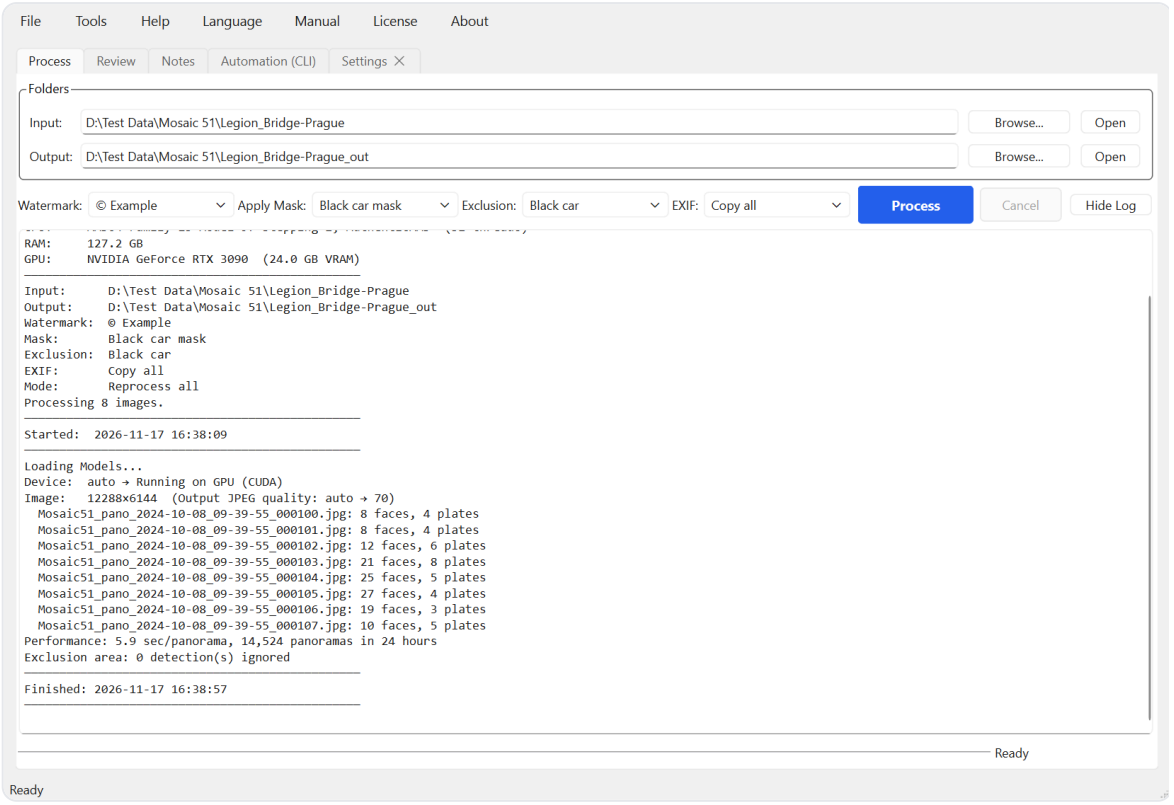
panohopper

Privacy Keeper

Manual

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1 Introduction

Privacy Keeper detects and blurs faces and number plates in equirectangular (360°) panoramas. It is made for mapping companies, photographers and anyone who must anonymize panoramic images before publishing them. Processing runs on your NVIDIA graphics card for speed and falls back to the CPU automatically.

1.1 Main Features

- **Automatic blurring:** AI-powered face and number plate detection, made for 360° panoramas up to 12,288 × 6,144 pixels and more.
- **Fewer false alarms:** rules that ignore signs above the horizon and "faces" in the gravel, an optional second AI check of every box, and exclusion areas for your own recording vehicle.
- **Fewer misses:** the Neighbour check searches again for faces and plates that were seen clearly in the panoramas before and after.
- **Review and correct:** look at every result, add notes, add or remove boxes and reprocess single panoramas.
- **Branding and metadata:** tiled watermarks, masks for your vehicle, and EXIF presets.
- **Automation:** run the same job from the command line, without opening the program (Pro license).
- **Privacy:** all processing runs on your PC. Nothing is uploaded.

1.2 What Happens to Your Images

Your original panoramas are never changed. Privacy Keeper writes everything into the output folder:

File	Content
Blurred panoramas	Same file names as the originals, with all EXIF metadata copied.
`privacy_keeper_YYYY-MM-DD_HH-MM-SS.log`	The full log of the job: system, settings, results per panorama, speed.
`detections.json`	Every face and number plate box. The Review and Edit tabs use it.
`detections_d1_rejected.json`	Boxes that the second check removed (only when the second check ran).
`annotations.json`	Your notes on panoramas (see Notes).

1.3 Supported Resolutions and Performance Data

Privacy Keeper works with the common 360° cameras:

Camera / Format	Resolution	GPU Time	CPU Time	FPS (GPU)
Mosaic 51	12,288 × 6,144 px	~2 sec	~26 sec	~0.5
Insta360 X4	8,192 × 4,096 px	~1.2 sec	~15 sec	~0.8

Camera / Format	Resolution	GPU Time	CPU Time	FPS (GPU)
GoPro MAX	5,760 × 2,880 px	~0.7 sec	~9 sec	~1.4

These figures were measured on an NVIDIA RTX 3090 (GPU) and an AMD Ryzen 9 7950X3D (CPU) for detection and blurring only. The Neighbour check and the second check add time (see Processing Speed). Your speed depends on your hardware.

2 System Requirements

Item	Requirement
Operating system	Windows 11 (64-bit)
Memory	8 GB RAM minimum, 16 GB recommended
Disk space	4 GB free for the program, plus space for your output panoramas
GPU acceleration (recommended)	NVIDIA RTX graphics card, series 20, 30, 40 or 50, CUDA Toolkit 12.9.1 and cuDNN 9.20.0
Second check (optional)	The separate model pack installed, and either an NVIDIA graphics card with about 12 GB memory, or 16 GB RAM when processing runs on the CPU
Neighbour check	GPS positions in the panoramas; one recording per folder, in recording order
License	A Privacy Keeper license. The command-line program needs a Pro license.

Without a suitable NVIDIA graphics card, Privacy Keeper runs on the CPU. It is much slower. The second check then also runs on the CPU if the PC has at least 16 GB RAM, and adds more time (see Processing Speed).

3 Installation

3.1 Installing CUDA and cuDNN (for GPU acceleration)

GPU acceleration is optional. Without CUDA, Privacy Keeper runs on the CPU automatically.

Step 1 — CUDA Toolkit 12.9.1

Download and install from: https://developer.nvidia.com/cuda-12-9-1-download-archive

Select: Windows → x86_64 → your Windows version → exe (local)

Step 2 — cuDNN 9.20.0

Download from: https://developer.nvidia.com/cudnn-9-20-0-download-archive

Select: Windows → x86_64 → Windows 11 → exe (local)

Run the installer and follow the instructions on the screen. You do not need to copy any folders by hand.

The same links are in Privacy Keeper under **Help** → **CUDA Installation Guide**.

3.2 Installing Privacy Keeper

Run the Privacy Keeper installer and follow the instructions on the screen. The installer adds a shortcut to the Start Menu and, if you choose, to the desktop.

3.3 Installing the Model Pack (optional)

The second check (see Settings) needs a separate model pack of about 3 GB.

1. Install Privacy Keeper first.
2. Download **both** files of the model pack into the **same folder**:
    - the installer: https://downloads.panohopper.com/privacy-keeper-modelpack/PrivacyKeeper_ModelPack.exe
    - the data file: https://downloads.panohopper.com/privacy-keeper-modelpack/PrivacyKeeper_ModelPack-1.bin 3. Run `PrivacyKeeper_ModelPack.exe`. It finds the Privacy Keeper folder by itself.

The same two links are shown in **Settings** → **Second Check** as long as the model pack is missing. Updates of Privacy Keeper keep the model pack, so you install it only once.

> **Note:** The installer needs the `.bin` file next to it. If it reports a missing file, put both files into the same folder and start it again.

3.4 Updating Privacy Keeper

Each time it starts, Privacy Keeper checks whether a new version is available. This needs an internet connection; without one, nothing is shown and Privacy Keeper works as usual.

When a new version is available, a window shows **Privacy Keeper X.Y.Z is available**, the version you use, and the changes of every newer version.

- **Later** closes the window. Privacy Keeper asks again at the next start.
- **Update** downloads the new installer and checks that it arrived complete. After 5 seconds the installer starts and Privacy Keeper closes. Follow the instructions on the screen.

The update keeps your settings, presets, license and the model pack. After the first start of the new version, a message confirms the update; **Show changes** opens the list of changes.

To check by hand, open **About** and click **Check for updates**. **About** → **Show Changelog** shows the list of changes of every version.

If the download fails, download the new version from https://www.panohopper.com/privacy-keeper.html and install it over the old one.

3.5 Signing In

Privacy Keeper needs a license. Without one, it opens on the **License** tab and the other tabs stay locked.

1. Click **Sign in**. Your browser opens the panohopper sign-in page. Sign in with your e-mail address or Google.
2. Return to Privacy Keeper. It activates this PC by itself and unlocks all tabs.

New accounts start with a free 10-day trial. Privacy Keeper renews the license each time it starts. See License and Account.

4 Getting Started

4.1 The Main Window

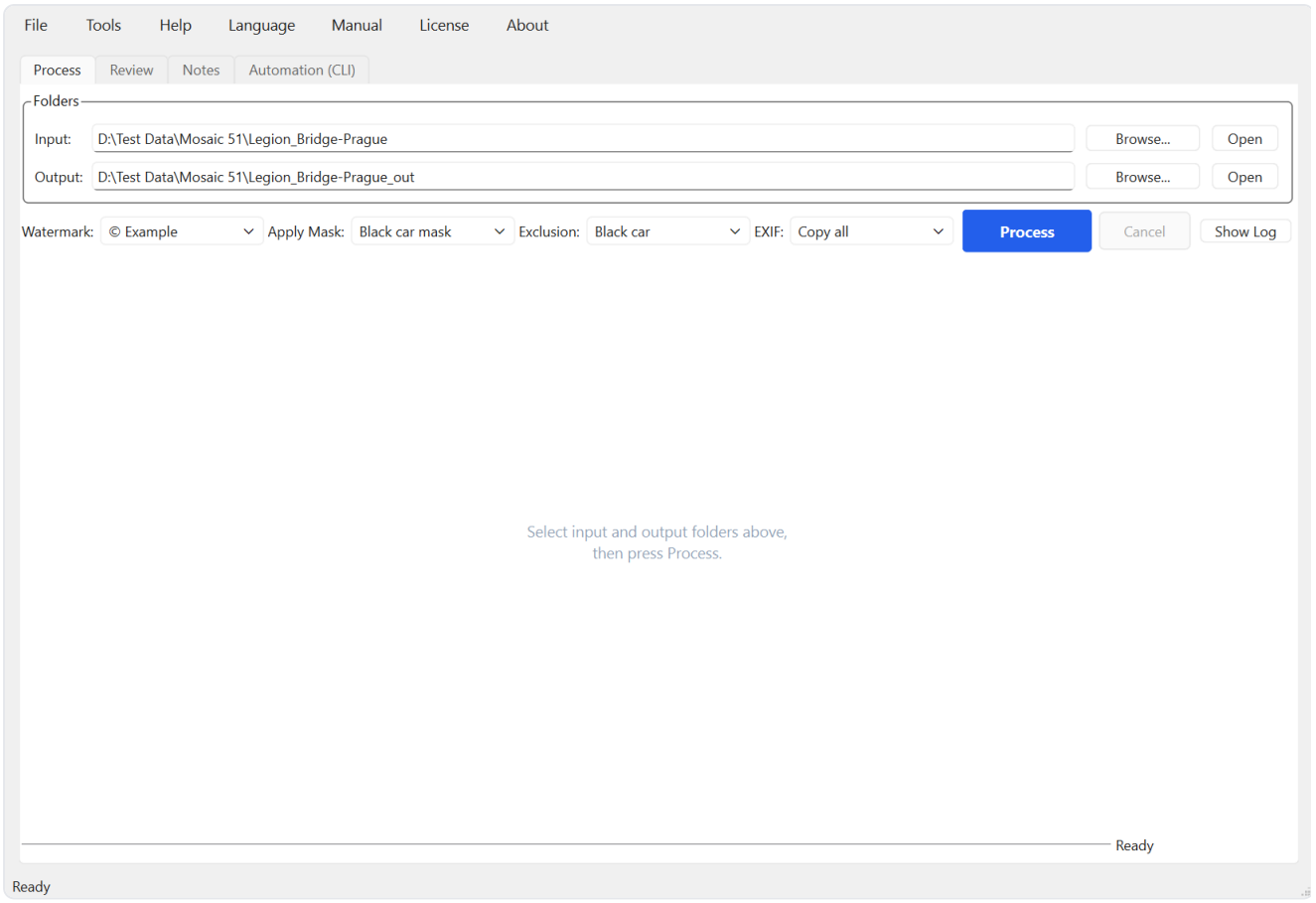
Start Privacy Keeper from the shortcut on your desktop or in the Start Menu. The main window has four fixed tabs:

Tab	Purpose
Process	Choose the folders and presets, start the job, follow the log.
Review	Look at the results, panorama by panorama.
Notes	All notes you added to panoramas, as a table.
Automation (CLI)	The command and job file to run the same job from the command line.

