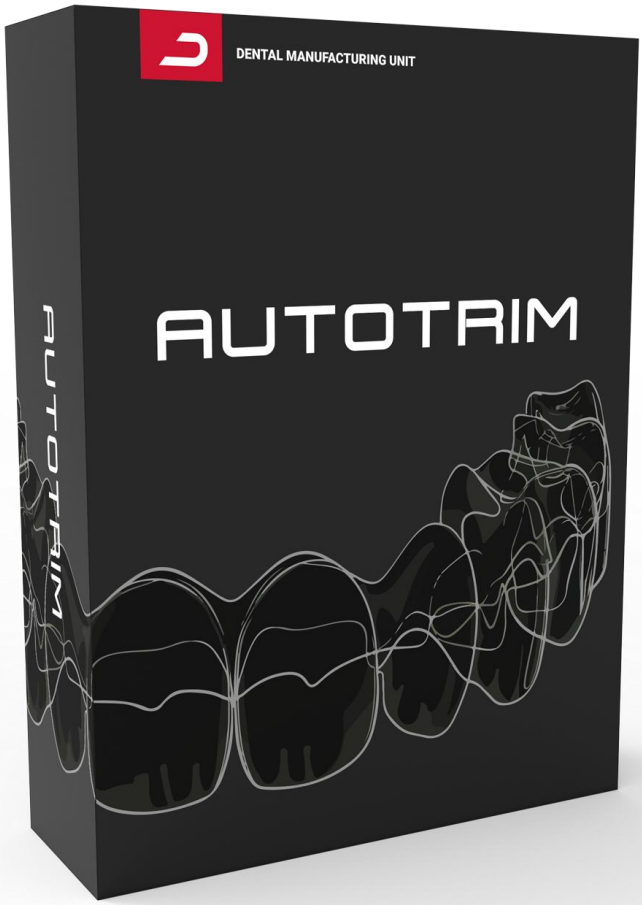
DENTAL MANUFACTURING UNIT GMBH



AUTOTRIM

MANUAL

Contents

1 Introduction

This documentation describes the function of the AutoTrim software 2.1.0. The primary features of this software are the automatic detection of a trimline along the gumline on a given model as well as adding a bar to the model which helps separating the model from the thermoformed aligner foil. The gum overlap of the trimline can be specified by an offset parameter. The smoothness of the trimline can also be configured. The detected trimline can then be individually adapted and exported as a .pts file.

The offset, angle and thickness of the bar can also be adjusted. The bar can display a randomly generated or selected ID and a serial number. It allows the use of the Automatic Job Selection feature of the LAC.

2 User Interface

The user interface (UI) (Figure 1) has a black background representing the 3D display area. On the left side you will find the control panel (1) and on the upper right side important process information (2). If you start the software and have not loaded a model yet, your license information will be shown here (e.g.: “License valid, expires on Wed Jul 26 2026”).

