration and activation files, a local database, and other files necessary for Agent operation.

To access OMNI Agent settings via the web interface, click the *Settings* icon in the upper right corner of OMNI agent web interface.

The workspace folder is by default located at the address:

- Linux: `~/local/share/OMNIAgent`
- Windows: `%LocalAppData%/OMNI Agent`

Configuration files for editing are located in the `config` folder. For your convenience, configuration files with default settings are available for review in the `config.default` folder. Note that any value changed in `config` files takes precedence over the default configuration.

The following basic settings can be modified through the web interface or by editing `run_params.json` and `log_params.json` configuration files. After adding or changing values in the configuration files, you must restart OMNI Agent.

#### 3.1 Enable/Disable Main Modules

You can configure all parameters specified in this section by editing `run_params.json`.

To enable/disable the body detection module, set the value for `enable_body_tracking:(Boolean)` as true (module enabled) or false (module disabled).

To enable/disable the face detection module, set the value for `enable_face_tracking:(Boolean)` as true (module enabled) or false (module disabled).

**Note:** Disabling this module also stops Agent synchronization with the local database.

To enable/disable age and gender estimation, set the value for `estimators.age_gender.enabled:(Boolean)` as true (module enabled) or false (module disabled).

To enable/disable estimation of emotions, set the value for `estimators.emotions.enabled: (Boolean)` as `true` (module enabled) or `false` (module disabled).

To enable/disable the mask detector, set the value for `estimators.mask_attribute.enabled: (Boolean)` as `true` (module enabled) or `false` (module disabled).

### 3.2 Enable/Disable Anonymous Mode

OMNI Agent has the anonymous mode enabled by default. In the anonymous mode, face images aren't transferred to OMNI Platform that ensures personal data protection and excludes the possibility of person recognition outside the system. You can enable or disable the anonymous mode at OMNI Agent web interface or by editing `run_params.json`.

To enable/disable the anonymous mode through the web interface, click on *Settings* icon at OMNI Agent web page and select an appropriate option in the opened tab.

For configuration via `run_params.json` set the value for `anonymous_mode: (Boolean)` as `true` (module enabled) or `false` (module disabled).

### 3.3 Proxy Server Connection

If the user gets access to the Internet through a proxy server, this connection should also be enabled to install and configure OMNI Agent. To use a proxy server, click on *Settings* icon at OMNI Agent web interface and select a system or custom proxy server in the opened tab. When choosing a custom proxy server, enter its address in a special field. After changes are completed, click the *Save* button.

### 3.4 Change the Standard Port of Web Configurator

You can configure all parameters specified in this section by editing `run_params.json`.

By default, the web configurator runs on port 8080. To change the port, add the `http_server_port: (int)` field in the configuration file and specify the desired port for opening the web configurator.

### 3.5 Change the Thresholds for Face and Body Matchers

You can configure all parameters specified in this section by editing `run_params.json`.

**Matcher** is 3DiVi Face SDK component that allows performing the following comparison operations with face biometric templates:

- Verification 1:1 - comparing of two biometric templates (faces) between each other, estimating of coincidence;
- Identification 1:N - comparing of one biometric template (face) with other templates (faces), searching and estimating of coincidence

When comparing face templates, Matcher calculates the difference between biometric features of faces. The calculations result in a measure of correspondence between face images and the probability of belonging to one person.

#### Face matcher settings:

**faR** : False acceptance rate (FAR) shows the system resistance to false acceptance errors. Such an error occurs when the biometric system recognizes a new face as previously detected one. This rate is measured by the number of false-acceptance recognitions divided by the total number of recognition attempts. You can change the faR value at `desired_far (float)` parameter. By default, the faR value equals to  $1e-5$ .

**frR** : False rejection rate (FRR). When a system fails to recognize previously detected face, false rejection occurs. The rate shows the percentage of recognition attempts with false rejection result. You can change the frR value at `desired_frr (float)` parameter. By default, the frR value equals to 0.

#### Body matcher settings:

To exclude low-confidence matches, you can change confidence thresholds for body detection and comparison.

Body detection confidence threshold is given in `detector_confidence (float)` parameter and equals to 0.9 by default with a range of values from 0 to 1.

Body comparison confidence threshold is given in `cos_reident_confidence` (float) parameter and equals to 0.6 by default with a range of values from -1 to 1.

### 3.6 View Logs/Change Logging Level

You can view the logs in the `logfile_*.log` file in the `log` folder. To change the logging level, go to the `log_params.json` configuration file and set a value for the `sev_level(string)` parameter. Available logging levels: TRACE, DEBUG, INFO, WARNING, ERROR, FATAL (listed in ascending order of importance).

### 3.7 Transfer Data via Webhooks

To set up data transfer via webhooks, go to the `run_params.json` configuration file and specify values for the `webhook_tracking_subscribers` parameter. This parameter represents a list of objects to determine the address of the server that receives data from OMNI agent and is available in two versions:

Version 1

```
{
  "url": "http://127.0.0.1:5000/trigger" // address with the endpoint
}
```

### Version 2 (default)

```
{  
  "host": "127.0.0.1", // address  
  "port": "5000", // port  
  "is_secured": false, // http/https flag  
  "path": "/trigger" // endpoint  
}
```

## 4. Release Notes

### 2.1.0

#### Bug Fixes

- Stable processes UUID;
- Hangs during shutdown sequence when Agent is reconfigured the second time before its restart;
- Rare database synchronization issues causing partial corruption of profile data.

#### Improvements

- Added ability to transfer best shot via webhook;
- Added ability to disable transfer of biometric template;
- Better installer package compression;
- Added ability to transfer best shots in original quality.

### 2.0.0

#### What's New

- FaceSDK 11v1000 support;
- New database fetching algorithm.

#### Bug Fixes

- Fixed several installation issues;
- Signed installers of on-prem agent;
- Fixed random changes (between startups) of web configurator's port when default is already in use;
- Fixed (rare) random hangs on MS Windows during the shutdown sequence;
- Fixed random shutdowns for cases of RTSP video streams with timed connection interruptions.

#### Improvements

- Partial runtime reconfiguration support (internal usage only);
- Response time optimizations;
- Smooth synchronous preview;

- Template version synchronization.