



Thank you for purchasing Geppetto, the animation tool for lip-sync and facial animation.

This document will show you how to use the asset in Unity (version 2021 or later).

If you have any question, contact us at contact@xandimmersion.com or on discord <https://discord.gg/qDMwNCDE8X>



0 - Introduction about blendshapes and phonemes

⚠ Please take note that our animation tools **only work with Blendshapes** so make sure your character already has some. If not, you can use software like blender or maya to create them.

Définition:

Blendshape is a deformation of a mesh to achieve a predefined pose.

Here, the blendshape that we use for our facial animation are blendshape reproducing a phoneme.

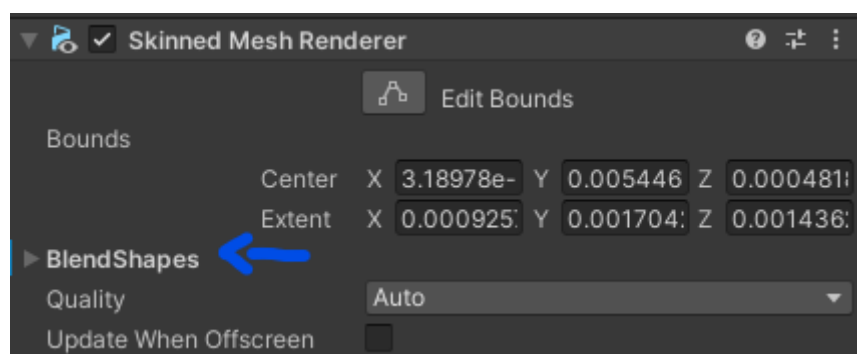
Phonemes are the smallest units of sound in a language and are used to differentiate one word from another. For example, the words "bit" and "bet" differ by only one phoneme, the "i" sound in "bit" and the "e" sound in "bet".

A **blendshape of a phoneme** is a blending from a closed mouth to a mouth pronouncing the desired sound.

Our technology uses up to a total of **39** phonemes that we adapt based on the 3D model's blendshapes.

You can easily create your blendshapes on your 3D model in Blender, Maya or any 3D model software that allows you to work on your mesh.

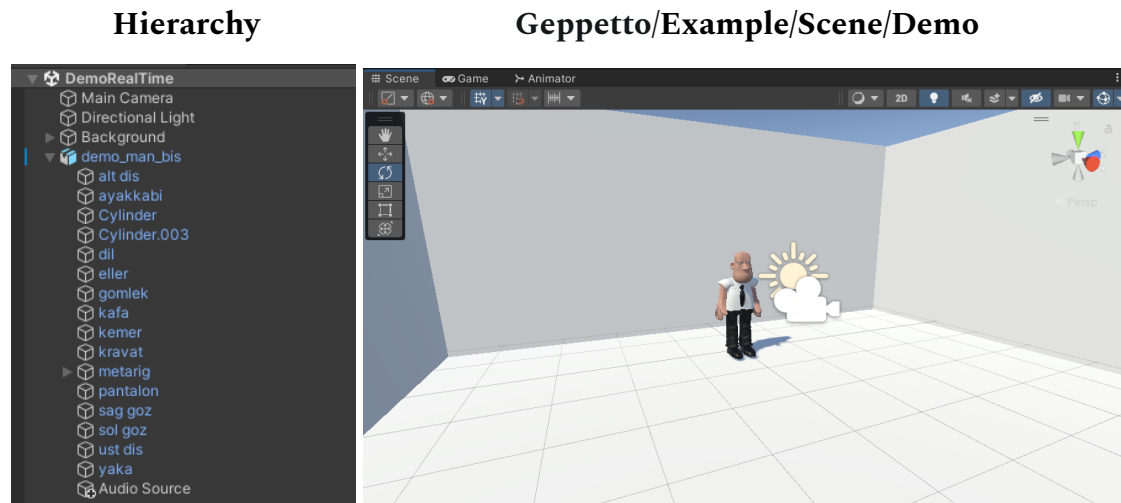
When importing your 3D model on the scene, you can find your blendshapes under the SkinMeshRenderer component like so



You can also check if you have blendshapes directly in Blender/Maya or other 3D modeling software



1- Learn how to use the tool with the demo scene



You will find under Geppetto/Exemple/Scene, 2 scenes for you to try our tools, **Demo** and **DemoRealTime**.