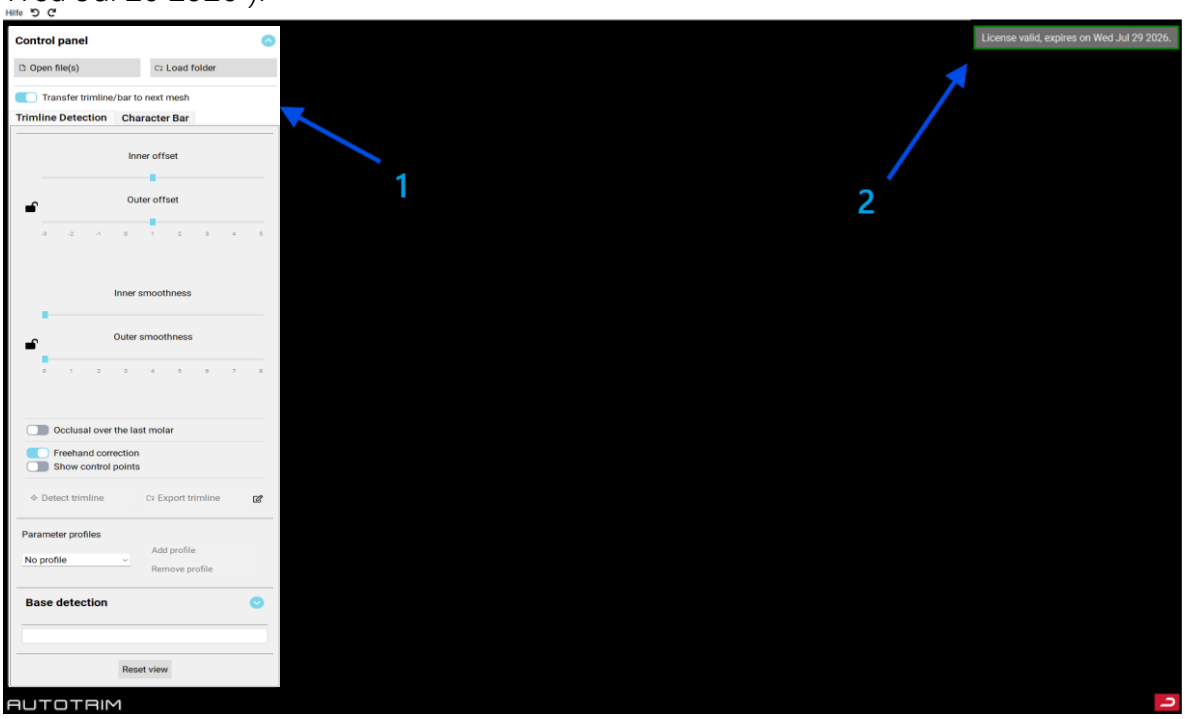


Figure 1: User Interface

When opening the software for the first time, you will be asked for a valid license file (Figure 2). The license file can be requested via support@dmu-gmbh.at. To do that, please click on the button *Copy to clipboard* (A) and send that MAC address to our support team via email.

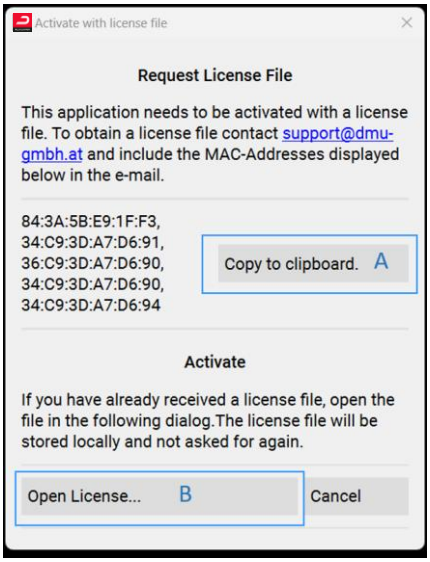


Figure 2: Request License File

After you have received the licence, please save it on your local computer and add the path in the software accordingly (B). After that, the setup required to start using the Trimline Software is complete.

The control panel on the left (Figure 3) allows you to import data, recognise the trimline, change it individually and export it.

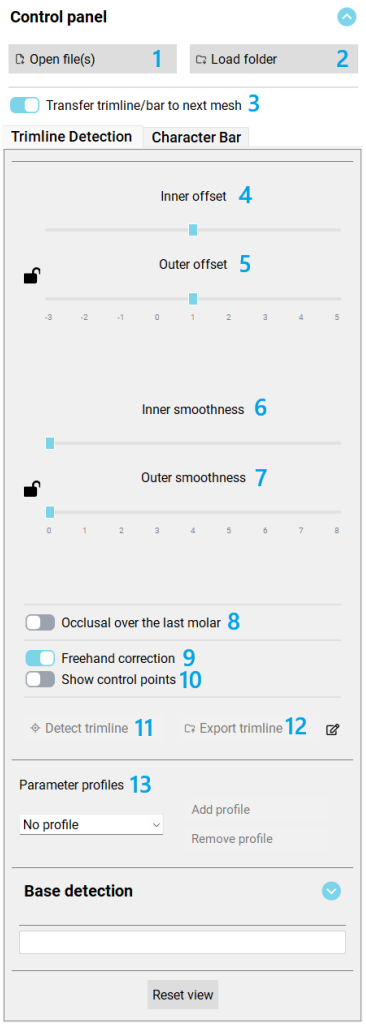


Figure 3: Control Panel - these blue numbers are referenced in parenthesis throughout the manual

2.1 Importing STL files

Via *Open file(s)* (1) you can import either one or several STL files. With *Load folder* (2) you can import a whole folder of STL files. In case of working with folders, it is advisable to have two different folders for each patient, one folder containing the upper jaw and the other folder containing the lower jaw.