More tools open as tabs that you can close, from the **Tools** menu: **Edit**, **Watermark**, **Mask**, **Exclusion**, **EXIF** and **Settings**.

The other menus:

Menu	Entries
File	Open Input Folder, Open Output Folder, Exit
Help	CUDA Installation Guide, Open Log, Error Log, Open Logs Folder, Open a Ticket (see Support)
Language	English, Deutsch, Français
Manual	English Manual (this document)
License	Opens the License tab: account, plan, sign in and out (see License and Account)
About	About: version, **Check for updates** (see Updating Privacy Keeper) and **Show Changelog**; Show Changelog: the list of changes of every version



The main window: choose the folders and press Process.

4.2 Examples on First Launch

On first launch Privacy Keeper adds an **Example Mask** and an **Example Exclusion Area** (and a **© Example** watermark when you first open the Watermark tab), so you have something to start from. The examples were made for a railway vehicle. Make your own for your recording vehicle (see Mask Editor and Exclusion Areas).

We strongly suggest that you process known test data first to check your installation. Download our test data: www.panohopper.com/test-data/Mosaic_51_-_Fort_Myers_Beach_2022.zip

4.3 Selecting Folders

Input: Click **Browse...** next to the Input field and choose the folder with your panoramas (`.jpg` or `.jpeg`). Subfolders are not read.

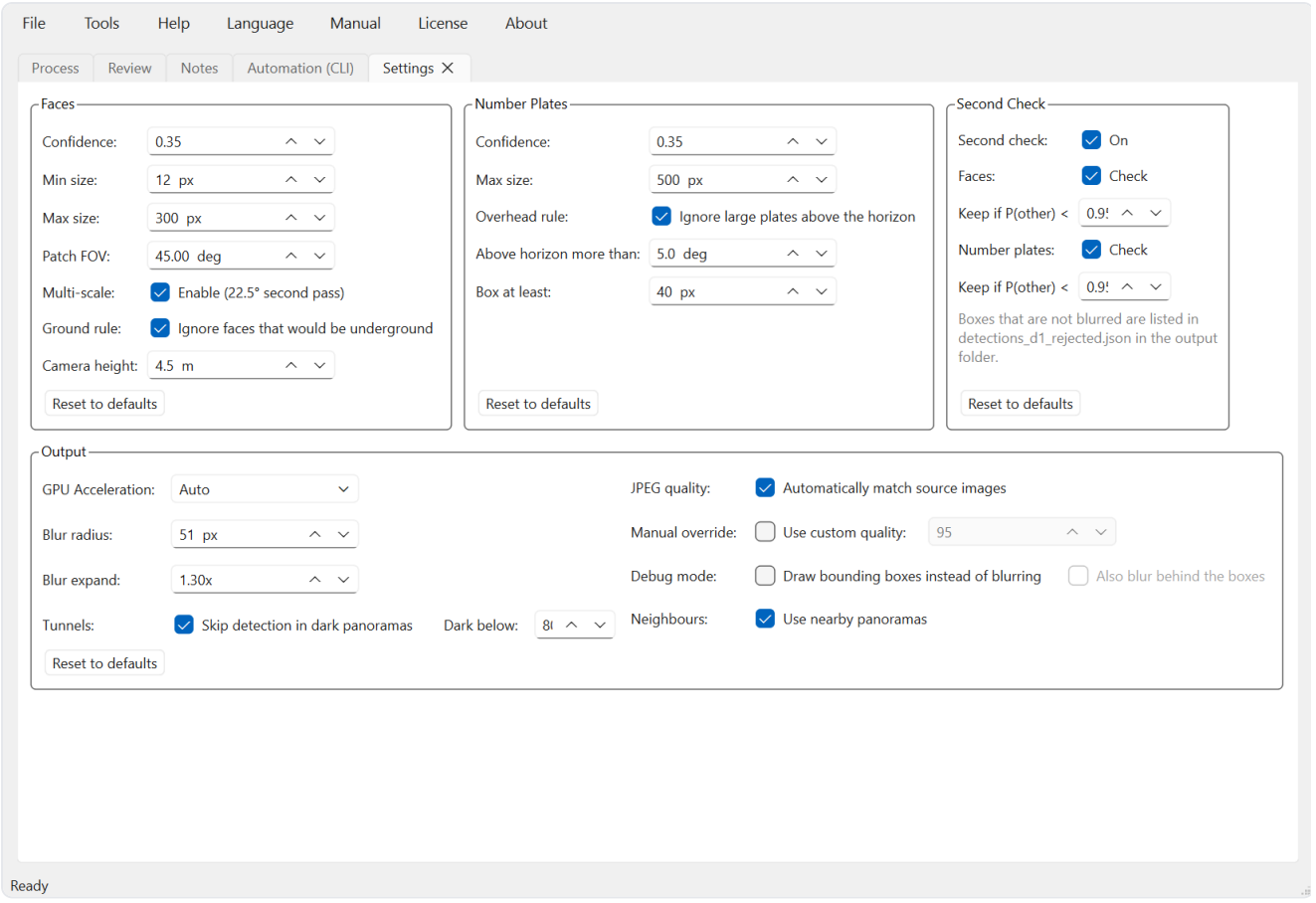
Output: Privacy Keeper fills in the input folder name plus `_out` each time you choose a new input folder. You can change it at any time. The folder is created if it does not exist.

The **Open** button next to each field opens the folder in Windows File Explorer.

5 Settings

Open **Tools → Settings** to change the detection and output settings. The tab stays open until you close it.

Privacy Keeper saves each setting the moment you change it and uses it again at the next start. Each group has a **Reset to defaults** button that restores the default values shown below. The defaults work well for most recordings.



The Settings tab (Tools → Settings).

5.1 Faces

Setting	Default	Description
Confidence	0.35	Minimum detection score (0.1–0.99). Lower finds more faces but also more false alarms.
Min size	12 px	Faces smaller than this are ignored.
Max size	300 px	Faces larger than this are ignored.
Patch FOV	45°	Field of view of the views that Privacy Keeper cuts from the panorama for detection.
Multi-scale	On	A second pass with 22.5° views finds small and distant faces.
Ground rule	On	Ignores "faces" that would have to be below the ground for their size: gravel, track bed.

Setting	Default	Description
Camera height	4.5 m	Height of the camera above the ground. Used by the ground rule.

> **Note:** Switch the ground rule off for recordings with people really below the camera, for example on a road under a bridge or below an embankment. The rule would remove them.

5.2 Number Plates

Setting	Default	Description
Confidence	0.35	Minimum detection score (0.1–0.99). Independent of the face confidence.
Max size	500 px	Larger plate boxes are ignored as false alarms.
Overhead rule	On	Ignores large plate boxes above the horizon. A plate close to the camera is always below the horizon, so a large box higher up is a sign, a shop name or an ornament.
Above horizon more than	5.0°	The overhead rule applies to boxes whose centre is higher than this.
Box at least	40 px	The overhead rule applies only to boxes at least this high. Small, far plates (for example in a raised car park) are kept.

Every number plate that is found and not removed by a rule is blurred.

5.3 Second Check

The second check is a second AI model. It looks at every box that the detection found. Boxes that it is very sure are neither a face nor a number plate are not blurred. This removes false alarms: objects that only look like a face or a plate to the detection.

Setting	Default	Description
Second check	On	Switches the second check on or off.
Faces: Check	On	Check face boxes.
Number plates: Check	On	Check number plate boxes.
Keep if P(other) <	0.97	A box is removed only if the model is at least this sure that it is something else. Higher is safer (fewer real faces or plates left unblurred) but removes fewer false alarms.

Removed boxes are listed in `detections_d1_rejected.json` in the output folder, so you can check them.

The second check runs only when the model pack is installed (see Installation). Where it runs depends on the PC:

Processing runs on	Second check
An NVIDIA graphics card with about 12 GB memory or more	Runs on the graphics card.
An NVIDIA graphics card with less memory	Not active. On the CPU next to the graphics card it would make the job several times slower.
The CPU (no suitable graphics card, or **GPU Acceleration** set to CPU)	Runs on the CPU if the PC has at least 16 GB RAM. This adds clearly more time per panorama.

A line at the top of the group says when the second check is not active on this PC, or when it runs on the CPU. The log says the same. If the model pack is missing, the line also shows the two download links.

5.4 Output

Setting	Default	Description
GPU Acceleration	Auto	Auto uses the GPU if CUDA is available, otherwise the CPU. See GPU Acceleration.
Blur radius	51 px	Strength of the blur. Larger is stronger.
Blur expand	1.30x	Makes the blurred area larger than the detected box.
Tunnels	On	Skips detection in dark panoramas (tunnels). The panorama is still saved, with watermark and mask, but not blurred.
Dark below	80	A panorama counts as dark when even its brightest parts stay below this value (0–255).
JPEG quality	Automatic	Saves each panorama with the JPEG quality of its source file.
Manual override	Off (95)	Uses a fixed JPEG quality (50–100) instead.
Debug mode	Off	Draws the boxes (red = face, green = plate, with their size) instead of blurring.
Also blur behind the boxes	Off	With debug mode: blurs as usual and draws the boxes on top, so no face or plate stays visible.
Neighbours	On	Neighbour check: faces and plates seen clearly in the 6 panoramas before and after are searched again, zoomed in, in this panorama. Finds more small and half-hidden objects. Needs GPS in the panoramas and one recording per folder. Takes extra time.

> **Note:** Use the tunnel setting only when your tunnels never contain people or vehicles. A dark panorama is saved without blurring.

5.5 Language

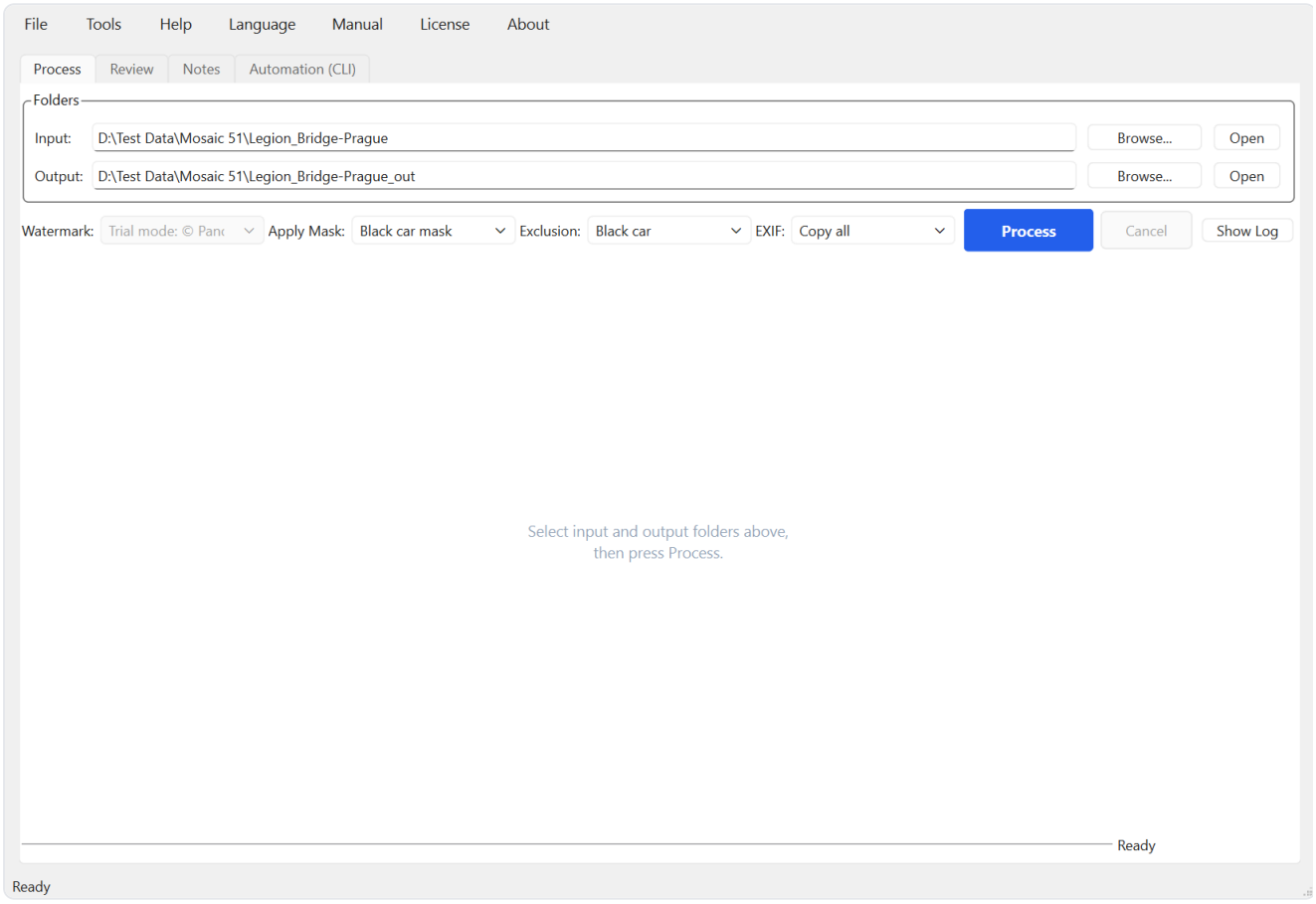
Choose **Language** in the menu bar to switch between English, Deutsch and Français. Privacy Keeper keeps the choice for the next start.