There are two ways to use this Geppetto tool. Either you want to use it to save production time and **pre-generate** all your lip animations from existing texts or audios. In this case, look at **section 1**.

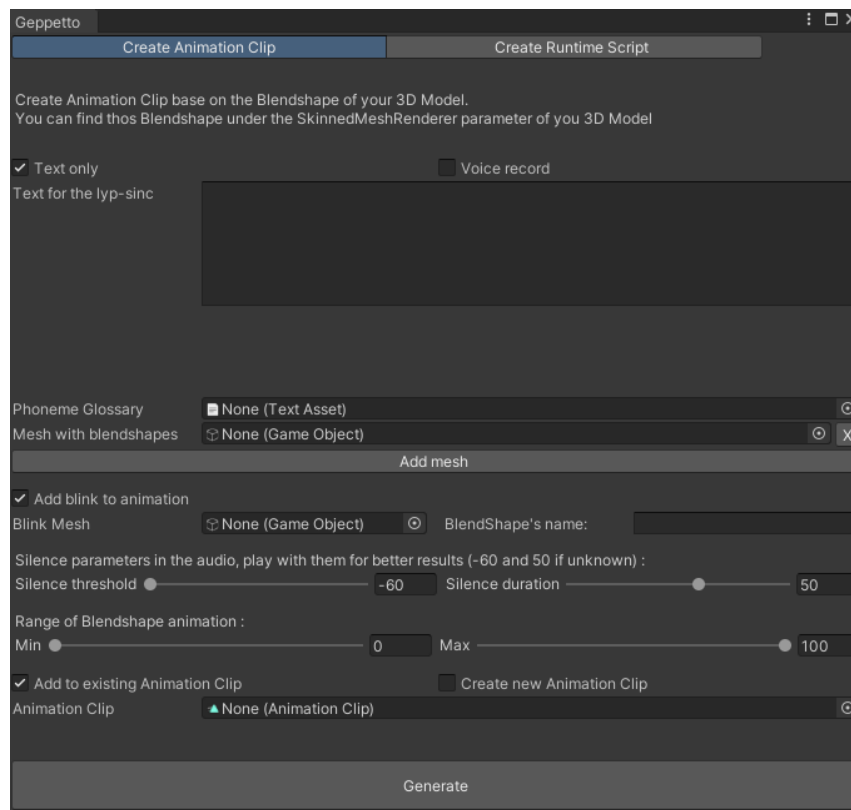
If you want to run Geppetto dynamically in your game and generate the animation in **real time**, see **section 2**. You may need [speech synthesis](#) or [text generation](#) for your characters. You can look at these tools on the unity asset store if you are interested.

Do not hesitate to contact us for further information at contact@xandimmersion.com