It is important to take into account the following:

- All the input meshes shall be supplied in binary or ASCII STL format.
- The data should be in a scale such that 1 unit in the coordinate system is equivalent to 1mm in real world coordinates.

  We test for the correctness of the scale by considering the size of the imported model. If this is out of the expected range, we scale the model by powers of 10 such that the overall extent is in the expected range. This means we only correct scale mismatches that are powers of 10 apart, since these are the ones we encountered the most. This test can fail to work as expected if the mesh is correctly scaled, but is overall much bigger than expected.

Once a mesh or a folder is loaded, the section with information about the imported mesh appears at (3). If a whole folder is chosen, the files are ordered alphabetically by name, and the first mesh is imported immediately. When importing a mesh that needs longer preprocessing, a progress bar is shown. The UI then displays information about the loaded data, such as the name of the folder, name of the mesh, and if there already exists a .pts file that has the same name. In case of a folder being loaded the number of meshes will be displayed, too. The arrows allow the navigation through the folder.

In some cases, after importing the file(s) you might be asked to aid orienting the mesh. If you need to do it, you will see a pop-up message on the right upper corner of the UI (Figure 4).

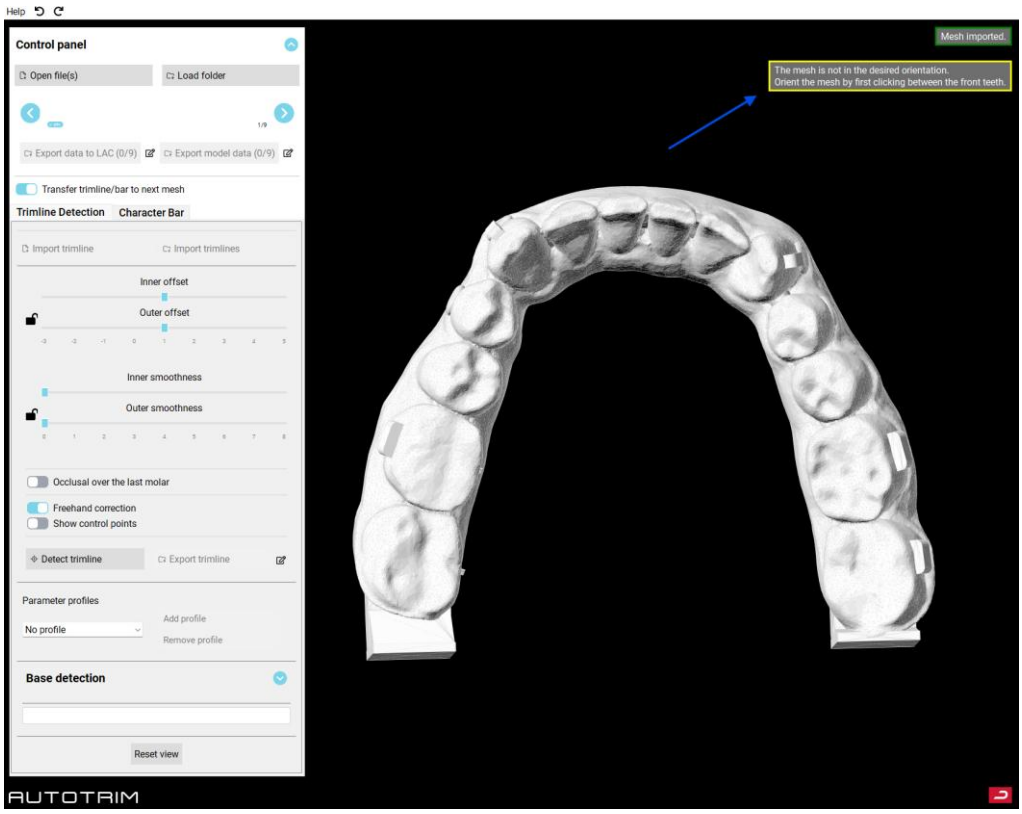


Figure 4: Message that appears when the mesh is not oriented correctly

The steps for orienting the mesh are consistent and do not change:

- First, you have to add a point between the front teeth, marked by 1 in **Figure 5**, preferably on the top of one of the teeth.
- Then you need to pick a point on one of the back teeth, 2 in **Figure 5**.
- Finally you have to pick the equivalent of the last point on the other side of the dental arch (i.e. its mirror image), which is represented with a 3 in **Figure 5**. After the third point is selected the mesh will be automatically oriented.

