Introduction

LipSync Lite is the new free version of LipSync Pro, the powerful facial animation tool from Rogo Digital. It contains all the same core lip-syncing features, including customisable poses, our clip editor and support for blend systems. More advanced features such as emotions, gestures and AutoSync are available in the full version, which also contains the full source code.

Check our website for a list of features that are and aren't included in both versions: **http://lipsync.rogodigital.com.**

Note: Though some images in this guide may show LipSync Pro, all the information provided applies to LipSync Lite.

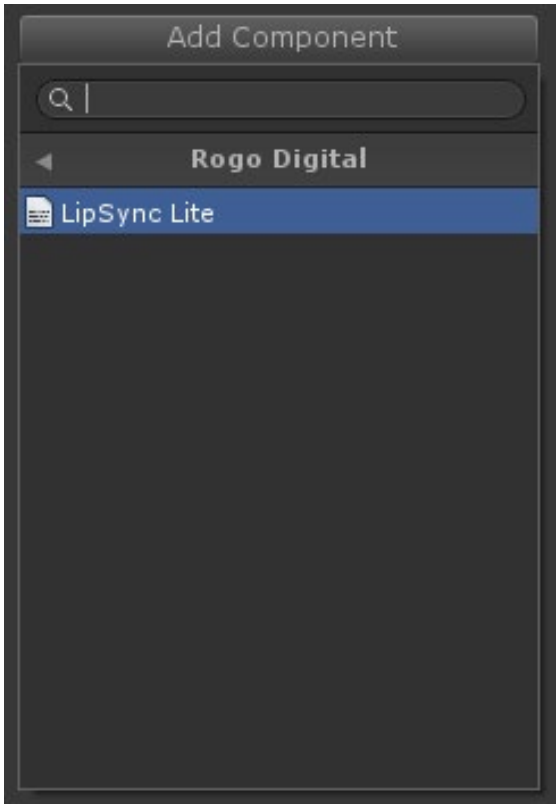
Contents

Getting Started

This is a basic guide on how to start using LipSync for the first time. More detailed information and alternative workflows are detailed later on in the manual.

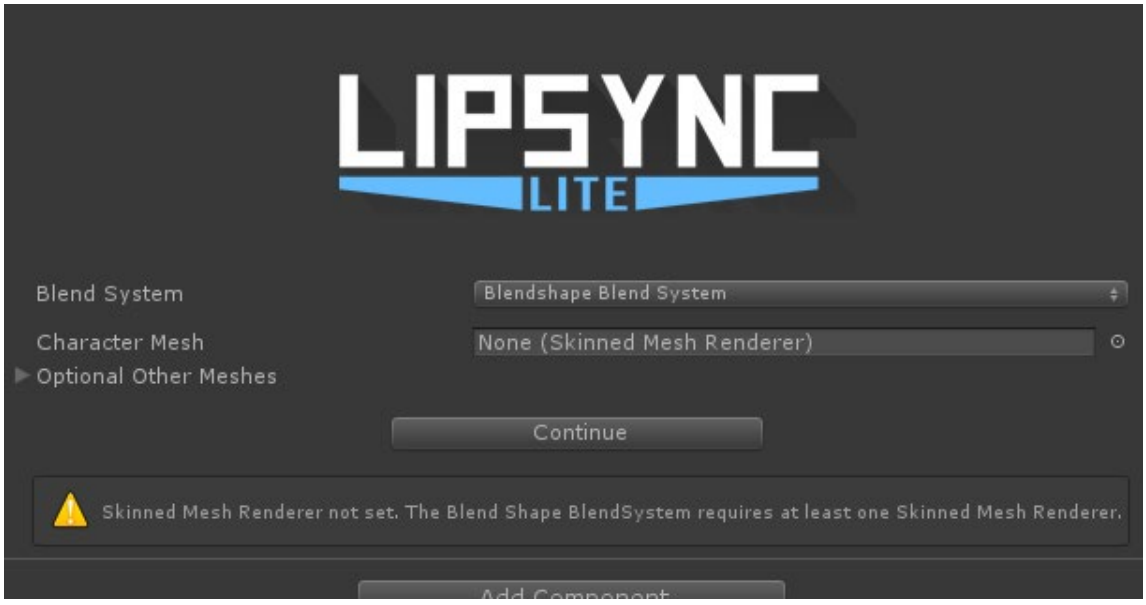
First, make sure you have a compatible character, by default this requires a SkinnedMeshRenderer with blend shapes, but other systems exist. Characters using LipSync Lite can be made into prefabs after setup if you wish, but setup is much simpler if the character exists in the scene.