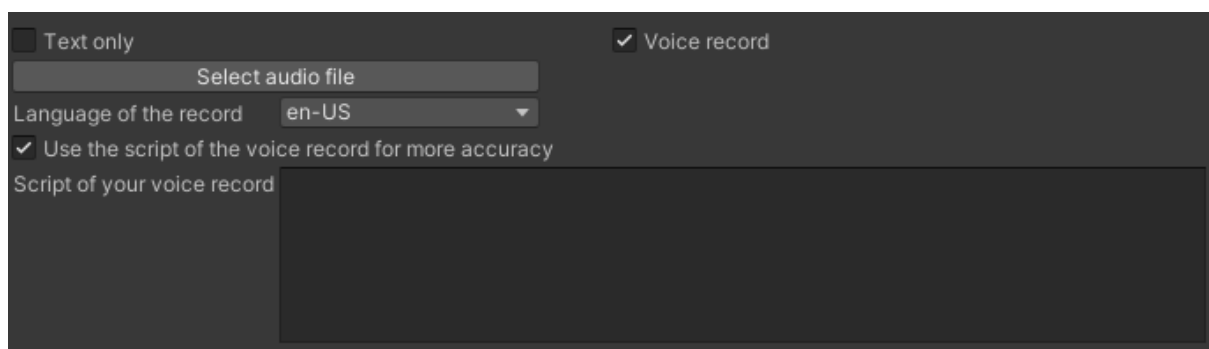


1a- Pre-generate the animation clips

In the Editor, open Window/Geppetto.



If you have an audio file, click on **voice record**. The animation will be synchronized with the text.



1b-Add the Phoneme Glossary

You can skip this part if you already have one

1. Duplicate then Open the spreadsheet named “glossaryFI.csv”
(Assets/Geppetto/Example) in your preferred software application, such as



Microsoft Excel or Google Sheets.

You will see 2 columns:

- The first one is the "Phoneme" column. It contains a list of the 39 phonemes that we use to animate 3D characters.
- The second is the "Blendshape" column.

2. In the first row of the "Blendshape" column, enter the blendshape that corresponds to the first phoneme listed in the first column. For example, for "P", you may enter the blendshape that makes your character's lips close tightly to simulate the "p" sound.
3. Repeat step 2 for each subsequent row, entering the blendshape that corresponds to the phoneme listed in the same row of the first column. Make sure to enter the correct blendshape's name.
4. Save the file as a CSV (comma-separated values) file, which is a standard format for storing spreadsheet data.
5. Test the file by opening it in a text editor to ensure that each row contains two values separated by a comma (one for the phoneme and one for the blendshape). You can also test the file by importing it into your 3D modeling software and applying the blendshapes to your character's facial rig to ensure that each blendshape corresponds correctly to its corresponding phoneme.
6. If necessary, make any additional changes or updates to the file and repeat steps 4 and 5 until you have achieved the desired results.

Great job! You've completed the most challenging part of this tutorial.

You now have a CSV file with 39 phonemes in the first column and their corresponding blendshapes in the second column, which will be used to control your 3D character's facial expressions when animating speech.



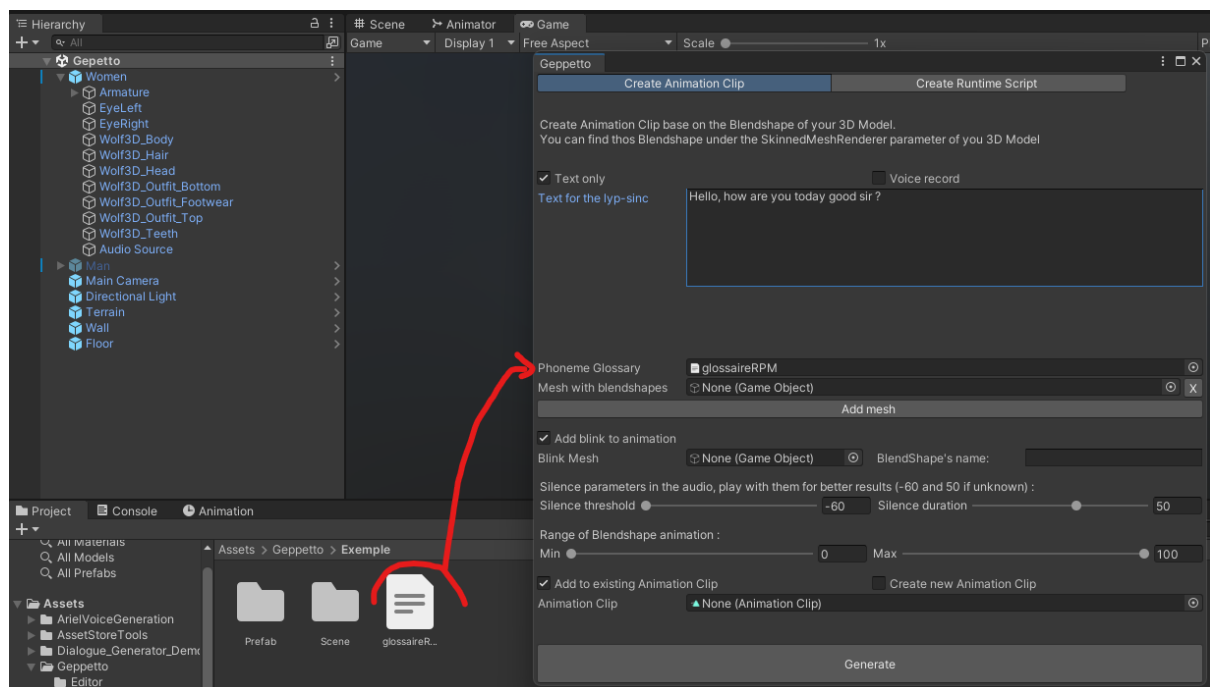
Example : How you would fill it for your Character