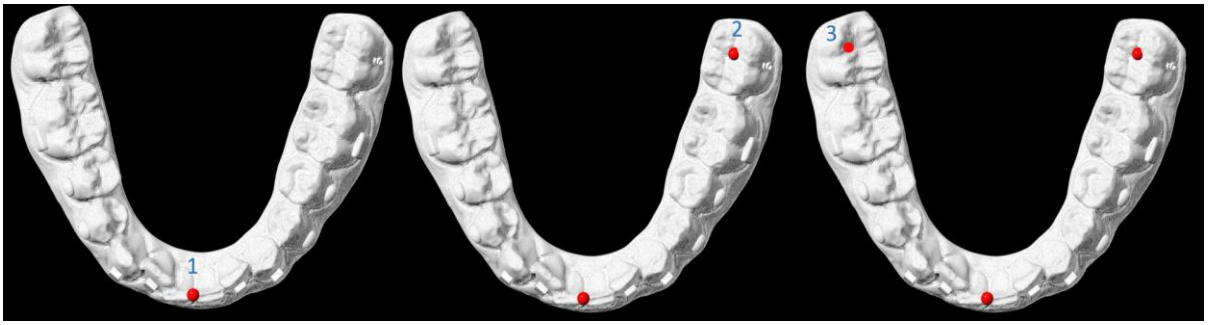


Figure 5: Points to select for mesh orientation

To zoom in and out on the model, you can use the scroll wheel. To rotate the model without changing the zoom, click and hold the scroll wheel while moving the mouse. To displace the model, click the Ctrl button, hold the scroll wheel and move the mouse.

This trimline can then only be adjusted with the *freehand correction* or the *control points*. The offset and smoothness settings are not available in this case. All these features are explained in more detail in Section 2.2.

2.2 Trimline Generation

Once at least one mesh has been imported, the trimline can be generated by clicking on *Detect Trimline* (11). There are two main parameters that allow the modification of the trimline:

- The parameter *Offset* (6) modifies how far away from the teeth the line will lie.
- The parameter *Smoothness* (7) modifies the straightness of the line on the mesh.

Next to the offset and smoothness parameters, there is a lock. If it is locked, the offset and the smoothness are adjusted in a synchronised way for the outer part of the dental arch and for the inner. If the lock is unlocked, the adjustment can be done freely and in a not synchronised way. After detection, the offset and smoothness parameters can still be modified and the trimline will be updated accordingly.

Additionally, the trimline can be adjusted by *Freehand correction* (9) or via *Show control points* (10). With the freehand correction you can directly draw the desired path on the model (see Figure 6). When displaying the control points the trimline can be modified by dragging any of the red points (Figure 7).