6 Processing Images

6.1 Starting a Job

1. Choose the input and output folders on the **Process** tab.
2. Optional: choose a **Watermark**, **Apply Mask**, **Exclusion** area and **EXIF** preset in the toolbar. The defaults are None and Copy all. Your choices are kept for the next start.
3. Optional: change the settings (**Tools** → **Settings**).
4. Click **Process**.

> **Note:** In trial mode, the **Watermark** list always shows **Trial mode: © PanoHopper** and is greyed out. Every processed panorama gets this watermark. Mask, Exclusion and EXIF work as usual.



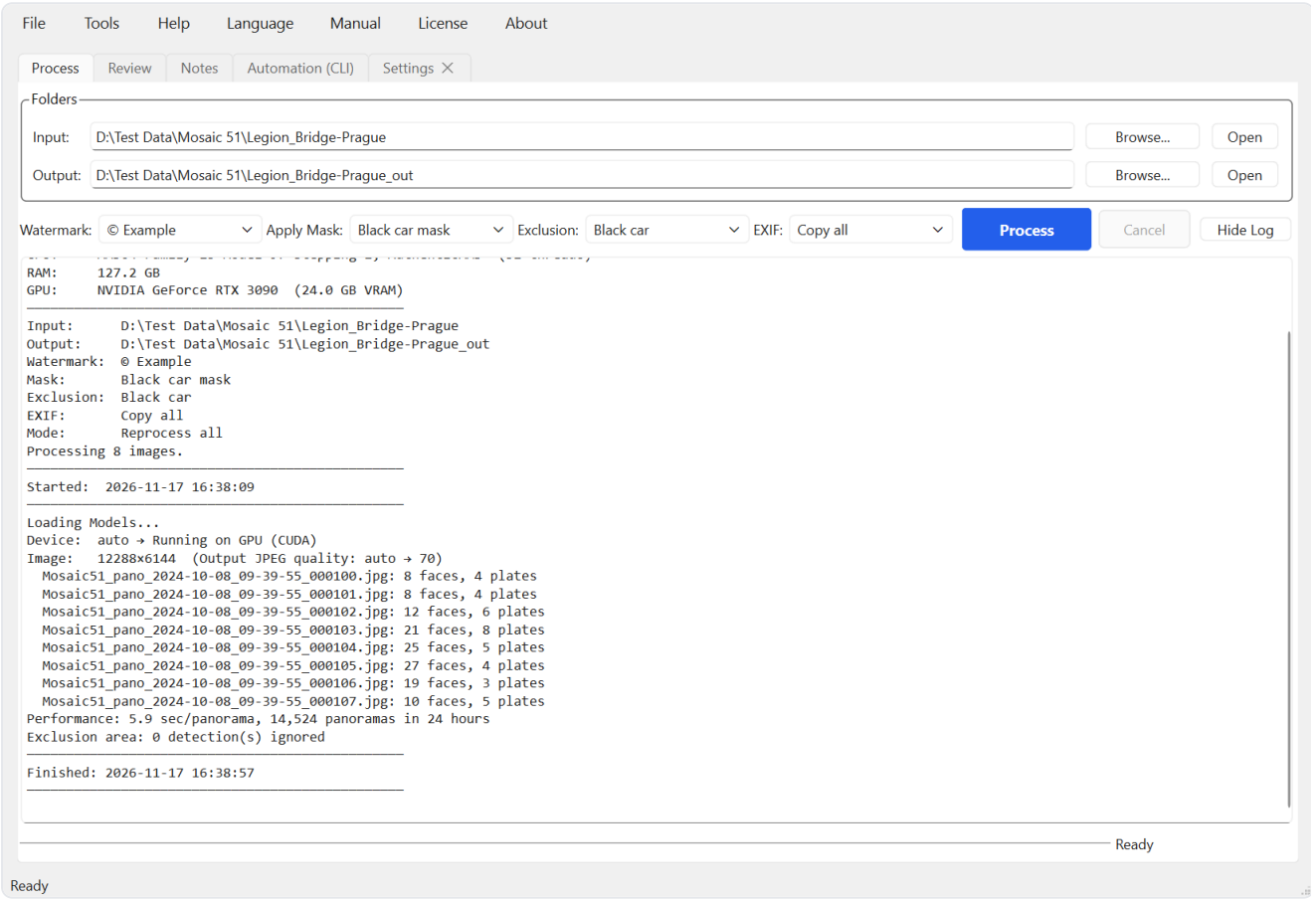
Trial mode: the Watermark list is locked to the trial watermark.

If the output folder already contains panoramas with the same names, Privacy Keeper asks what to do:

- **Continue (skip existing)** processes only the new panoramas. The boxes of the panoramas already done are kept.
- **Reprocess All** processes and overwrites all panoramas.

6.2 Following the Log

Click **Show Log** to see the log while the job runs, and **Hide Log** to hide it again. The log starts with your PC's system information and shows whether the GPU or the CPU is used. Each panorama gets one line with its number of faces and plates. At the end the log shows the speed (seconds per panorama, panoramas per day) and how many boxes each rule and check removed or added.



The Process tab after a job, with the log shown.

Warnings and errors are also collected in a separate **Errors** tab (**Help** → **Error Log**).

6.3 Progress and Remaining Time

At the start, Privacy Keeper loads its models and prepares the first panoramas. The status bar at the bottom of the window shows **Preparing the first panoramas…** and then the name of the panorama being processed.

The progress bar shows how many panoramas are done. From the second panorama on, the line above it shows, for example:

```
126 / 793 · 5.9s/image · 14,644/24h · ~1h 05m remaining · Done ~16:17
```

That is: panoramas done / total, seconds per panorama, panoramas per 24 hours, remaining time and expected finishing time. The figures are the average of the last 10 panoramas; the first panorama is left out, because it takes longer. With the Neighbour check on, the last panoramas of a folder finish faster, so near the end the remaining time can be a little too high.

6.4 Cancelling

Click **Cancel** at any time. The current panorama is finished first. Panoramas already processed stay in the output folder. Start the job again and choose **Continue (skip existing)** to process the rest.

6.5 Completion

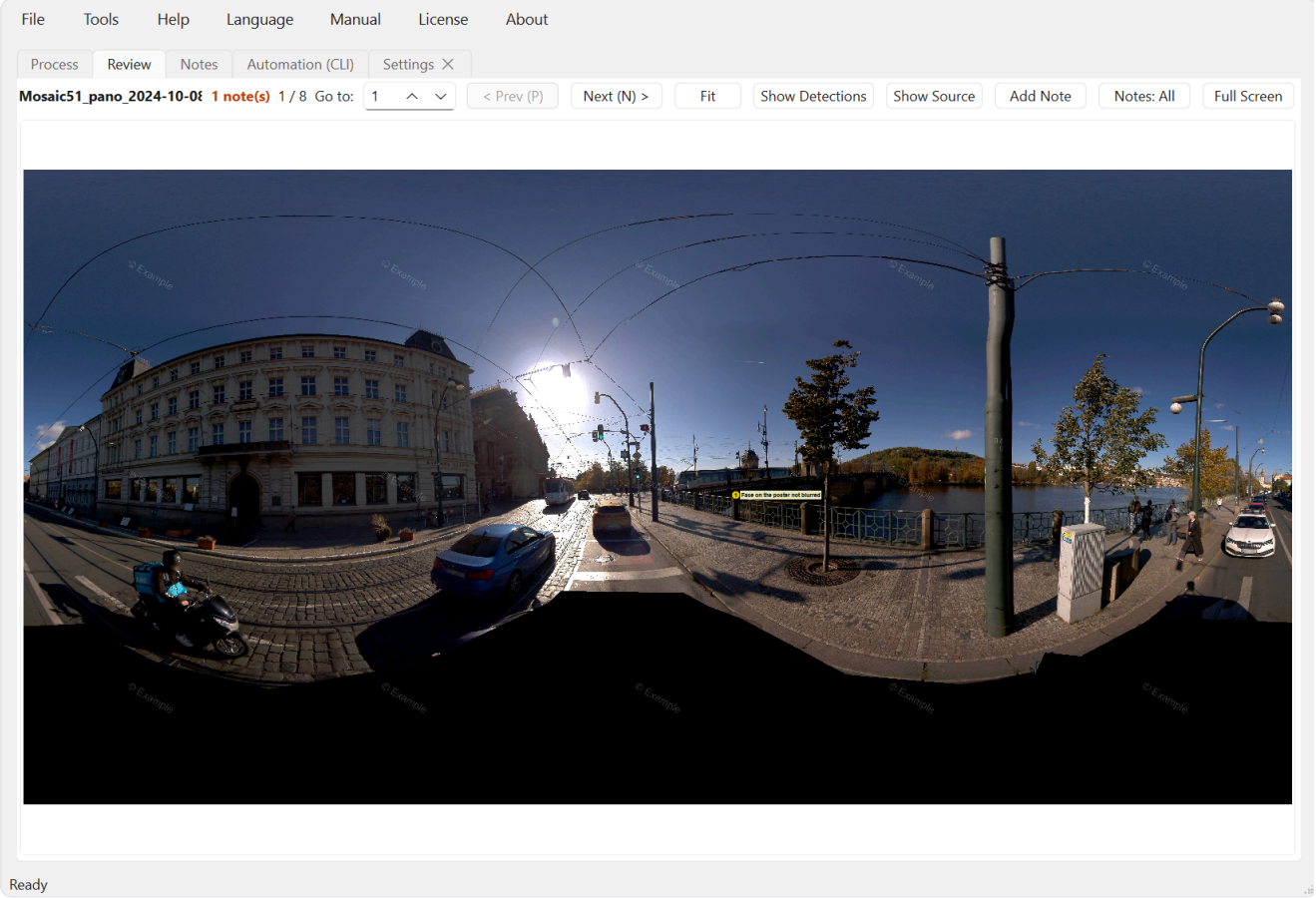
When the job is finished, the **Review** tab opens. The Process tab shows the totals and the time taken.

6.6 Log Files

Each job writes a log file named `privacy_keeper_YYYY-MM-DD_HH-MM-SS.log` into the output folder. In the **Help** menu, **Open Log** opens the log of the last job, **Error Log** shows its warnings and errors, and **Open Logs Folder** opens the folder that holds it.

7 Reviewing Results

The **Review** tab shows the processed panoramas one at a time at full resolution. It opens automatically when a job is finished. The line at the top shows the panorama name (select it to copy it), its number of notes and its position, for example 1 / 5. When you come back to an output folder, the tab shows the panorama you looked at last.

