

3. Building translations

Glypher Data


GlyphViewer application enables a user to create translations from text in images, text available in different type of languages:

- Modern languages that can be easily recognized by the OCR engine, such as English, Chinese etc... All you will need to do is to select an area, recognize the text and a translation containing that language will be created. You will be able to edit it to add additional translations in other languages.
- Ancient languages such as Ancient Egyptian Hieroglyphic. For these kind of languages the OCR engine might not be that successful, but it will enable you to recognize glyphs in order to group them into words and finally build your translation. Basically this process is structured into 3 parts:
 - a. Discover glyphs
 - b. Group glyphs into words
 - c. Use the found words to create translations

The user will have to use the dialog forms functionality on the right side to apply the above steps. Let's take a quick look on how the application looks with all forms opened:



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 At any time you can filter the items shown on the image by using the *Image* menu to select/deselect any display option in order to show/hide the elements such as glyphs, words or translations. Hiding them will not cause them to be deleted, you can show them later at any time by clicking on their menu option.

Recognizing glyphs

The first thing you need to do after you added your image to the project is to start to generate glyphs.



Glyphs are basically characters that form a language. For a Latin language they would be letters, numbers. For Ancient languages, such as HieroGlyphs, they are signs in the image such as a bird, hand and so on.

In GlyphViewer application glyphs are identified by an area in the image (rectangular, polygon), and they can have one or more symbols, associated from different languages with a degree of confidence.

A glyph may have more than one symbol because you may not be sure of which one is correct (for example for incomplete or unreadable glyphs in ancient scrolls).

You have the ability to either manually identify glyphs or use an OCR (optical character recognition) method to allow GlyphViewer to identify them for you.



OCR accuracy greatly depends on the image's resolution and how the character distinguishes from the background image. So if you will be using this method always check your results.

The easiest way to start building glyphs in your image is to use the *Identify Ancient Hieroglyphs* option from the *Translation Builder* menu, or use the buttons on the upper right side. You will need to open 2 dialog forms on the right as seen in the image:

- Language dialog will allow you to **automatically** recognize glyphs using an OCR technology. All you need to do is select a language you believe the glyphs belong to in **3** then click on the *Select Area* button. To select the region to recognize glyphs, after clicking the Select button drag a rectangular area in your image, the same way you would do to select a region in a paint editor. The region will appear like the one at **11**. You can resize it by selecting the borders of the area or move it by dragging it with your mouse across the image. Once you have selected the area containing the glyphs, select the language you believe the glyphs belong to, also from **3**, then click *Recognize* at **4**. If glyphs are identified they will appear on your image with surrounded by a bounding box filled with a color based on the confidence level of the identified symbols. If you chose a modern language, such as English, an English translation text will be automatically build and you will be able to edit it.
- Glyph Builder dialog will allow you to **manually** identify a glyph in the image. You will probably want to use it if OCR fails. First at **1** select from the combo box the area to use to create a bounding area around your glyph. You can use either a rectangular area, *Rectangle*, or define a polygon using *Polygon*. After you have chosen the preferred select mode click on the *Start Select* button also at **1**. Then go to the image where the glyph is located and:
 - if you chose *Rectangle* just click on the image then while holding the left mouse button drag to see the corresponding rectangular are forming. When you are done release the mouse left button.
 - if you chose *Polygon* you will have to click on the image with your mouse to add points to your polygon. You will notice that when you move your mouse that the polygon is being drawn, left click to add a point to it. When you are done double click with your left mouse button to commit the polygon.

When you finished creating a bounding area around your glyph click on the *Add Glyph* button at **2**. This will add the glyph to the image, but it will not add any symbols for your glyph. You will notice that the glyph is drawn with a gray area because of this. You will have to manually add symbols to your glyph by editing the glyph area.

Depending on the confidence value of a symbol associated with a glyph, GlyphViewer will use different colors for drawing the bounding box in the image view. As you can see in **8** the glyph has a high confidence value and is shown in green. Near it you can see a glyph with a low confidence value in a gray bounding box. At any time you can remove a glyph and all it's symbols by clicking on its bounding box as in **8** the clicking on the *Remove* button in **2**. You can also edit the glyph's value by clicking on it's bounding box. More information about this can be found in [Glyph View](#).

Discovering words

After discovering some glyphs in the image, either manual or through an OCR engine, and associated some symbols to those glyphs, it's time to start to convert them into words. This is a paid feature of GlyphViewer application, though you will be able to create **30** words if you create a [2Glyph.com](#) account. More information about this can be found at **1**. [Becoming a glypher](#).

In any case now it's time to see if we can add some meaning to the found glyphs. This stage can be done through the Language dialog . This step only requires you to to click on the *Select Area* button at **3** then use the area like the one at **11** to cover over the glyphs that you want to be translated into words.



The selected glyphs are streamed into an array of symbols with their confidence data and sent to a remote 2glyph server to be translated. Only the symbol data is required by the remote server, no part of the original image is ever sent.

In the case that the symbols that you assigned to the glyphs can compose a word for the language you sent you will notice that new data will appear on your image, as you can see in **9**. If you move your mouse over the word text you will notice that it will be highlighted as well as the symbols that compose the word. Editing the word can be done by clicking on it in the image, and a dialog form for it will appear as described in [Word View](#).



If you did not purchased GlyphViewer, for each word identified a credit will be charged to your account. You can see your remaining credits in your [login form](#). In any case creating a [www.2glyph.com](#) account is required.

Creating translations

The final step is to actually build your desired translations. At this point this is done manually by adding the translated words to your own translation. We believe that for an ancient language, such as Egyptian Hieroglyphs, any automatic translation will not be possible as composing such a translation should be an art left to the user. But GlyphViewer helps you by providing a list of words that you can use to build your translation. All that you need to do is click on the *New Translation...* button in **6** and a dialog form will appear to help you with this as described in [Translation View](#).

After you are done you can see the translation appear on the image with the font and color you have chosen. You can also move it by clicking on the translation and dragging it across the image. You can also select the translation and click *Edit* in **7** to add different a translation in a different language or modifying one of it or *Remove* to delete it.



Clicking on the translation, as seen in **10** will cause a combo box to appear on the upper right corner of the translation as well as the translation to be surrounded by a thin border. You can use it to scroll through the different languages it has been translated to.

You can also link or add recognized words to the translation. When you move your mouse over the translation you will see the words and their underlying glyphs becoming highlighted.

A translation can be deleted once you selected it by clicking the Delete key.