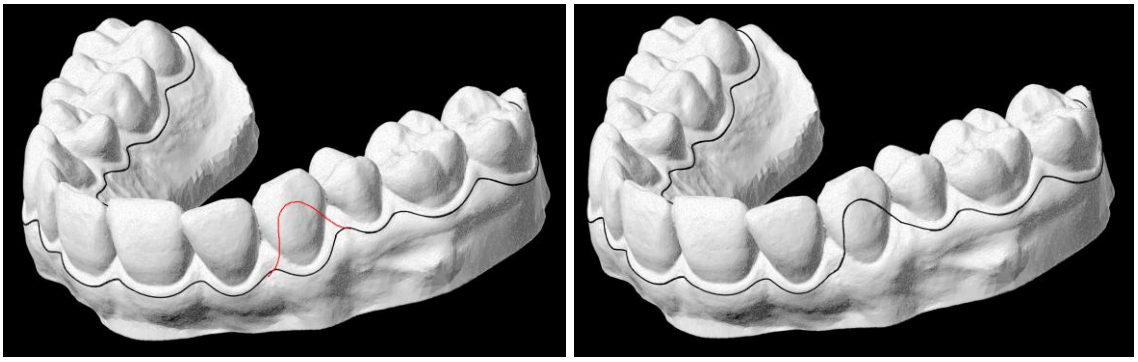


Figure 6: Freehand correction directly on the model

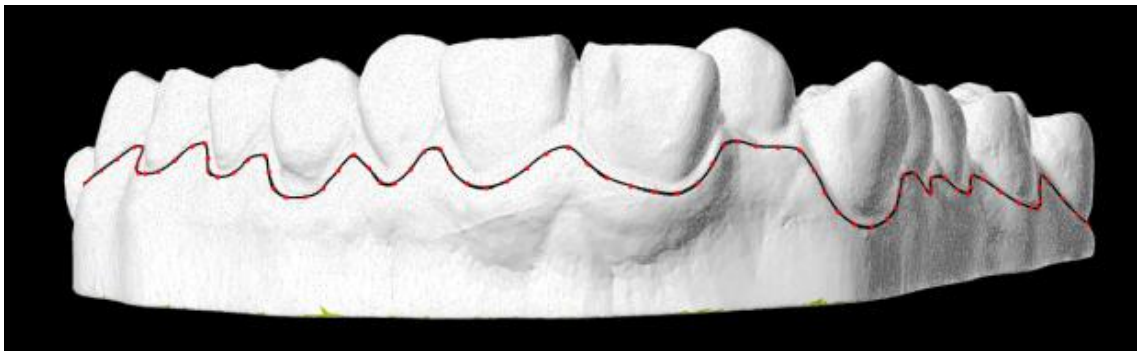


Figure 7: Display of the control points for mesh trimline modification

Occlusal over the last molar (8) controls that the trimline is designed not behind the last molar, but on top of it (Figure 8). If this option is activated, you can also modify its offset with an additional feature (Molar offset) that will be automatically displayed below the inner and outer offset features, see Figure 9.

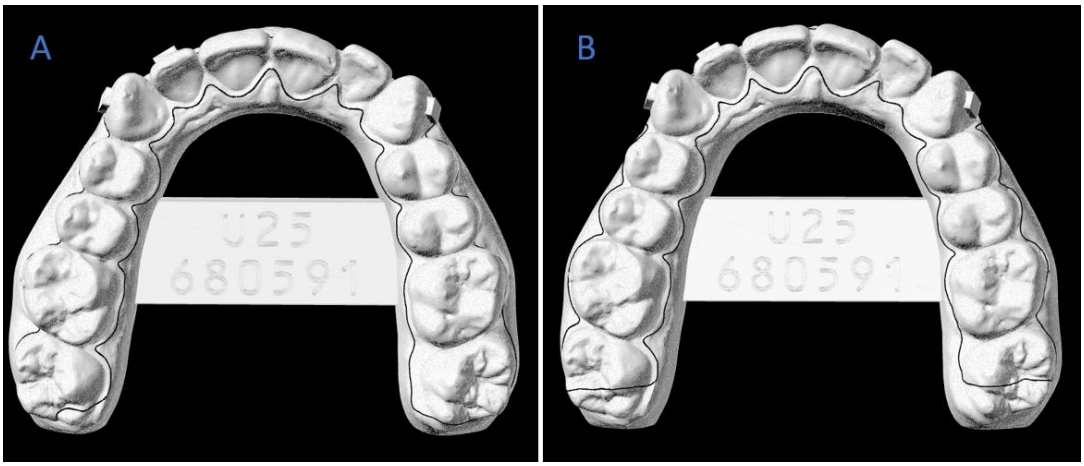


Figure 8: Occlusal over the last molar deactivated (A) and activated (B)