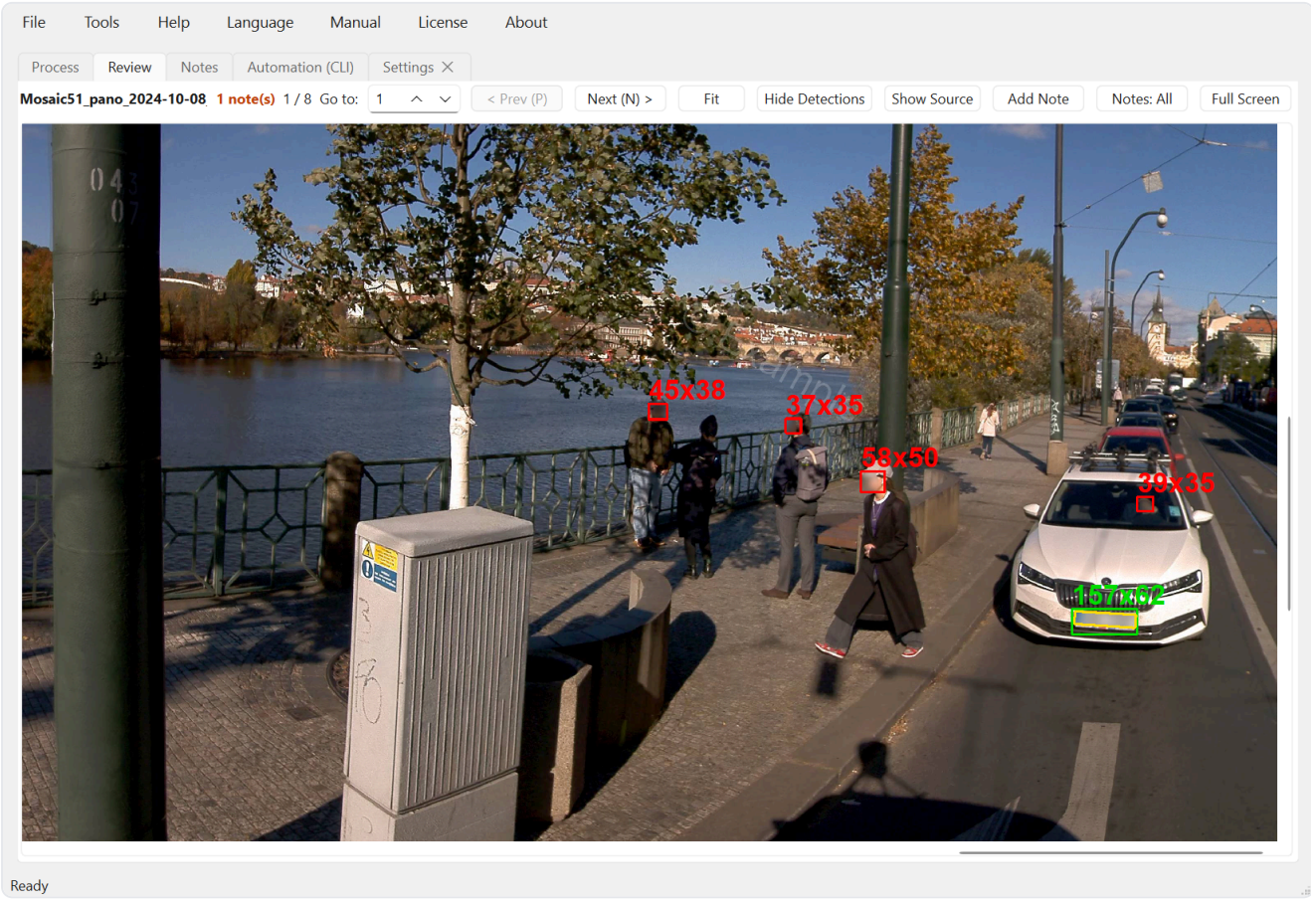


The Review tab with a processed panorama and one note.

7.1 Controls

Control	Action
< Prev (P) / **Next (N) >**, or the arrow keys	Previous / next panorama
Go to:	Type a panorama number and press Enter.
Fit	Fit the whole panorama into the window.
Show Detections / **Hide Detections**	Show or hide the boxes from `detections.json` (red = face, green = plate, with their size in pixels).
Show Source / **Show Output** (S)	Switch between the original panorama and the processed one, at the same view.
Add Note (A)	Mark an issue on the panorama (see below).

Control	Action
Notes: All / Numbers / Hidden (`T`)	Show notes with text, only their numbers, or hide them.
Full Screen (`F11`)	Show the panorama on the whole screen. `F11` or `Esc` leaves.
Mouse wheel	Zoom in and out.
Drag with the mouse	Move the view.



Detections shown, zoomed in: red = face, green = number plate.

A panorama skipped as a tunnel shows the orange note **Tunnel – detection skipped** beside its name.

7.2 Adding Notes

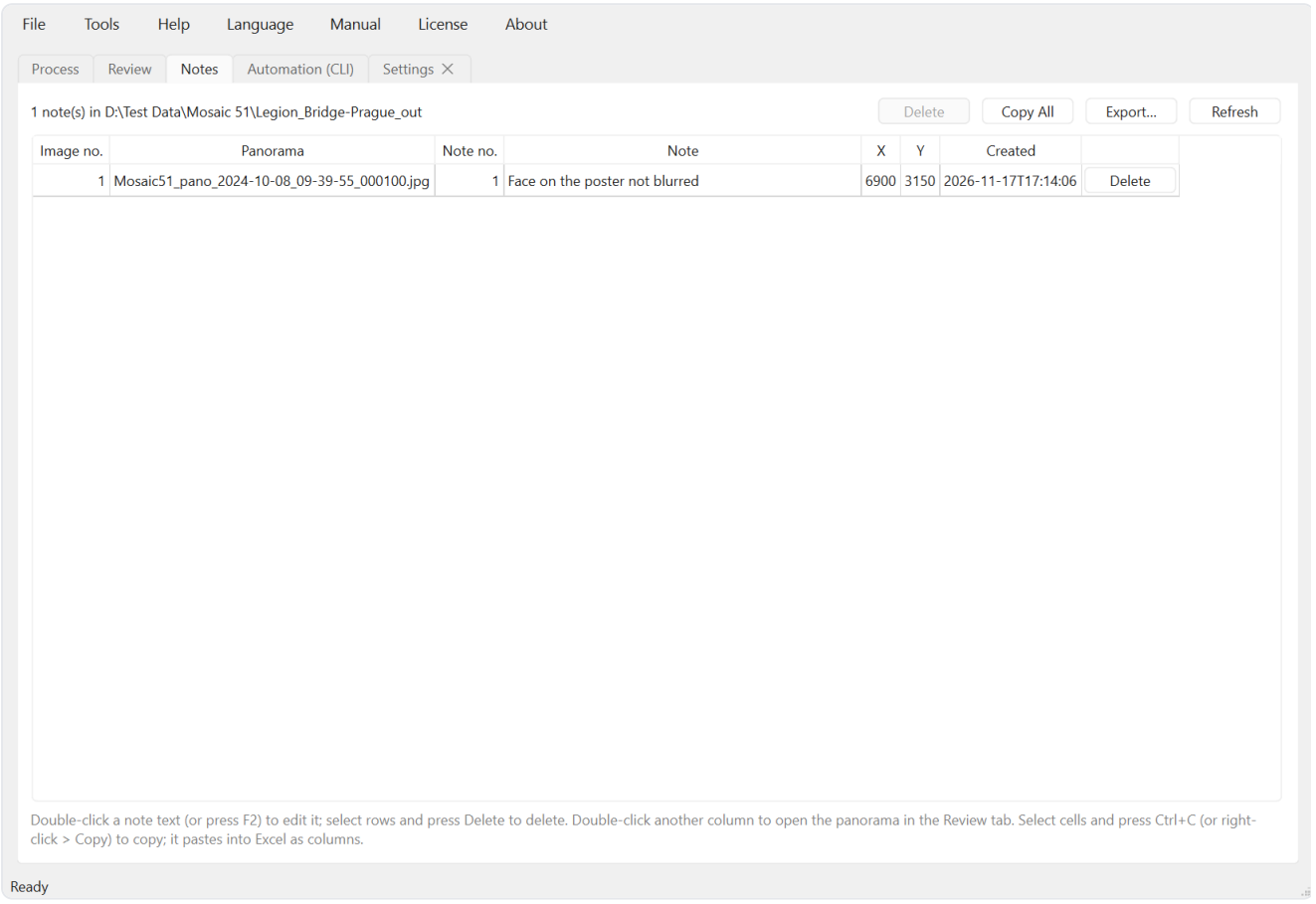
Use notes to mark problems for later, for example a face that was not blurred.

1. Click **Add Note** (or press `A`).
2. Click the spot on the panorama. `Esc` cancels.
3. Describe the issue in the field **What is the issue here?** and confirm. Below the field, **Recent notes** lists the last five texts used in this output folder; click one to use it again.

The note appears as a numbered yellow marker with its text. Click a marker to change or delete the note. Notes are saved at once in `annotations.json` in the output folder. The Edit tab shows the same notes. All notes are listed in the Notes tab.

8 Notes

The **Notes** tab lists all notes of the current output folder as a table: panorama number, panorama name, note number, note text, position (X, Y in panorama pixels) and the time it was created. The list is refreshed each time you open the tab; **Refresh** reloads it.



The Notes tab with one note.

8.1 Working with Notes

Action	How
Open the panorama	Double-click a row (not the note text). The panorama opens in the Review tab.
Change a note text	Double-click the note text (or press `F2`), type, press Enter.
Delete notes	Click **Delete** in the row, or select rows and press `Delete`. Privacy Keeper asks first.
Copy	Select cells and press `Ctrl`+`C` (or right-click → Copy). **Copy All** copies the whole table. It pastes into Excel as columns.
Export	**Export...** saves all notes as an Excel CSV file or as JSON.

Changes are saved at once in `annotations.json`. The Review and Edit tabs show them when you switch back.

9 Edit Tab

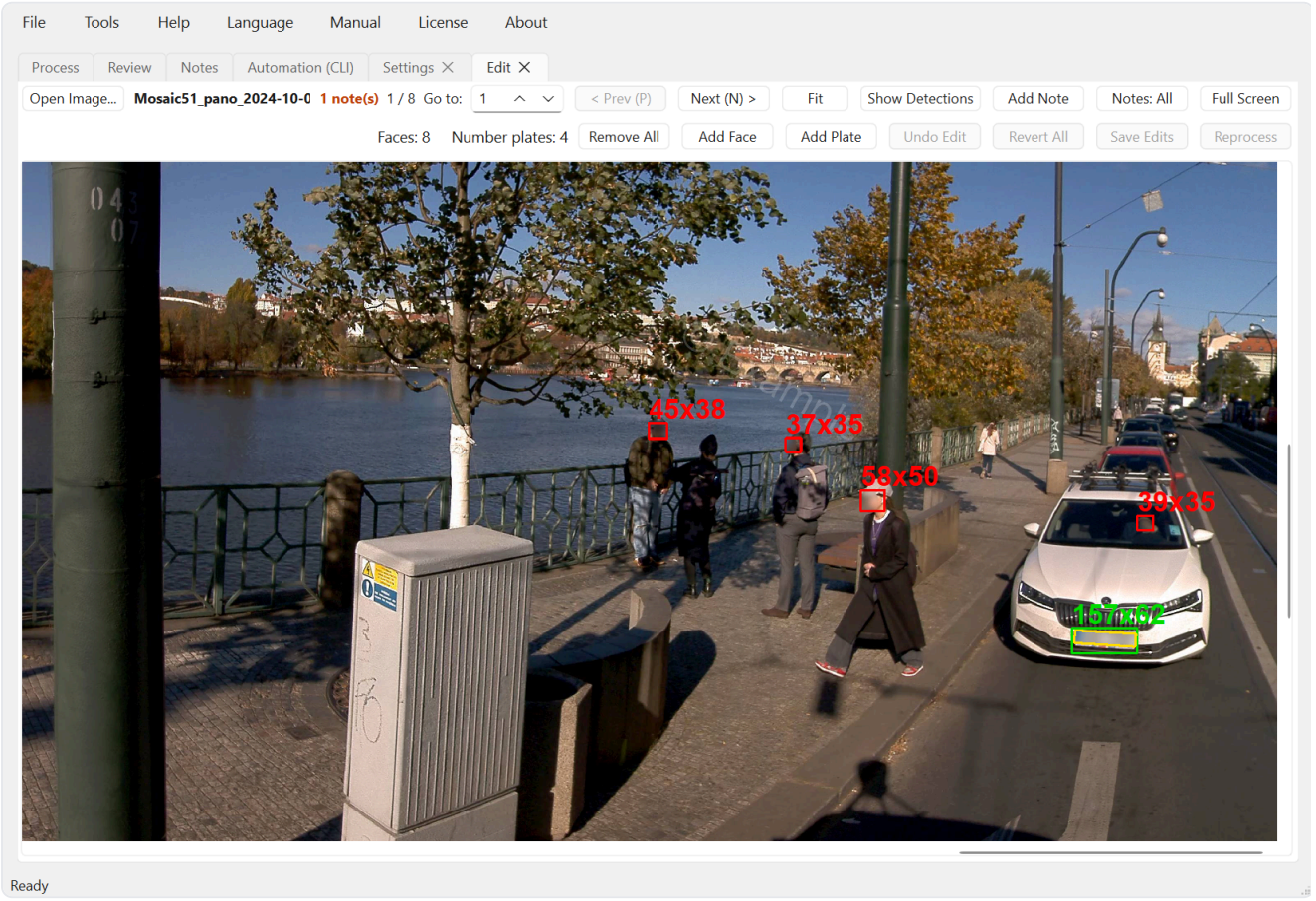
The **Edit** tab (**Tools** → **Edit**) lets you correct the detections after a job: add missed faces and plates, remove false alarms, and blur the panoramas again.

9.1 Opening the Edit Tab

Choose **Tools** → **Edit**. The panoramas and their boxes load from `detections.json` in the output folder. To open another panorama, click **Open Image...**. When you come back to an output folder, the tab shows the panorama you edited last.

You can open the Edit tab while a job is still running. It adds each finished panorama with its boxes as the job goes on; the newest panorama appears one step later, and the last one when the job ends. Boxes you already edited are kept.

> **Note:** Click **Save Edits**, **Reprocess** or **Reprocess All Edits** only after the job has finished. They write `detections.json`, and while the job runs it writes that file itself and can overwrite them.



The Edit tab, zoomed in. The line above the panorama counts its faces and number plates.

9.2 Editing Detections

Navigate with **< Prev (P)** / **Next (N) >**, the arrow keys or **Go to:**. Drag with the left mouse button to move the view, and use the mouse wheel to zoom. Above the panorama, **Faces: n Number plates: m** counts the

boxes of the current panorama; the line turns bold when both are 0. Each box shows its size in pixels.