Step one. Select your character's root GameObject and add the LipSync Litecomponent from the AddComponent menu.



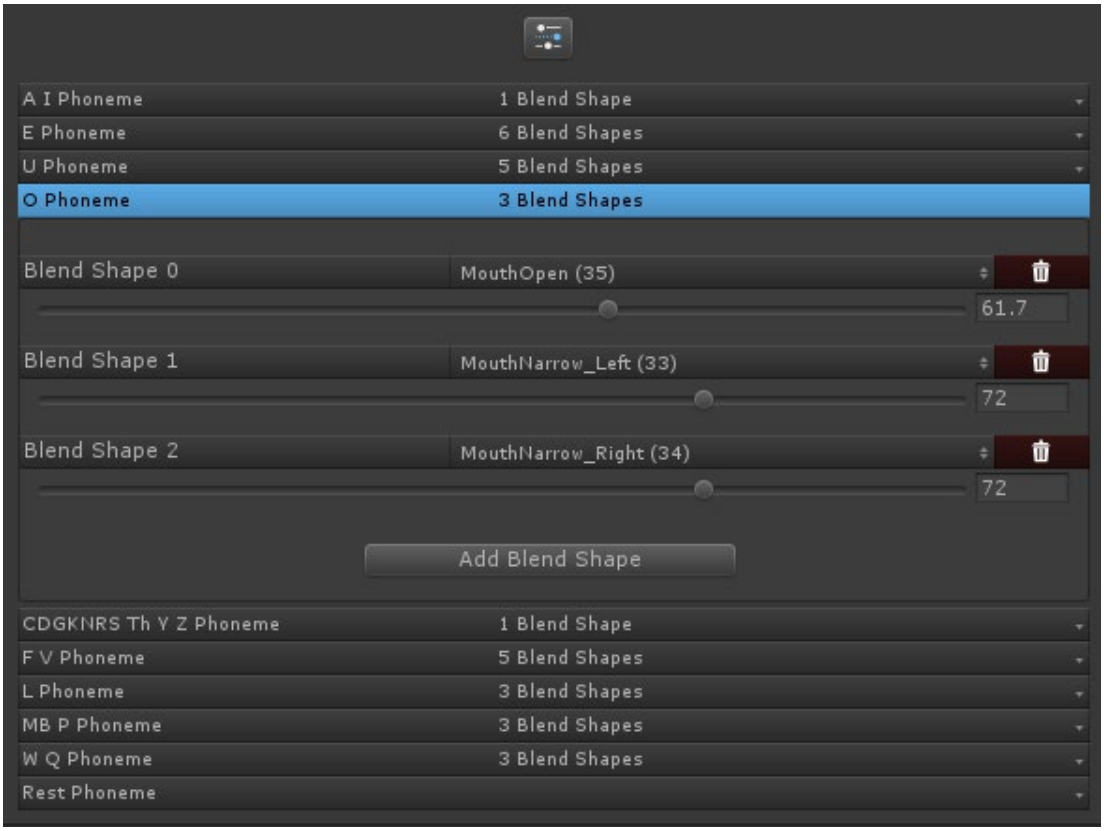
Step two. Select a Blend System (see BlendSystems) from the dropdown at the top of the LipSync component. By default, only the Blenshape and Sprite blend systems will be available. Others can be downloaded (see Extensions) or created yourself (see Creating Blend Systems).

Step three. Fill in the fields required by the Blend System, then press the Continue button. Using the Blendshape Blend System, this is the Main Skinned Mesh Renderer, and any optional additional renderers. These can be changed at a later point.



Step four. Create the phoneme poses by clicking on a phoneme, adding blendables and setting a value for each (See Blendables and The Pose Editor). You can alternatively use a preset instead by clicking the Presets button and selecting one from the drop-down.