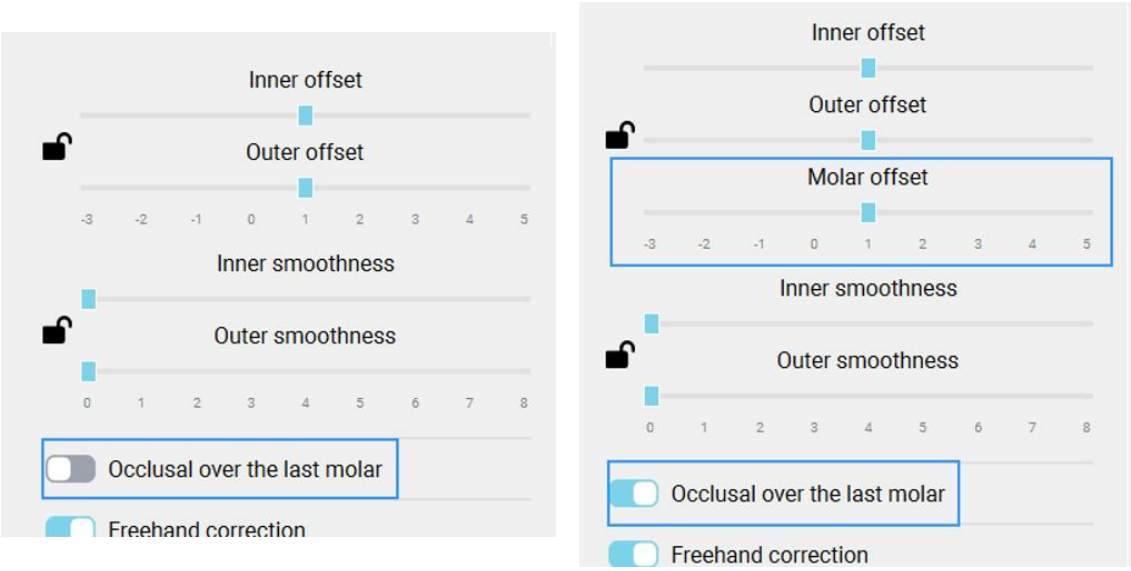


Figure 9: Molar offset is displayed only when Occlusal over the last molar is activated

If you have loaded a folder of cases you have the possibility to copy the current trimline and bar to the next mesh by activating *Transfer trimline/bar to next mesh* (4). For using this feature, it is necessary that the folder only contains the models for either the upper jaw or the lower, as described in Section 2.1. And all of them should be aligned with each other, so they must have the same origin coordinate. You can also save presets for your offset and smoothing settings under a custom name (13).

2.3 Character Bar Generation

By clicking *Character Bar* (1) (Figure 10) you get the option to add a character bar to the model. At first you have to select lower or upper jaw (2). Then you can select or randomly generate a six digit ID as well as a serial number (the sub-setup number) to the bar. When you select *Increment Serial Number* (3) the serial number will automatically increase when going to the next model. The offset, the angle and the additional thickness of the character bar can be adjusted (4). If no ID or Serial number is needed for your bar it can be created by clicking *Create bar* (5).