Action	How
Add a box	Click **Add Face** or **Add Plate**, then drag a rectangle. Shortcut: press `E`, drag a rectangle, then press `F` (face) or `N` (number plate).
Delete a box	Right-click it.
Delete all boxes of the panorama	**Remove All**
Undo	**Undo Edit** (`Ctrl`+`Z`) reverts the last add, delete or Remove All.
Undo everything	**Revert All**
Save	**Save Edits** writes the changes into `detections.json`.
Blur again	**Reprocess** makes the current panorama again from the original in the input folder, with exactly the boxes in the list: a deleted box is no longer blurred. It uses the current settings (blur, mask, watermark, JPEG quality, EXIF) and saves `detections.json`.
Blur all edited panoramas again	**Reprocess All Edits (n)** does the same for every panorama you changed and did not reprocess yet (n = how many). The list is kept when you save, leave the tab or close the program.
Show / hide boxes	`D` or **Show Detections**
Find small boxes	Hold `H`: big frames are drawn around all boxes.
Fit the panorama	`F` or **Fit**

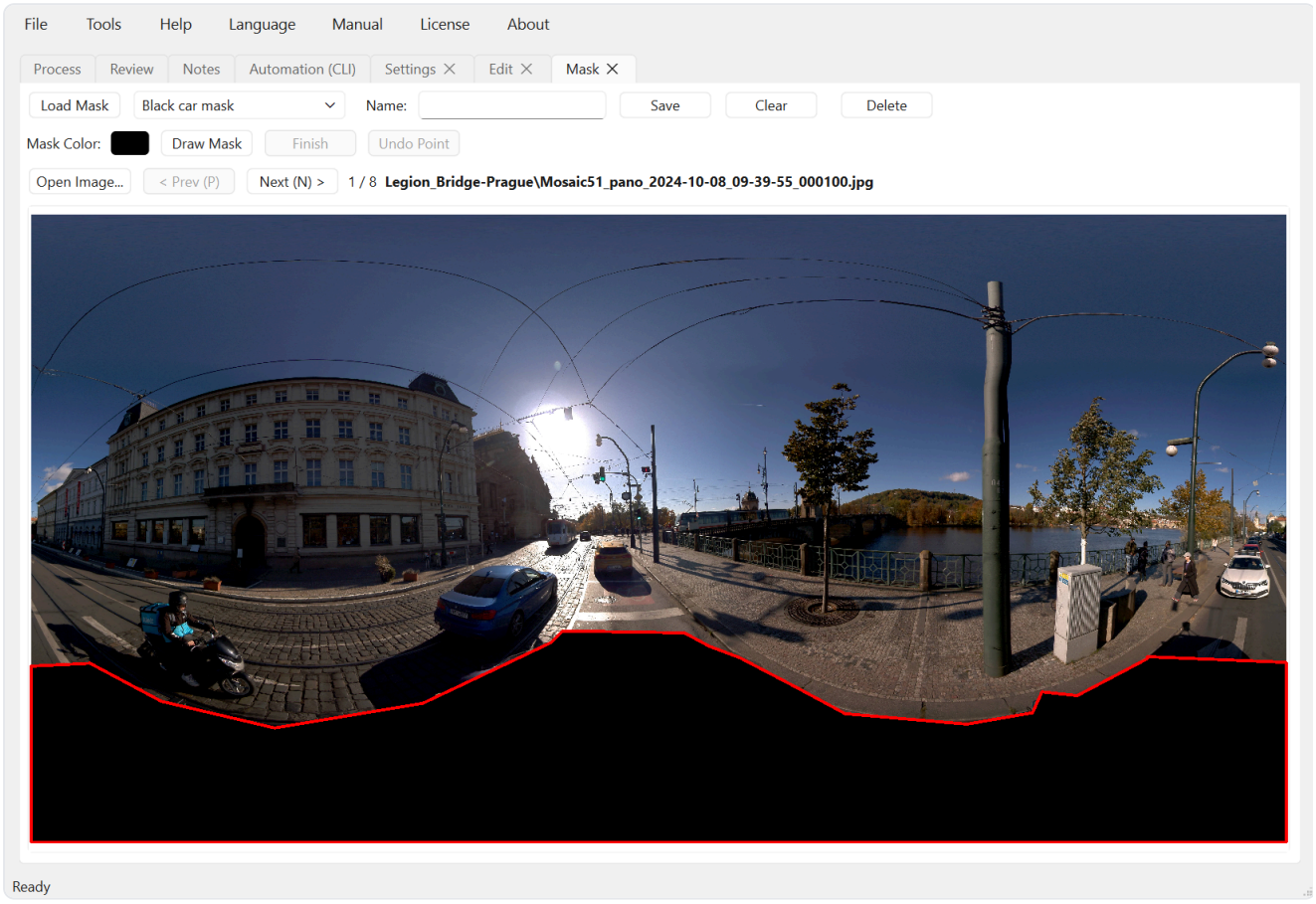
Number plates: when you add a plate box, Privacy Keeper looks for the plate's outline inside it, as during processing, and shows it in yellow. Reprocess then blurs only the outline. If no outline is found, the whole box is blurred. Draw the box closely around the plate: the outline is found more often.

The Edit tab has the same **Add Note**, **Notes: All**, **Full Screen** and **Go to:** controls as the Review tab (see Reviewing Results).

> **Note:** Unsaved changes are kept when you switch to another tab, but not when you close Privacy Keeper. Click **Save Edits** or **Reprocess** before you close the program.

10 Mask Editor

A mask covers a fixed part of every panorama, usually your own recording vehicle. During processing the masked area is painted over in the mask colour, and detections inside it are ignored. Open the editor with **Tools → Mask**.



The Mask tab with a mask for the recording car loaded (red outline, black fill).

10.1 Drawing and Saving Masks

1. Choose a **Mask Color** (default: black).
2. Click **Draw Mask**, then click on the panorama to place the corners of the shape. **Undo Point** removes the last corner.
3. Click **Finish** to close the shape.
4. Enter a **Name** and click **Save**. **Clear** removes the shape; **Delete** removes a saved mask.

Use **Open Image...** and **< Prev (P)** / **Next (N) >** to draw on a panorama of your own recording.

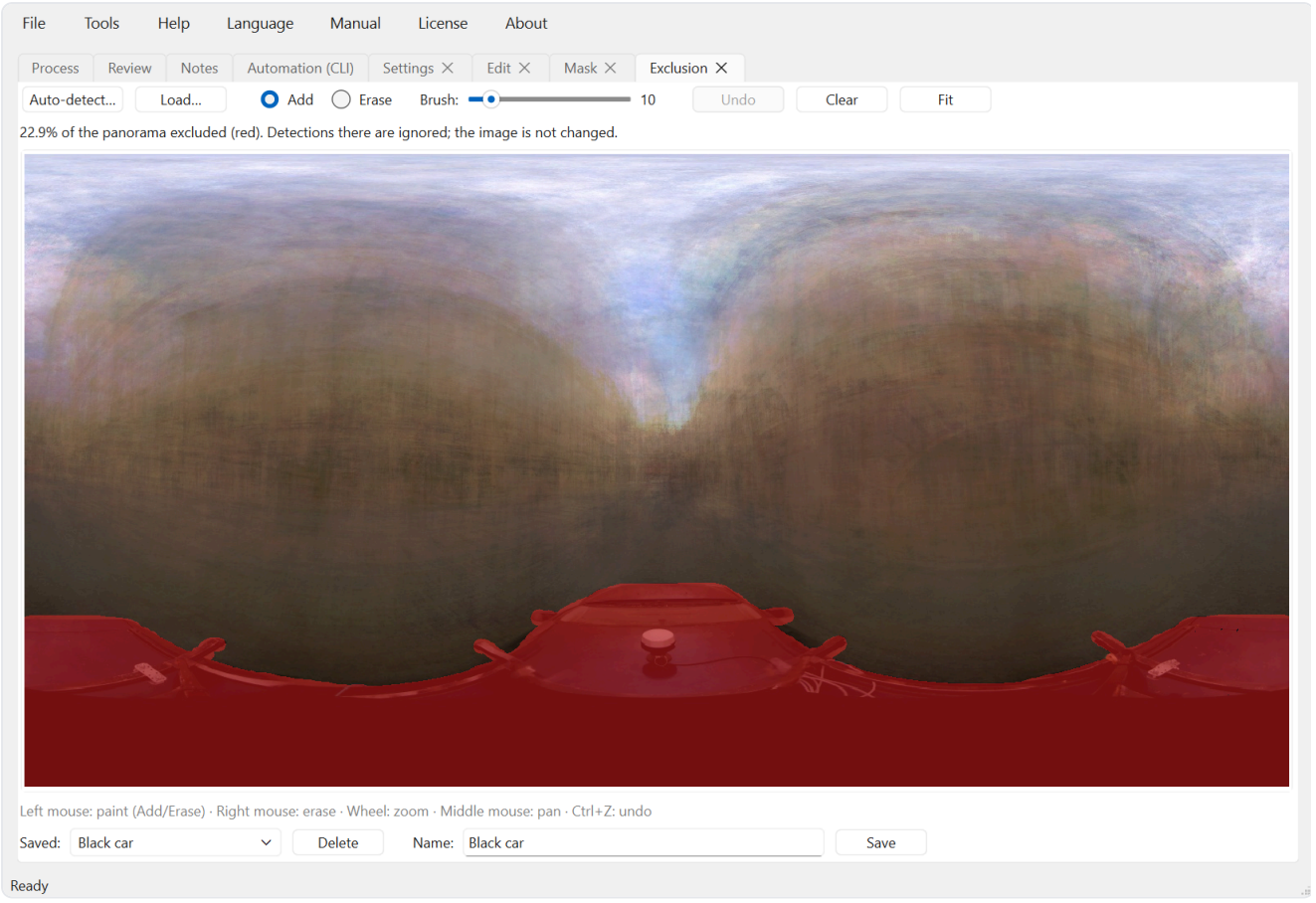
The **Example Mask** (added on first launch) covers a railway vehicle in 12,288 × 6,144 px panoramas. Choose it and click **Load Mask** to see how a mask works, then draw your own for your vehicle and camera. Masks are stored in panorama pixels, so draw them on panoramas of the size you process.

10.2 Applying Masks During Processing

Choose a saved mask in the **Apply Mask** list in the Process tab toolbar before you click **Process**. Masks are saved in `~\.panohopper\masks\`.

11 Exclusion Areas

An **exclusion area** marks the parts of your own recording vehicle that appear in every panorama, for example a crane, a roof rack or equipment. Detections whose centre lies inside the area are ignored: they are not blurred and not counted. The image itself is **not** changed. (A mask, in contrast, paints over the area.) Open the editor with **Tools** → **Exclusion**.



The Exclusion tab with the exclusion area of the recording car loaded. Red = excluded.

11.1 Making an Exclusion Area

1. Click **Auto-detect...** and choose a folder from **one recording** that covers a long stretch of the journey, not a station stop. 100 or more panoramas work best. Privacy Keeper compares the panoramas and marks what stays the same: your vehicle. This takes about 20 seconds.
2. **Check the result:** erase everything that is not the recording vehicle, especially straight ahead and the ground beside the vehicle. Detections in the red area are never blurred.
3. Correct it with the brush: **Add** / **Erase** and the **Brush** size. Left mouse paints, right mouse erases, the wheel zooms, the middle mouse button moves the view, `Ctrl`+`Z` undoes. **Clear** empties the area, **Fit** shows the whole panorama.
4. Enter a **Name** and click **Save**. **Delete** removes a saved area.

The line above the panorama shows how much of it is excluded.

Load... opens an existing exclusion area file (`.png` , white = excluded), for example one copied from another computer. Click **Save** to add it to the saved list.