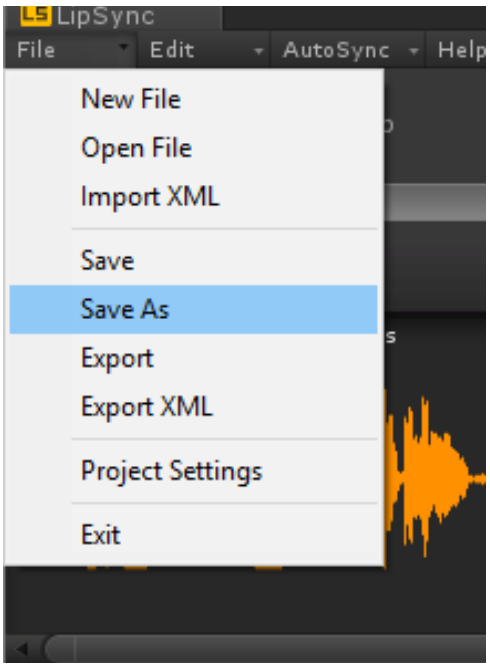
Note: LipSync comes with presets for Adobe Fuse characters only. You can create your own to work with other characters (see Presets).



Step five. Open the Clip Editor by selecting an AudioClip you want to lip-sync in the Project window and clicking Window > Rogo Digital > LipSync Lite > Open Clip Editor in the top menu, or using the keyboard shortcut Ctrl + Alt + A.

Step six. Add phoneme markers to the file using the editor (See The Clip Editor).

Step seven. Save the file by clicking File > Save As in the Clip Editor toolbar, and selecting a location within your project to save it. You can alternatively export to an XML file, though for most uses, the standard LipSyncData file is recommended.



You're Done! You can now play the saved LipSyncData file using the

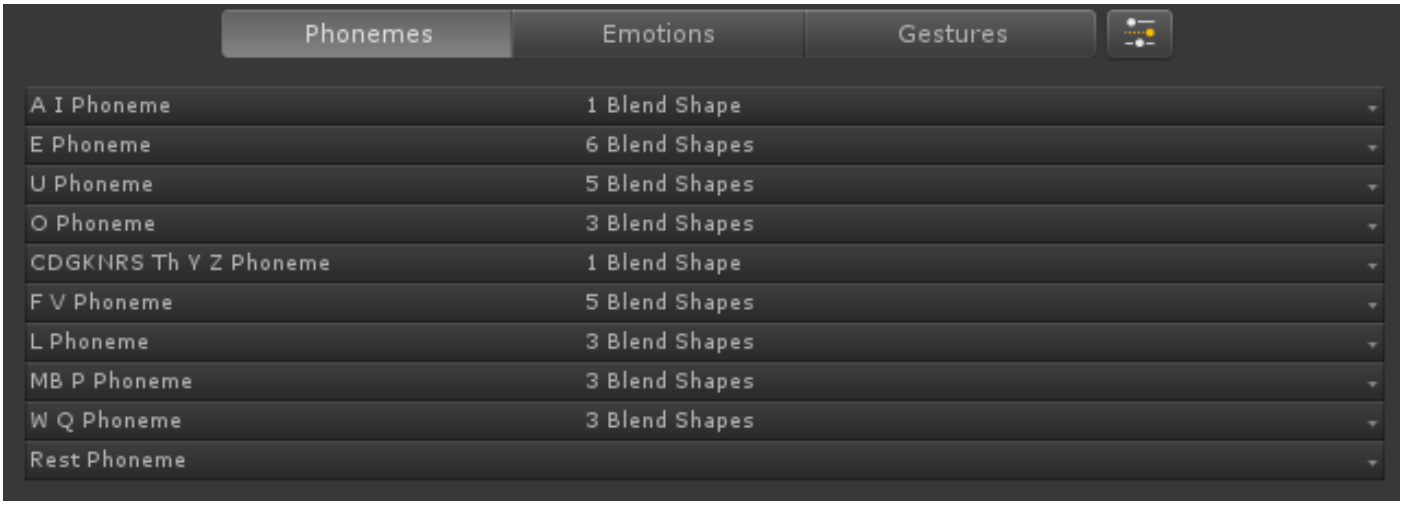
LipSync component on your character, either by using the play on awake setting or by calling LipSync.Play from a script.

Editors

LipSync Lite is made up of two parts, a component that includes an editor for defining phoneme (viseme) poses, and a clip editor that's used for syncing phonemes to an audio clip.