AA	myBlendshapeFor_AA
AE	myBlendshapeFor_AE
AH	myBlendshapeFor_AH
AO	myBlendshapeFor_AO
AW	myBlendshapeFor_AW
AY	myBlendshapeFor_AY

You can use the same Blendshape for multiple phonemes

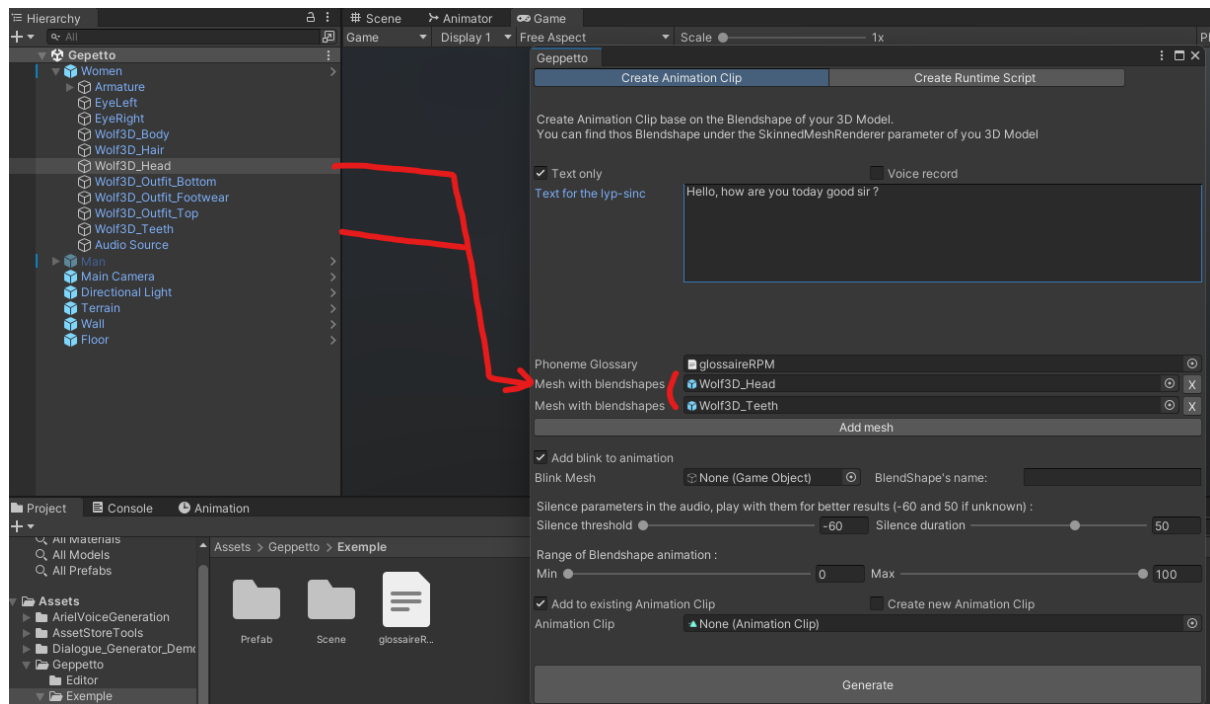
15	G	myBlendshape_GK
16	HH	myBlendshape_I
17	IH	myBlendshape_I
18	IY	myBlendshape_I
19	JH	myBlendshape_I
20	K	myBlendshape_GK