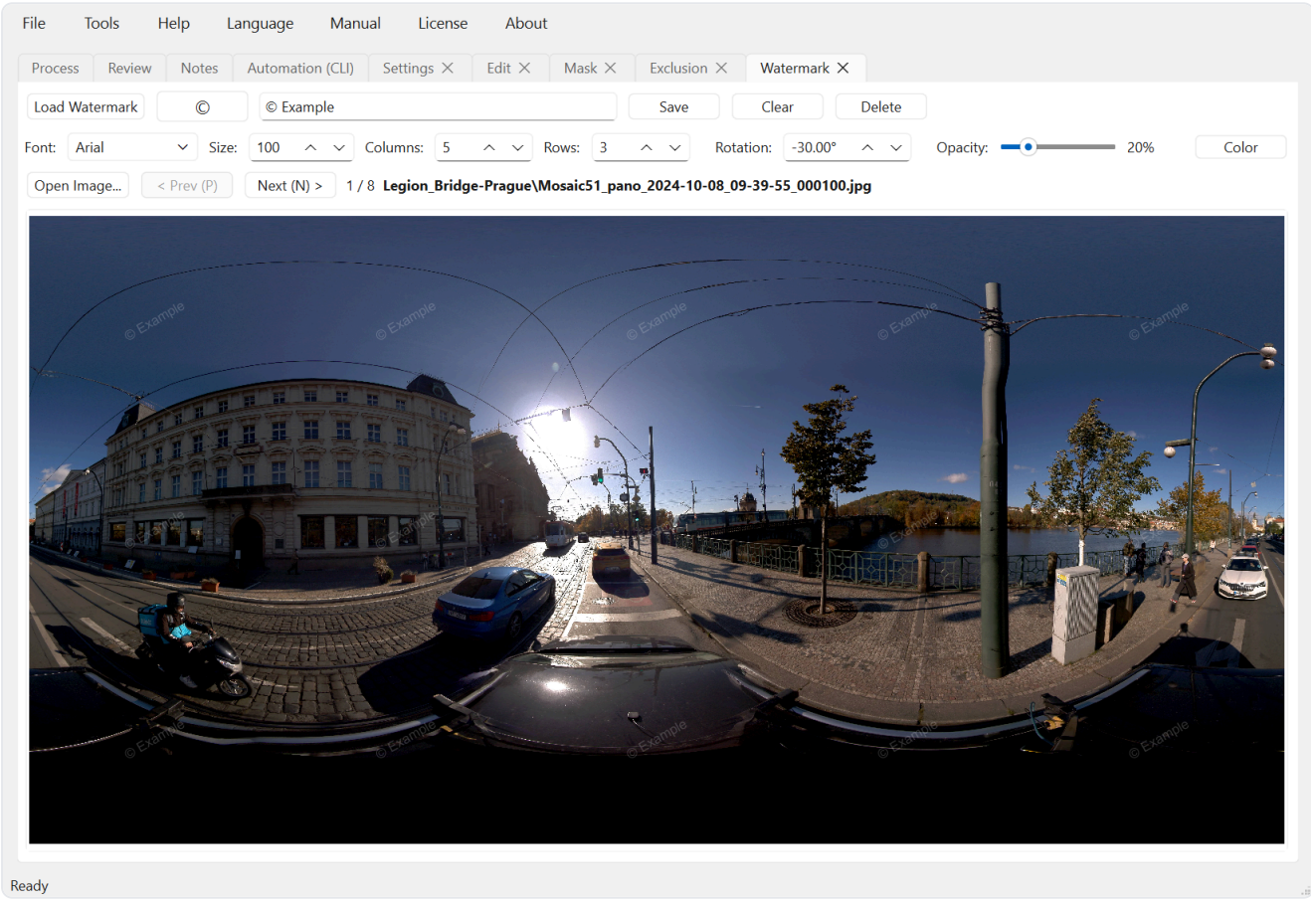
The **Example Exclusion Area** (added on first launch) shows the area of a railway vehicle. Use it to see how exclusion works, then make your own with **Auto-detect...**.

11.2 Applying an Exclusion Area During Processing

Choose the area in the **Exclusion** list in the Process tab toolbar before you click **Process**. The log reports how many detections were ignored. Exclusion areas are saved in `~\.panohopper\exclusions\`.

12 Watermark

The watermark tool repeats a text in a regular grid across the whole panorama, after blurring. Use it for ownership notices or "confidential" stamps. Open it with **Tools → Watermark**.



The Watermark tab with the © Example watermark.

12.1 Making a Watermark

1. Enter the text. The **©** button inserts the copyright sign.
2. Choose the **Font**, **Size** and **Color**.
3. Set the grid with **Columns** and **Rows**, the **Rotation** and the **Opacity**.
4. Enter a name and click **Save**. **Clear** empties the fields; **Delete** removes a saved watermark.

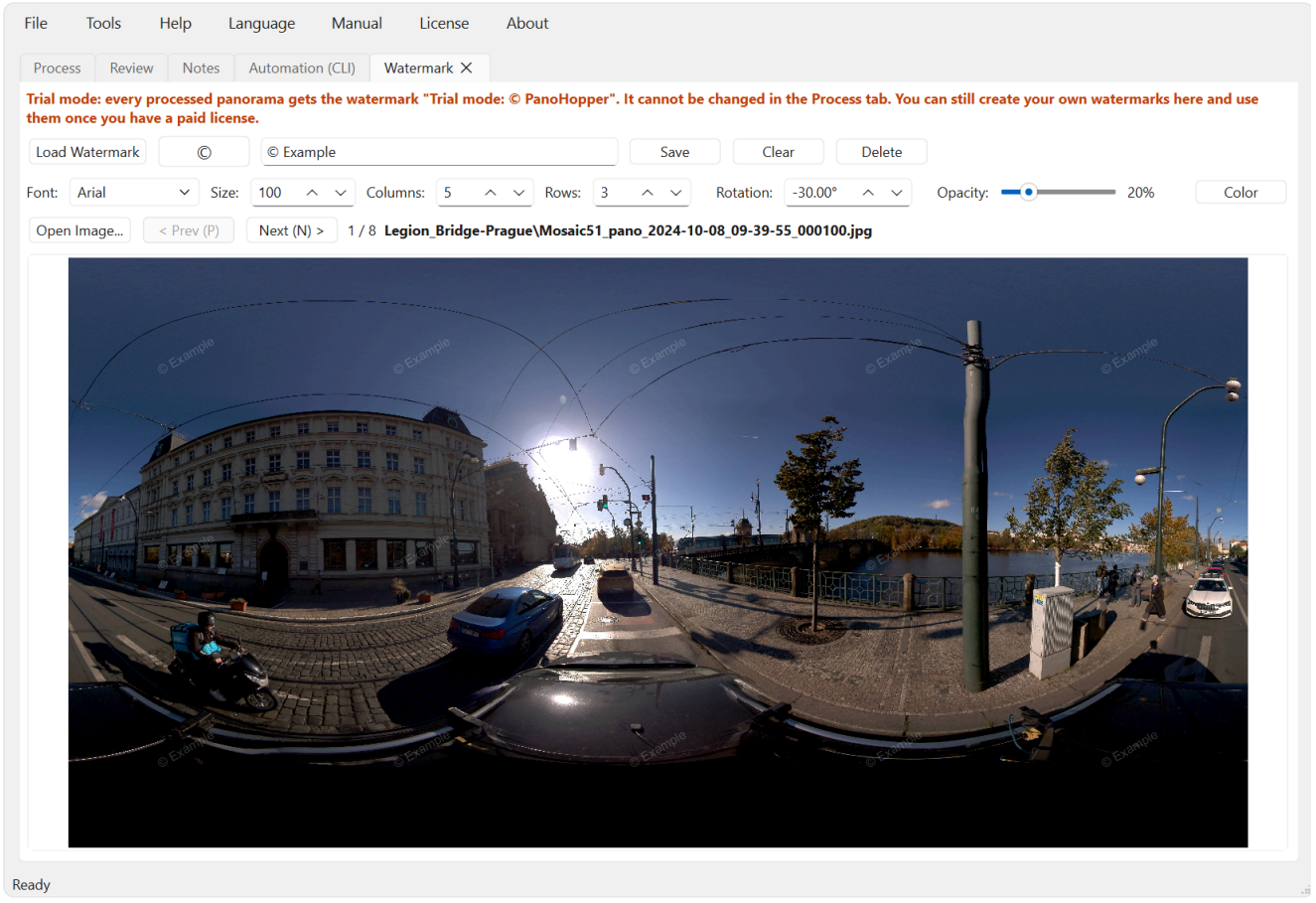
The preview shows the watermark on a panorama of the input folder (**Open Image...**, **< Prev (P)** / **Next (N) >**). **Load Watermark** loads a saved watermark for changing.

12.2 Applying the Watermark During Processing

Choose the watermark in the **Watermark** list in the Process tab toolbar before you click **Process**. Watermarks are saved in `~\.panohopper\watermarks\`.

12.3 Trial Mode

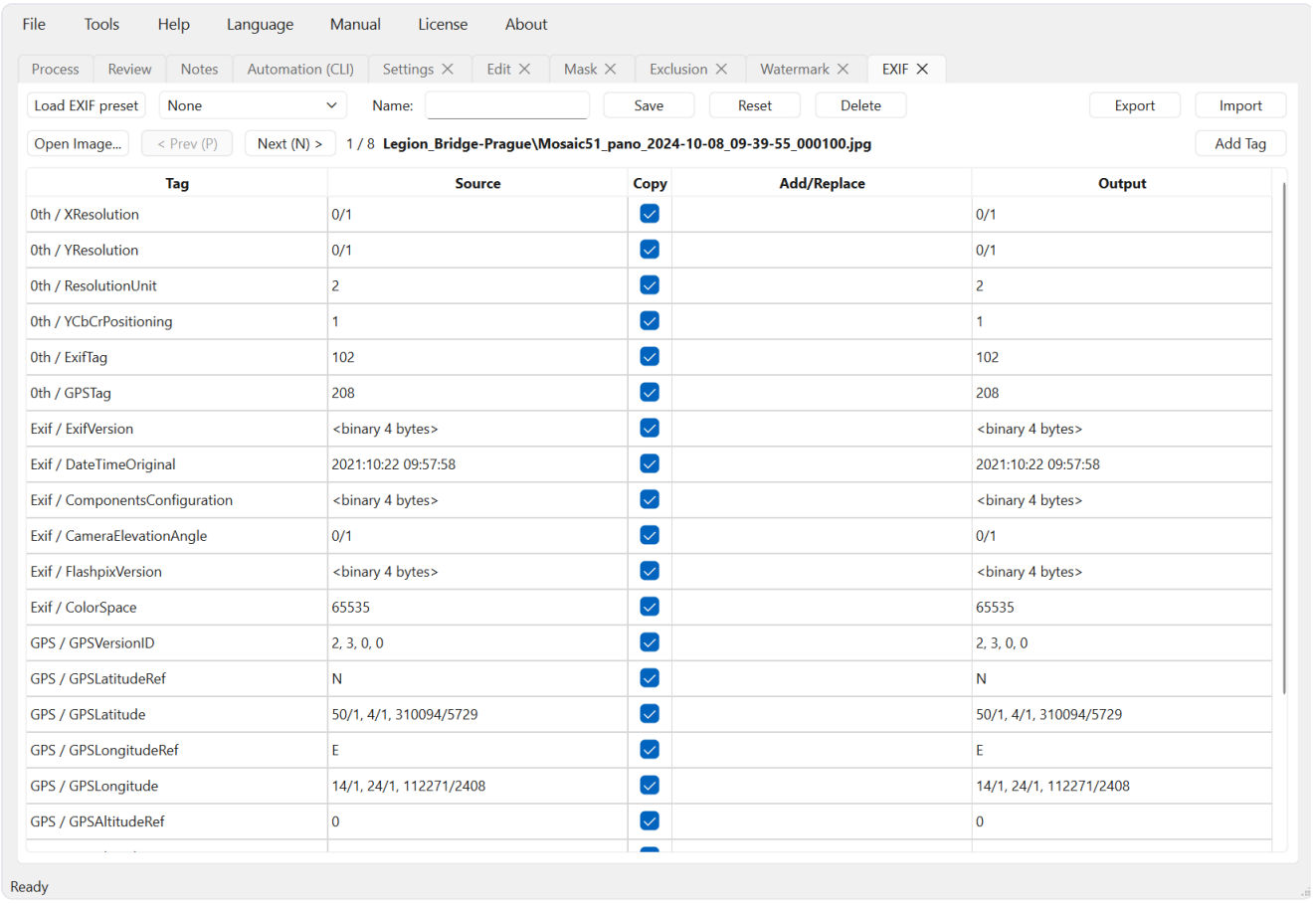
In trial mode, every processed panorama gets the built-in watermark **Trial mode: © PanoHopper**. It cannot be changed in the Process tab, and it is not a file you can edit or delete. The Watermark tab shows this in an orange line at the top. You can still create your own watermarks and use them once you have a paid license.



The Watermark tab in trial mode, with the trial note at the top.

13 EXIF Editor

By default, Privacy Keeper copies all EXIF metadata from each source panorama to the output: GPS position, camera model, capture time and all other tags. The **EXIF** tab (**Tools** → **EXIF**) lets you make presets that remove or change tags instead.



The EXIF tab with the tags of the first panorama.

13.1 Making a Preset

1. Open the tab. The tags of the first panorama in the input folder are shown. **Open Image...** and **< Prev (P)** / **Next (N) >** show another panorama; **Search tags...** filters the list.
2. For each tag the table shows the **Source** value, a **Copy** box, an **Add/Replace** field and the resulting **Output** value.
3. Clear **Copy** to remove a tag. Type a value in **Add/Replace** to change it. **Add Tag** adds a tag that the source does not have.
4. Enter a **Name** and click **Save**. **Reset** undoes your changes; **Delete** removes a saved preset.

Export and **Import** save a preset to a file and load it, for example to use it on another computer.

13.2 Applying a Preset During Processing

Choose the preset in the **EXIF** list in the Process tab toolbar before you click **Process**. The default, **Copy all**, keeps all metadata. Presets are saved in `~\.panohopper\exif\`.