The Pose Editor

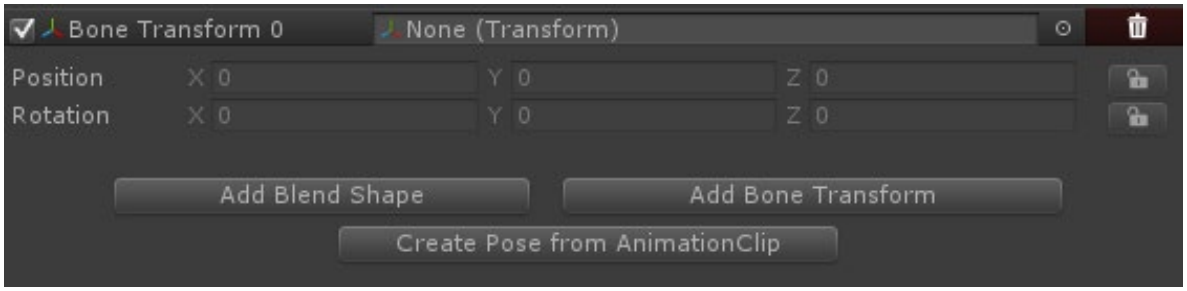
The Pose Editor is part of the inspector for the LipSync component. It's here that you setup the per-character poses for each phoneme.
The main area of the Pose Editor is an accordion-style list of phonemes. Clicking one of these will expand the editor for that pose.



Within this panel, you have the choice to add blendables or bones (if bones are enabled) to the current phoneme pose, and a list of all the blendables and values that make up the pose.

Each row in this list contains a dropdown (1) to choose the blendable from a list, a delete button (2) to remove that blendable from the pose, and a slider (3) to set the value/weight of that blendable in the pose.

When you add bones, the dropdown is replaced by an object picker and the value slider is replaced by position and rotation vector fields. Use these to chose and pose the bone transforms instead. You may also notice the lock buttons on the right. Locking either the position or rotation for a pose will prevent that property from being affected by the pose. This can be useful if you want ONLY the position from the pose, or vice-versa. Enabling the checkbox next to the bone transform will show position/rotation handles in the scene view for that transform.



As you add/remove blendables and move the sliders, the changes you make will be reflected on the character in the scene view.
When editing phoneme poses, an illustration of that phoneme is displayed in the lower-right hand corner of the scene view. You can use this as a rough guide to pose your character's face exactly how you want for each phoneme.

The Clip Editor

The Clip Editor is a separate editor window that can be moved and docked like the other Unity editor windows. It can be opened by going to the Window > Rogo Digital > LipSync Lite menu at the top of the Unity editor, and selecting Open Clip Editor. You can also use the keyboard shortcut Ctrl + Alt + A. This action is context sensitive: if an AudioClip is selected in the Project window, it will be set as the clip for the new animation. If a LipSyncData asset is selected, it will be opened in the editor.

This editor is used for synchronising phonemes to audio clips, and creates the LipSyncData asset files that your characters will play back. The next page shows an overview of the editor with an audio clip selected.