1c - Locate your csv file and drag it into the Geppetto editor

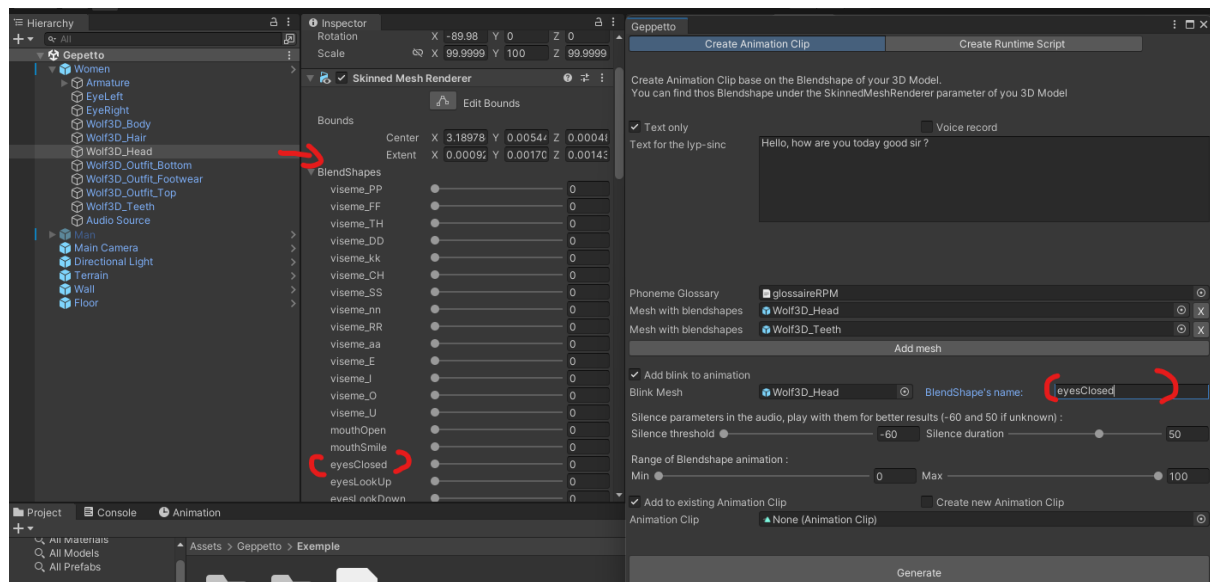




1d - Find your object with the SkinnedMeshRenderer attached to it

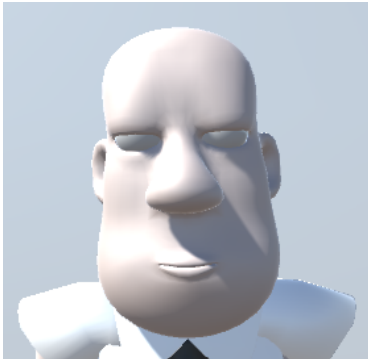


1e - Add the blinking

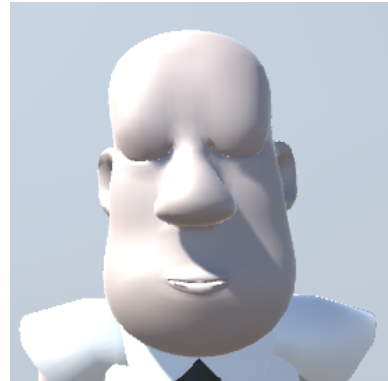




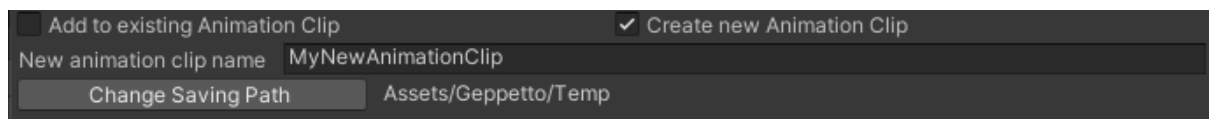
eyesClosed = 0



eyesClosed = 100

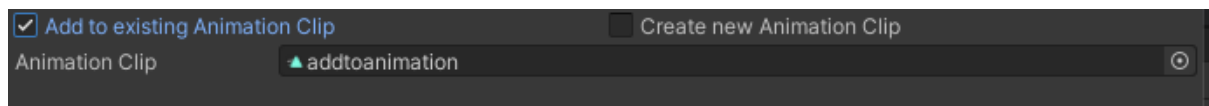