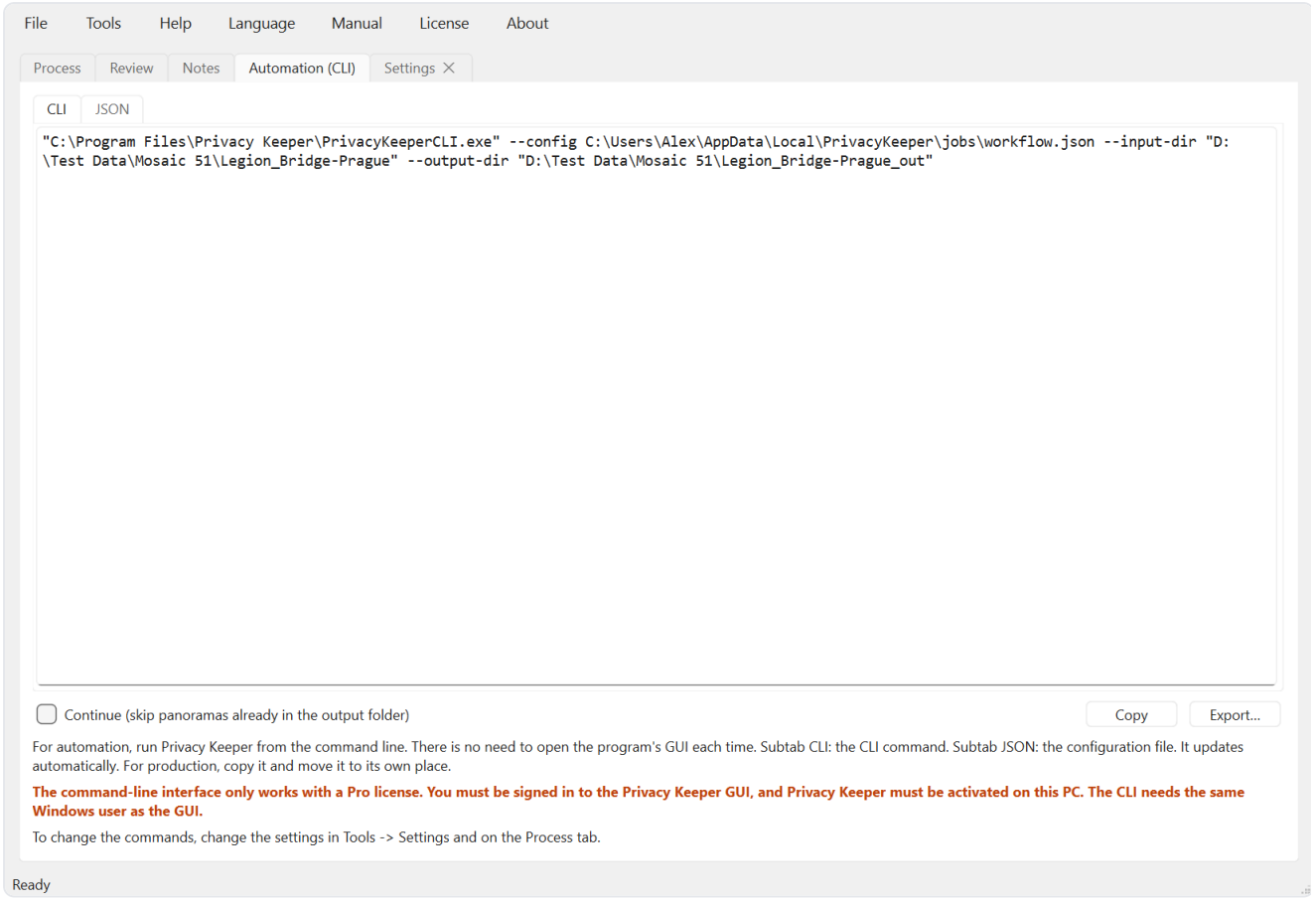
14 Automation (CLI)

For automation, run Privacy Keeper from the command line. You do not need to open the program window each time, so you can start jobs from a script or the Windows Task Scheduler. The **Automation (CLI)** tab shows everything you need.

> **Note:** The command-line program needs a **Pro license**. You must be signed in to Privacy Keeper, and Privacy Keeper must be activated on this PC. The command-line program must run as the same Windows user as the program window.

14.1 The Command (CLI subtab)

The **CLI** subtab shows the command for the current job: the program `PrivacyKeeperCLI.exe`, the job file, and the input and output folders from the Process tab.



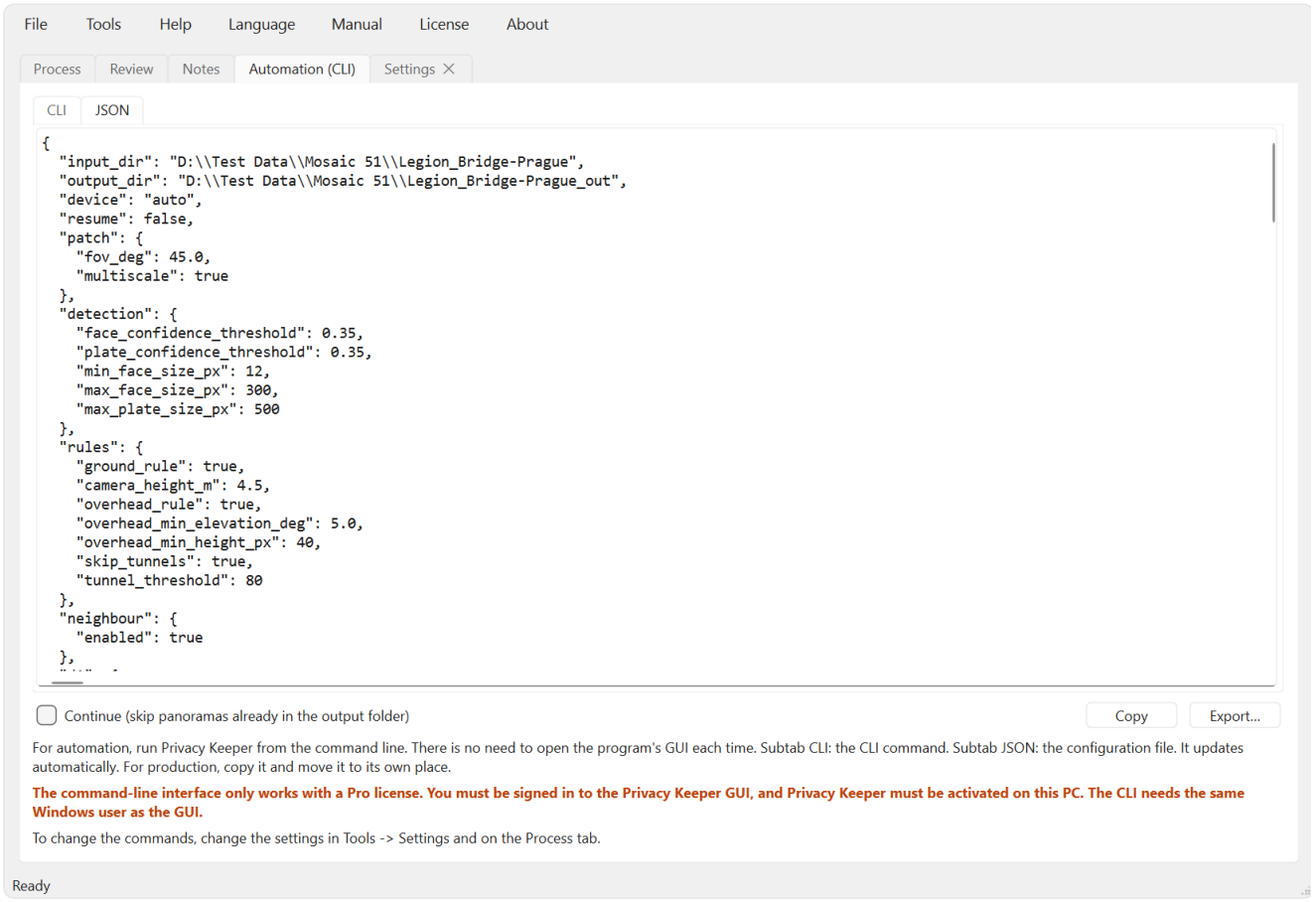
The Automation (CLI) tab, CLI subtab.

The command follows your choices. To change it, change the settings in **Tools** → **Settings** and the folders and presets on the **Process** tab. **Continue (skip panoramas already in the output folder)** adds `--skip-existing` to the command: the same choice as **Continue (skip existing)** in the program window.

- **Copy** copies the command.
- **Export...** saves a `.bat` file that you can start with a double-click, together with its own copy of the job file. You can also save the command as text.

14.2 The Job File (JSON subtab)

The **JSON** subtab shows the job file: all settings of the job, including the mask, watermark, EXIF preset and exclusion area themselves. A job therefore also runs on a PC where these presets do not exist.



The Automation (CLI) tab, JSON subtab.

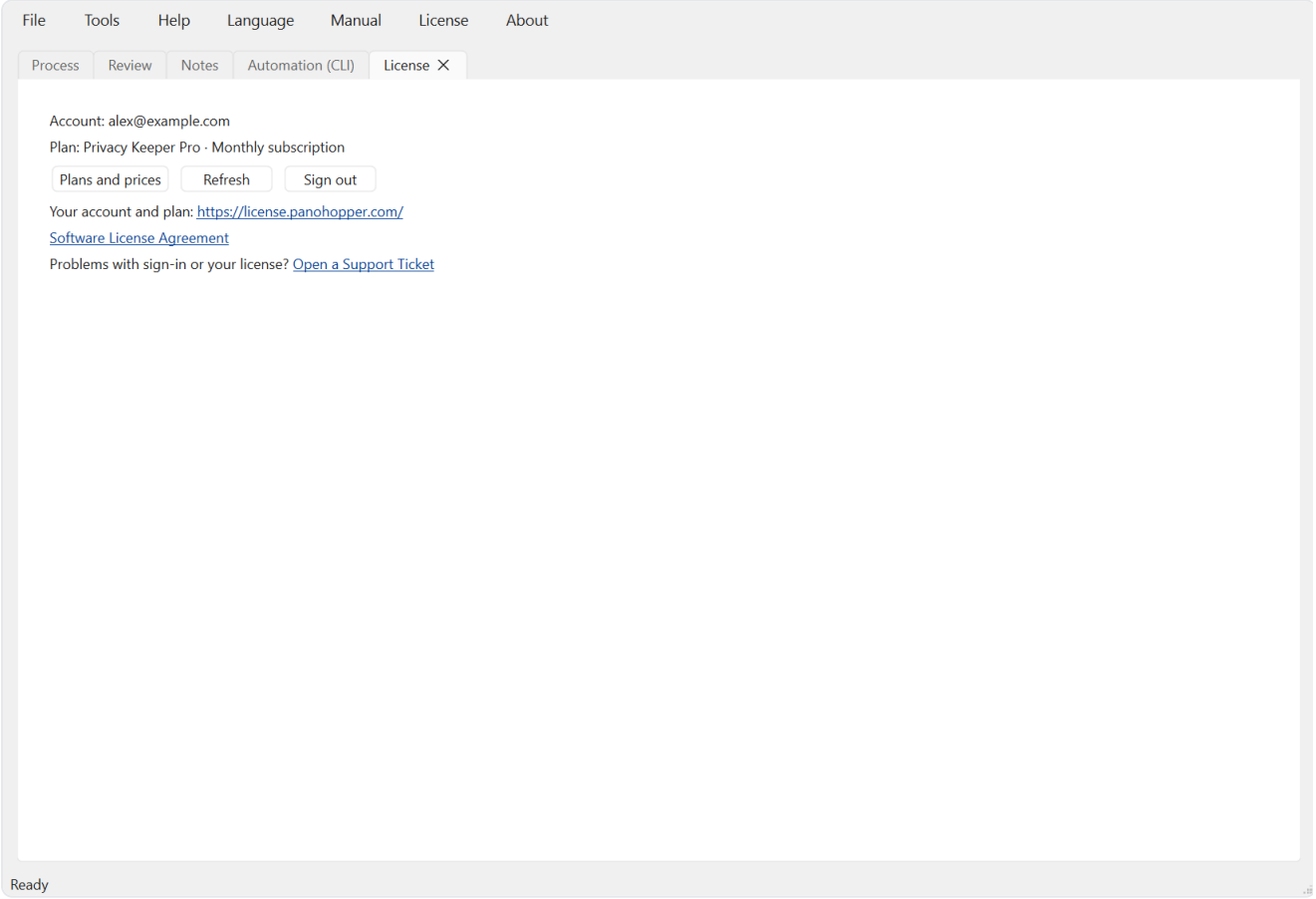
Privacy Keeper updates this file automatically in `%LOCALAPPDATA%\PrivacyKeeper\jobs\workflow.json`. For production, copy it (**Export...**) and move it to its own place, so later changes in the program window do not change your production job.

14.3 Running the Command

Open a Command Prompt and paste the command, or double-click the exported `.bat` file. Values given on the command line (for example other folders) take priority over the values in the job file. The command-line program writes the same files into the output folder as the program window, including the log file.