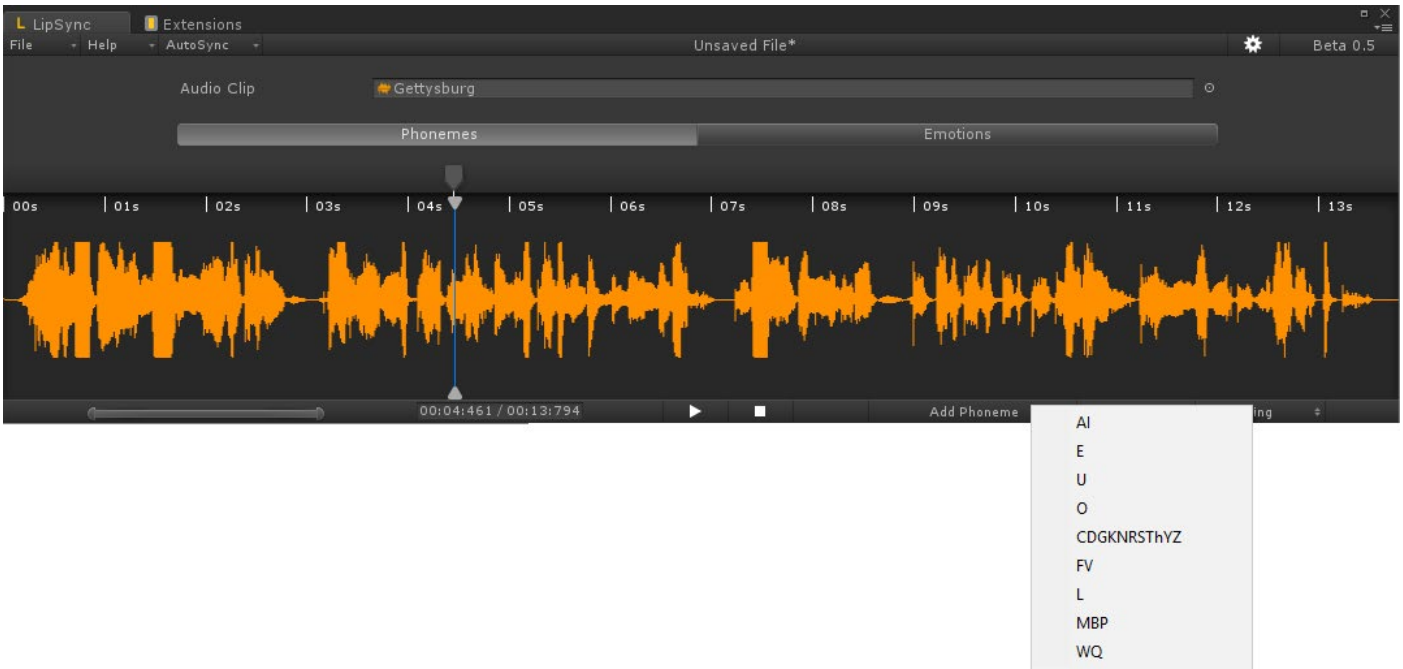
(The LipSync Pro UI is pictured above. LipSync Lite is identical with the exception of the tab control and AutoSync menu.)

1. The name of the asset being edited.
2. Settings button. Opens the settings panel.
3. Preview button. Turns on real-time previews.
4. Linked audio clip. Changing this will cause the waveform to update.
5. Timeline. Phoneme or emotion markers will appear here.
6. Time Ruler and Waveform. Gives a preview of the audio at a specific time.
7. Zoom/pan Control. Used to zoom in on a certain part of the clip.
8. Play/Pause/Add Phoneme buttons.
9. Phoneme Filter. Limits which markers are shown in the timeline.

Manually Adding Phonemes

Clicking and dragging anywhere within the Time ruler/waveform area will move the playhead along and scrub through the audioclip. If you click once and release, a short snippet of the audio will be played. This is useful for finding exactly where to add a certain phoneme.

Place the playhead where a phoneme should be triggered and click the “Add Phoneme” button on the lower toolbar. This will then show you a list of phonemes to add. Pick the right one for the sound you hear and a new marker will appear on the timeline. You can also right-click the waveform to add a marker at the point you clicked.



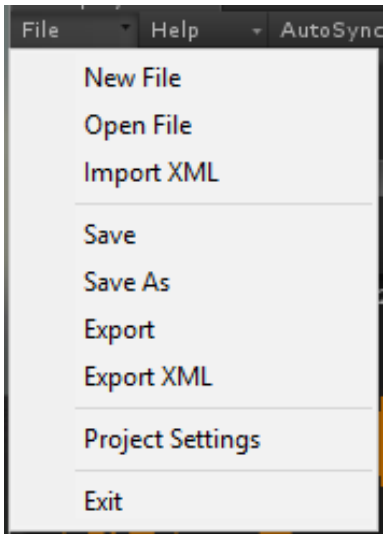
Go through the clip adding phoneme markers until complete. You can zoom in and scroll along the timeline by using the zoom/pan control in the lower left. Dragging one side of the handle resizes it, so that the length and position of the handle represents the viewport in relation to the clip’s length.

You can delete a phoneme marker, or change the phoneme it represents after placing it by right-clicking, and either clicking delete or choosing the new phoneme from the context menu.

Saving/Loading

Once you've finished syncing a clip you will need to save it in order to play it back.

The File menu in the Clip Editor's top toolbar has a number of different options you can use for saving out your clips.



The standard *Save* and *Save As* options will create a .Asset file in our LipSyncData format. These files can be used as the default clip in a LipSync component, or passed as a parameter to the LipSync.Play or LipSync.PlayFromTime methods. This is the recommended format for saving data to be played in, as it contains a reference to the linked audio clip.