1f - Create new AnimationClip



1g - Add your blendshape animation to existing AnimationClip

If you want to add lip sync to an existing animation, select the animation here.

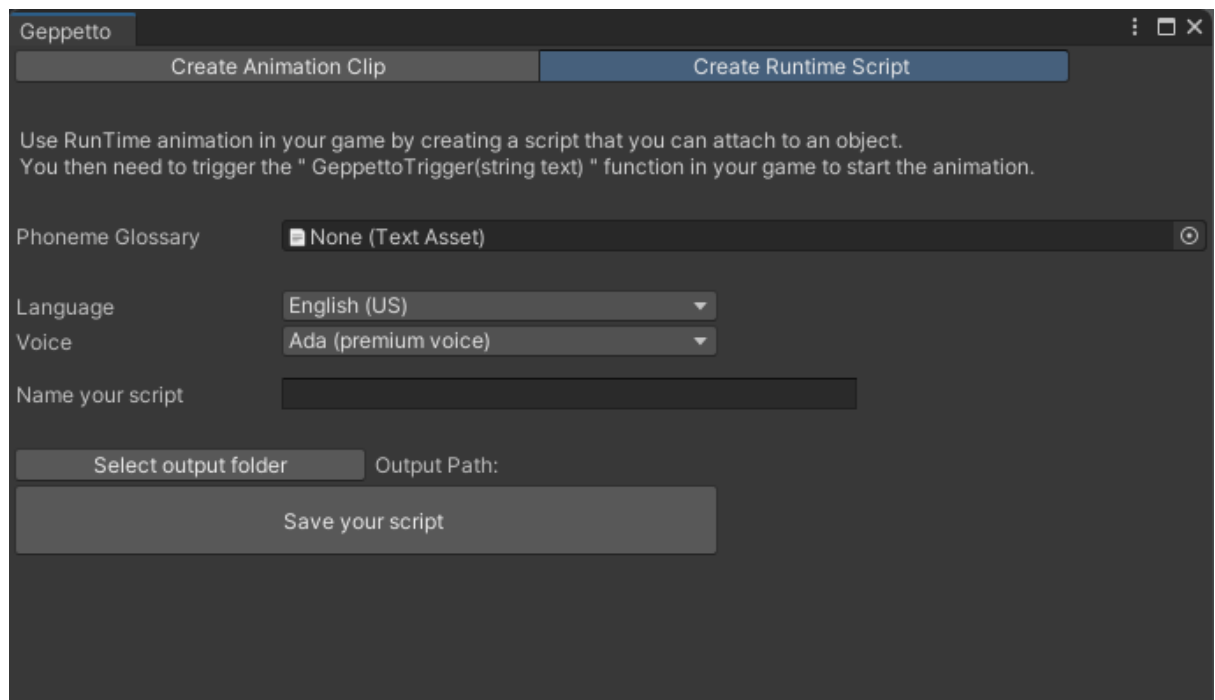




2a - Create a run time script

1. Open the Geppetto Editor in Unity by navigating to Window > Geppetto.
2. Click on the "Create RunTime Script" button in the Geppetto Editor.