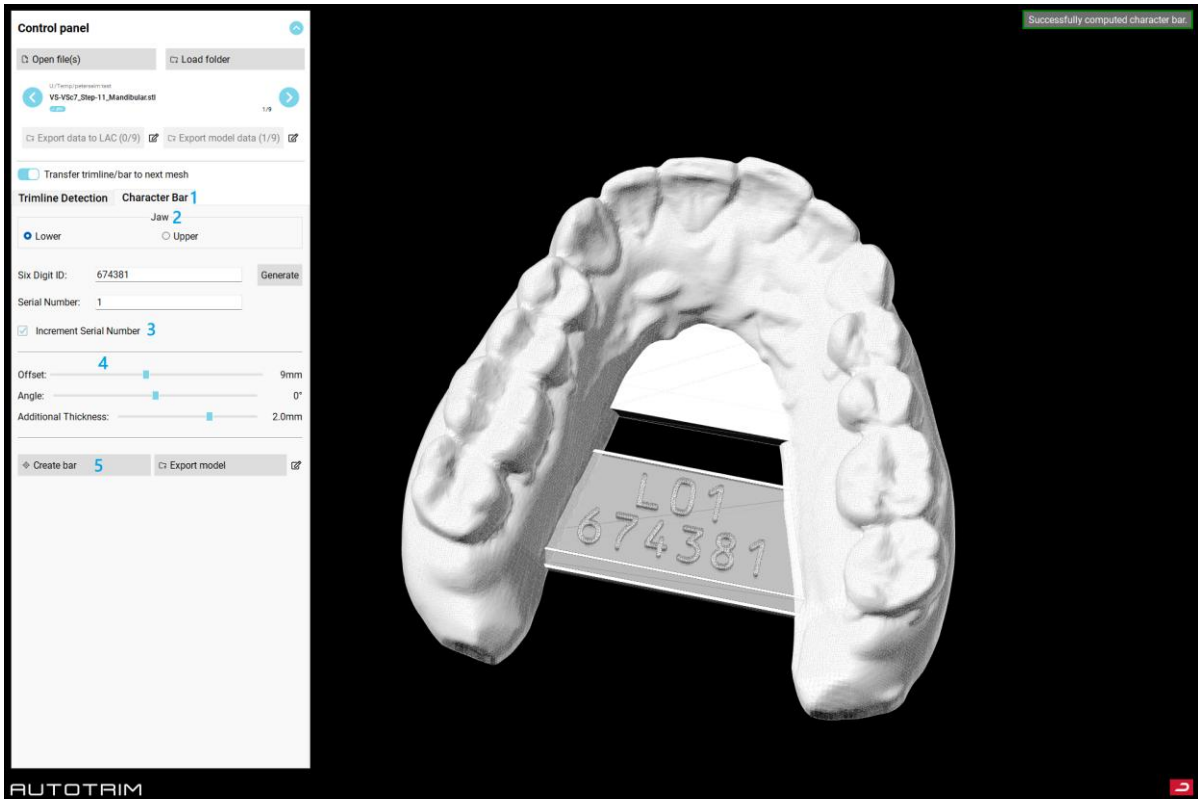


Figure 10: Character bar

2.4 Export

You have an export button in each menu, which always only exports the current trimline or model, see *Export trimline* (5) (Figure 11) and *Export model* (6) (Figure12).

The icon on the right of each button (e.g. 2 & 4 in Figure 11) allows you to set the storage path. If no storage path has been set, the folder dialogue is automatically displayed. The storage location is then saved permanently for this button.

Attention! The storage location can be set individually for each save button and can be changed again via the icon. Permanent saving is intended to make it easier to store data, as the target folder paths remain the same in most workflows.

If you load a folder, two additional export buttons appear (1 & 3) (Figure 11). As soon as all trimlines are defined you can *export the data directly to LAC* (1). As described above, the target directory (of the network folder of the LAC) can be permanently saved. The STL file is exported to this folder as well, as the LAC always requires a matching STL and PTS pair. This should also simplify the copying of data back and forth.

If you add a bar to all of your loaded models, you can specifically *export only the model data* (STL files) (3). This should simplify the workflow towards the 3D printer, as the modified STL models have to be printed first.

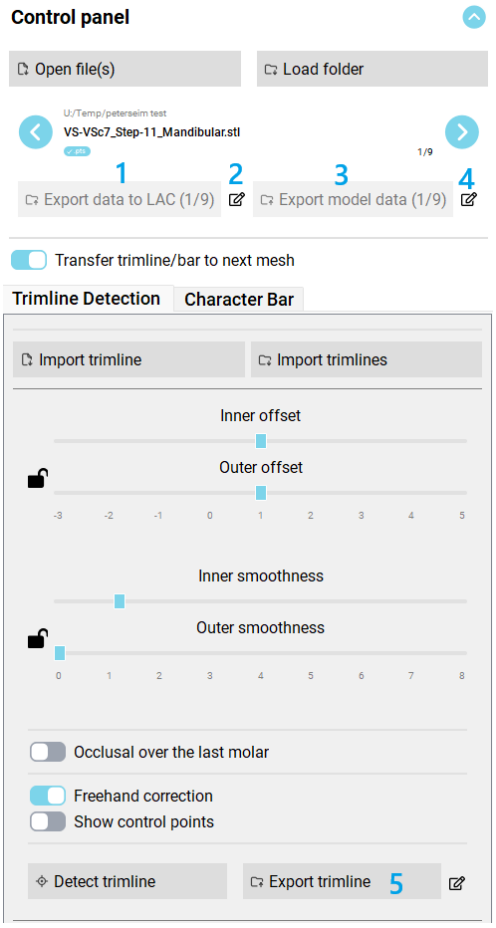


Figure 11

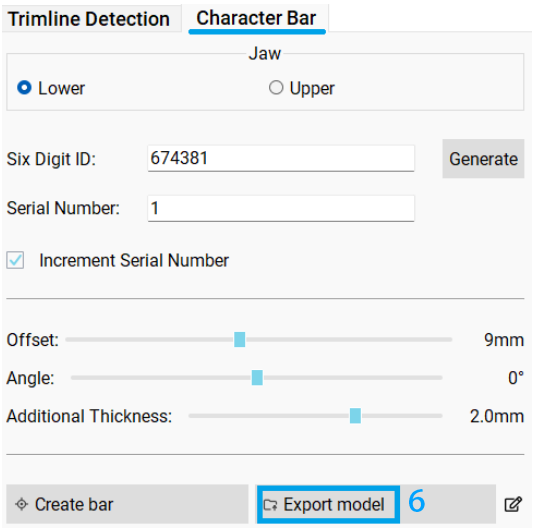


Figure 12