15 License and Account

Choose **License** in the menu bar to open the License tab. Without a valid license, Privacy Keeper opens on this tab by itself and the other tabs stay locked until you sign in.



The License tab of a signed-in user (example account).

15.1 Signing In

Click **Sign in**. Your browser opens the panohopper sign-in page; sign in with your e-mail address or Google, then return to Privacy Keeper. While you sign in, the tab shows **Waiting for sign-in in your browser...** and the button changes to **Cancel sign-in**. Privacy Keeper waits up to 15 minutes, enough time to create a new account and confirm your e-mail address. Privacy Keeper never sees your password.

Signing in also activates this PC. New accounts start with a free 10-day trial.

> **Note:** After you sign in, the browser shows an address that starts with `127.0.0.1:12047`. This is correct: it is how the browser hands the sign-in back to Privacy Keeper on your PC.

15.2 If Sign-In Does Not Work

The License tab shows why the sign-in did not work:

Message	What to do
Another program is using the sign-in connection (port 12047)	Close the other program, for example Creator or 360camsters, and click **Sign in** again.
No sign-in arrived within 15 minutes	Click **Sign in** again.
The browser answered for an older sign-in attempt	Click **Sign in** again and finish the sign-in in the browser tab that opens now.
Privacy Keeper could not reach the sign-in server, although your browser can	Often an antivirus program that scans HTTPS connections, or a company proxy. Allow Privacy Keeper in your antivirus program or ask your IT department.
The sign-in server did not accept the sign-in	Click **Sign in** again.

If the problem continues, click **Open a Support Ticket** at the bottom of the tab (see Support). The ticket includes the program log, which shows the exact reason.

15.3 What the Tab Shows

Line	Meaning
Account	The e-mail address you are signed in with.
Plan	Your plan, for example "Privacy Keeper Pro · Monthly subscription". A trial also shows the days left.
Your license is in use on another PC	Your license is activated on another computer. Click **Use on this PC** to move it here.
No active plan	You are signed in but have no plan. Click **Plans and prices** to choose one.
No connection to the license server	Privacy Keeper keeps working while the saved license is valid.

15.4 Buttons and Links

Control	Action
Sign in	Signs in and activates this PC (shown when you are signed out).
Cancel sign-in	Stops a sign-in that is waiting for the browser.
Use on this PC	Moves your license from another PC to this one.
Plans and prices	Opens the panohopper pricing page.
Refresh	Checks your license with the server again, for example after you bought or changed a plan.
Sign out	Signs out. The program locks all tabs except License until you sign in again.

Control	Action
Your account and plan	Opens your account on `license.panohopper.com`, where you can change or cancel your plan.
Software License Agreement	Opens the license agreement.
Open a Support Ticket	Opens the support ticket form (see Support). Works before you are signed in.

Privacy Keeper renews the license each time it starts and every hour while it is open, so you stay signed in without typing anything. If the license is no longer valid, for example after the plan ended, Privacy Keeper locks all tabs except License. A job that is running is finished first.

15.5 Desktop, Pro and Trial

Plan	Includes
Privacy Keeper Desktop	The program window with all its functions.
Privacy Keeper Pro	Desktop, plus the command-line program for automation (see Automation (CLI)).
Free trial	All functions for 10 days. Every processed panorama gets the watermark **Trial mode: © PanoHopper** (see Watermark).

16 GPU Acceleration

Privacy Keeper uses your NVIDIA graphics card to make detection much faster. The **GPU Acceleration** setting in **Tools** → **Settings** controls this:

- **Auto** uses the GPU if CUDA is installed and available, otherwise the CPU (recommended).
- **GPU** always uses the GPU and shows an error if CUDA is not available.
- **CPU** always uses the CPU.

If an NVIDIA graphics card is found but CUDA or cuDNN is missing, the log shows a warning with the installation steps. The steps are also in **Help** → **CUDA Installation Guide**.

16.1 When the Graphics Card Cannot Run the Detection

Some graphics cards load CUDA but still cannot run the detection, for example older cards below the System Requirements. Privacy Keeper tests the graphics card when a job starts:

- With **Auto**, the job continues on the CPU. The log says: "The graphics card (...) could not run the detection models. Processing continues on the CPU (slower)."
- With **GPU**, the job stops with a message. Choose **Auto** or **CPU** and start the job again.

16.2 Processing Speed

Measured on an NVIDIA RTX 3090 (GPU) and an AMD Ryzen 9 7950X3D (CPU) with 12,288 × 6,144 px Mosaic 51 panoramas, detection and blurring only:

Mode	Hardware	Time per panorama	Panoramas per day
GPU	NVIDIA RTX 3090 (24 GB)	~2 seconds	~43,000
CPU	AMD Ryzen 9 7950X3D (16 cores)	~26 seconds	~3,320

On this hardware the GPU is about 13 times faster than the CPU.

The Neighbour check and the second check take extra time. With the default settings (both on), the same GPU needed about 6 to 8 seconds per 12,288 × 6,144 px panorama, depending on how busy the street is. The log of each job shows your own speed.

When processing runs on the CPU, the second check runs on the CPU too (with at least 16 GB RAM). On busy streets with about 10 boxes per 12,288 × 6,144 px panorama it added about 24 seconds per panorama on the 16-core CPU above, and about 36 seconds with only 8 threads. To save this time, switch off the second check in Settings. More false alarms are then blurred: objects that only look like a face or a number plate.

17 Troubleshooting

No images found

The input folder must contain `.jpg` or `.jpeg` files directly, not in subfolders.

GPU not used / CUDA warning

Open **Help** → **CUDA Installation Guide** and install CUDA 12.9.1 and cuDNN 9.20.0. Until then, Privacy Keeper runs on the CPU.

"The graphics card could not run the detection models"

The graphics card loaded CUDA but could not run the detection. This happens with some older graphics cards below the System Requirements. Privacy Keeper continues on the CPU, which is much slower. For full speed, use an NVIDIA RTX graphics card of series 20 or newer.

The update could not be downloaded, or "no connection to the update server"

Check the internet connection and click **About** → **Check for updates** again. You can also download the new version from https://www.panohopper.com/privacy-keeper.html and install it over the old one. Your settings, presets, license and the model pack are kept.

"Not active on this PC" for the second check

The model pack is not installed, or the graphics card has less than about 12 GB memory, or processing runs on the CPU and the PC has less than 16 GB RAM. Processing works without the second check. If the model pack is missing, download and install it (see Installing the Model Pack); the download links are also shown in **Settings** → **Second Check**.

Faces or plates not detected

Lower the **Confidence** (for example to 0.20). Keep **Multi-scale** and **Neighbours** on. Check that the images are equirectangular 360° panoramas. If people stand below the camera (under a bridge, below an embankment), switch off the **Ground rule**.

Too many false detections

Raise the **Confidence** (for example to 0.55). Keep the **Overhead rule** and the **Second check** on. Use **Debug mode** with **Also blur behind the boxes** to see what was found.

Detections on your own vehicle

Make an exclusion area for your recording vehicle (see Exclusion Areas) and choose it in the Process tab.

Dark panoramas are not blurred

These panoramas count as tunnels. Lower **Dark below** or switch off **Tunnels** in the Settings.

The command-line program does not start a job

It needs a Pro license, a signed-in Privacy Keeper activated on this PC, and the same Windows user. See Automation (CLI).

The Watermark list is grey

Privacy Keeper is in trial mode, so the trial watermark is locked. See Watermark.

Sign-in does not work

The License tab shows the reason. See If Sign-In Does Not Work. An address starting with `127.0.0.1:12047` in the browser after sign-in is correct.

All tabs except License are locked

There is no valid license on this PC. Open the License tab and sign in, or click **Use on this PC** if your license is in use on another PC. See License and Account.

Output file size differs

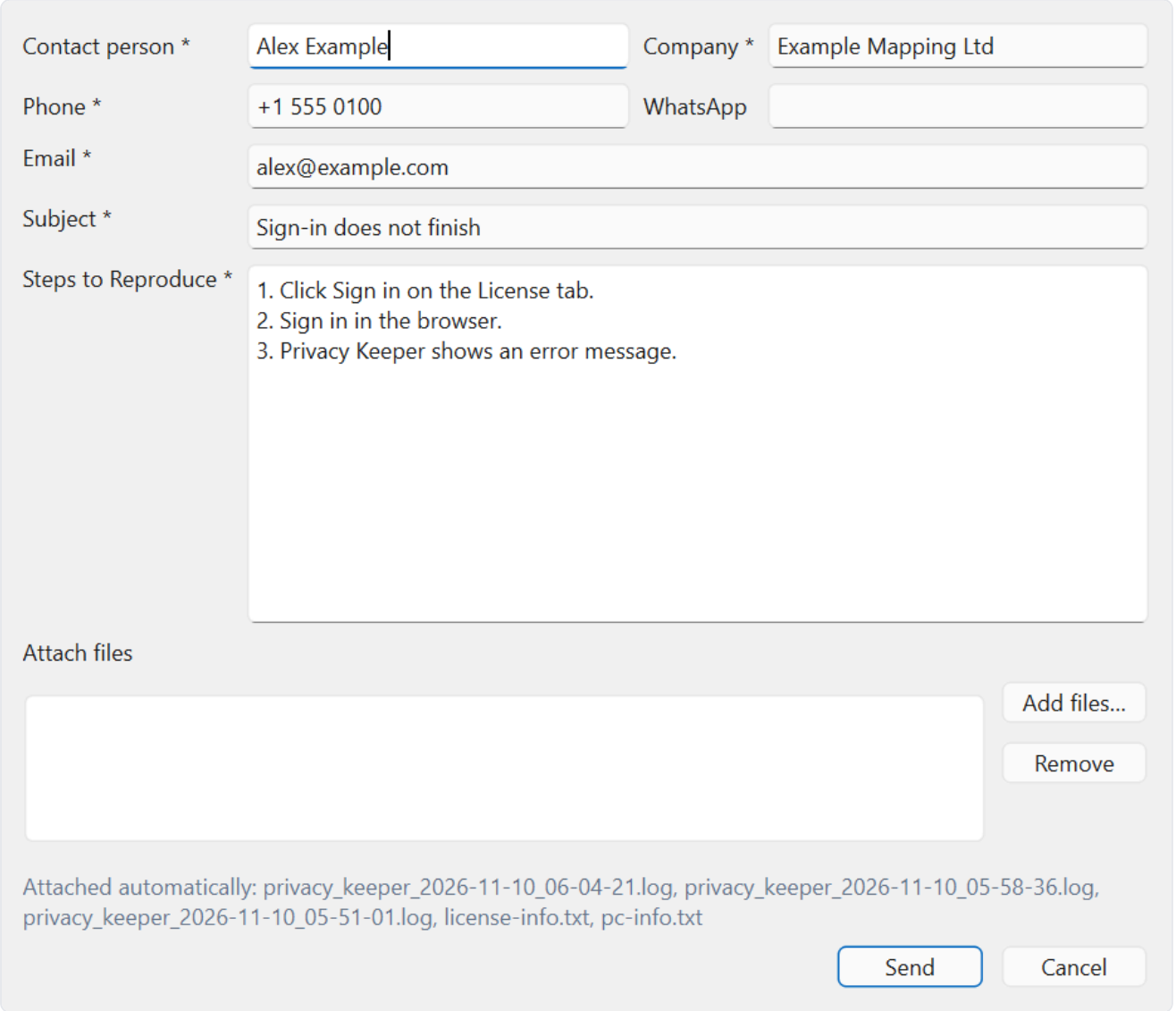
Switch **JPEG quality** back to **Automatically match source images**. All EXIF metadata (GPS, camera, date/time) is copied to the output unless you choose an EXIF preset.

18 Support

18.1 Open a Ticket

Choose **Help** → **Open a Ticket**. The License tab has the same form under **Open a Support Ticket**; it also works before you are signed in.

Fill in your contact details, a **Subject** and the **Steps to Reproduce**, then click **Send**. Fields marked with * are required. With **Add files...** you can add your own files, for example a screenshot (up to 10 MB in total).



The support ticket form (example data).

Privacy Keeper attaches these files automatically. The form lists them under **Attached automatically** before you send:

File	Content
Program logs	The newest 3 program log files: sign-in, license and program messages.

File	Content
Processing logs	The newest 3 job logs: from the folder of the last job, otherwise from the output folder in the Process tab.
`license-info.txt`	Your account e-mail address and your license details.
`pc-info.txt`	Windows version, processor, memory, graphics card and driver.

Panoramas are not sent unless you add them yourself. A message confirms **Your Support ticket has been received** and shows the ticket number. Privacy Keeper keeps your contact details for the next ticket.

18.2 Log Files

Log	Where
Program log	`%LOCALAPPDATA%\PrivacyKeeper\logs` : one file per start of Privacy Keeper, the newest 10 are kept.
Processing log	In the output folder of each job (**Help** → **Open Logs Folder**).

18.3 Contact

Support page	https://www.panohopper.com/support.html
Website	https://www.panohopper.com
E-mail	info@panohopper.com