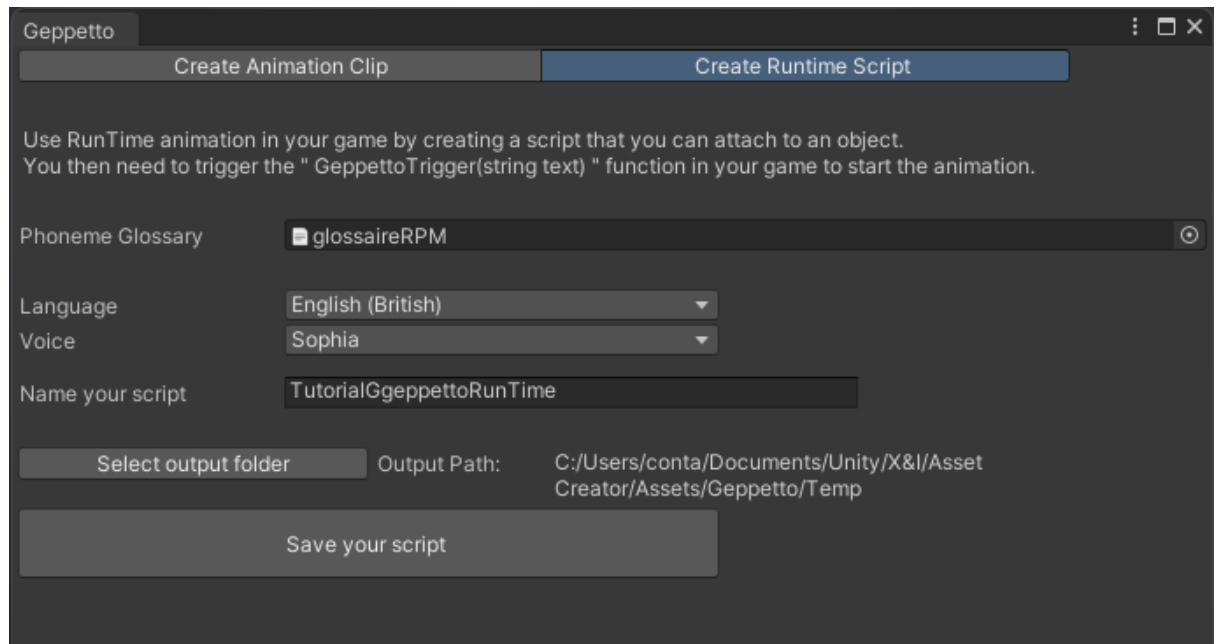
(Empty)



3. Drag and drop your glossary file into the "Phoneme Glossary" bar in the Geppetto Editor.
4. Choose a name for your script and it will automatically become the name of the file with the extension "GeppettoLive.cs". For example, if you name it "MyName", the file will be called "MyNameGeppettoLive.cs".
5. Select the location where you want to create your new script by clicking on the "Select Folder" button.
6. Click on the "Save" button to save your script in the selected location.



(Completed)



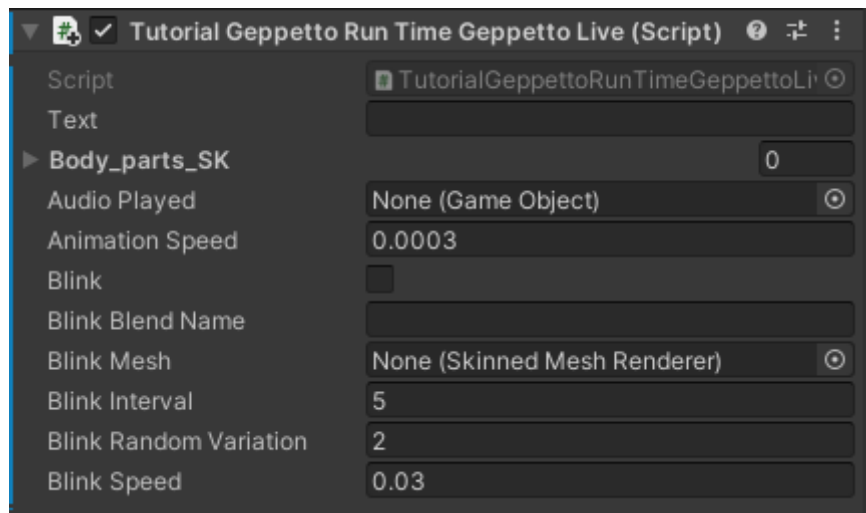
7. Go to the Unity scene where you want to attach the script to a GameObject.
8. Select the GameObject that you want to attach the script to.
9. In the Inspector window, click on the "Add Component" button and search for "MyNameGeppettoLive" (or whatever name you chose for your script).
10. Click on the "MyNameGeppettoLive" script to attach it to your selected GameObject.

That's it! Your script is now attached to your GameObject and you can start using it to control your character's facial expressions based on the phonemes in your glossary.

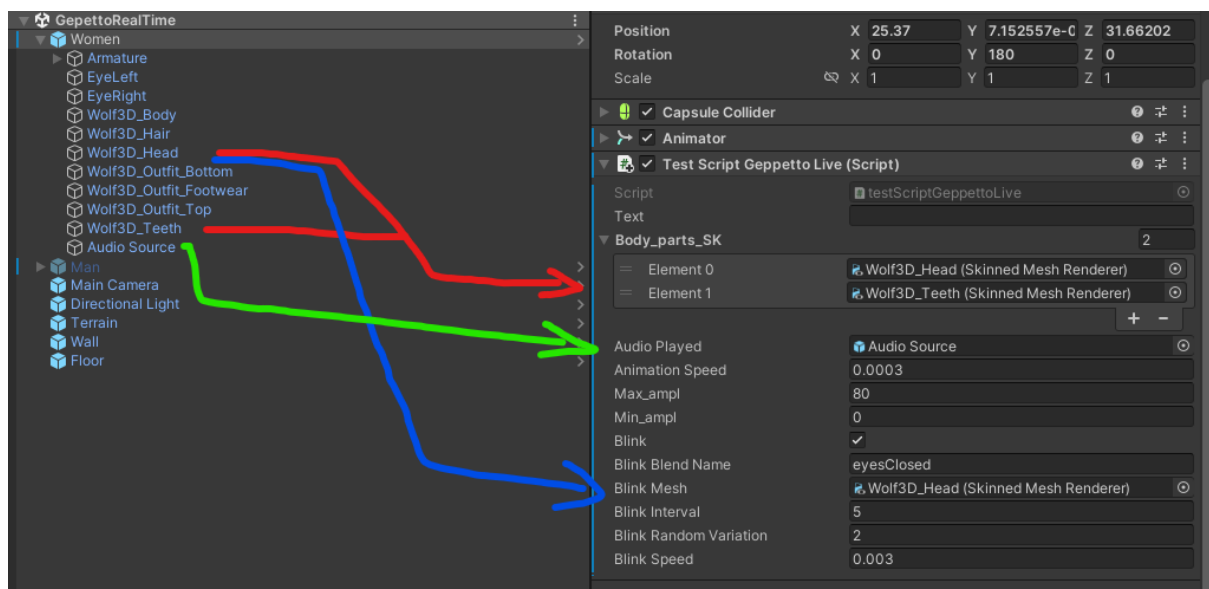


2b - Adding the blendshapes in the script.

(Empty)



(Completed)



2c - Try it out in real time



Start the Game and Trigger the GeppettoTrigger(string text) Function. You can do so with this code.

```
Message Unity | 0 références
void Update()
{
    timepassed = timepassed + Time.deltaTime;
    if (Input.GetKeyDown(KeyCode.E))
    {
        Debug.Log("E pressed");
        GeppettoTrigger("hello, my name is Michel");
    }
}
```