There are, however, two export options you can also use.

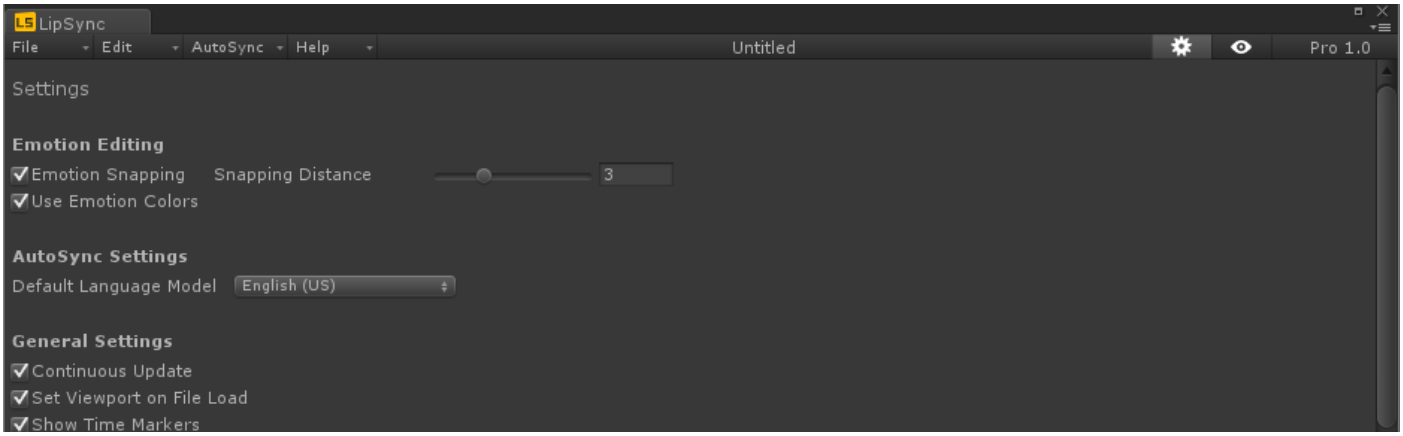
Export XML will create an XML document representing the phoneme and emotion marker data. This XML file can then be loaded back in to the editor using the *Import XML* option, or played back using LipSync.Play. This format can be useful for processing the data outside of Unity, as the XML format is very widely supported and easy to work with. It doesn't have any way to reference

the audio clip however, so this must be passed to the Play method separately.

The final option is simply *Export.* This will create a .unitypackage file containing the data as a LipSyncData file, along with a copy of the audio clip. This can be used for easily transferring a file between two computers.

Settings

Clicking the settings icon in the top toolbar will toggle between the standard Clip Editor screen and the settings page. Many of these settings are user preference for how the Clip Editor should behave. They are as follows:



Emotion Snapping and **Snapping Distance**

Not used in LipSync Lite (Emotions are only available in Pro).

Use Emotion Colors and **Default Color**

Not used in LipSync Lite (Emotions are only available in Pro).

Continuous Update

If enabled, this will make the Clip Editor redraw every frame. This makes it more responsive while editing markers, but could be slow to use on a low-powered machine.

Set Viewport on File Load

This will make the editor display the entire clip in the viewport when a new file is loaded, instead of staying at the same zoom level as the last file.

Show Time Markers

Shows or hides the time ruler underneath the timeline.

Scrubbing Preview Length

The length of time, in seconds, that will be played when the playhead is moved.

Preview Volume

The volume that audio from the Clip Editor will play at.

Max Waveform Width

This is the maximum width of the waveform preview image. The preview is regenerated with a larger width when you zoom in on the timeline, to preserve detail. At extreme zoom levels though, this can cause the image to become unacceptably large, so Max Waveform Width is used to clamp it. Setting this lower can make the editor use less memory, while setting it higher will allow the preview to become more detailed. **Warning**: setting this value too high can cause the editor to crash when zooming in.

Show Extension Window

If enabled, a Rogo Digital Extensions window (see Extensions) will be docked next to the Clip Editor for easy access when the editor is opened.

Concepts

This section explains some of the terms and concepts in LipSync, and how they are used.

Poses (Shapes)

Poses (known as shapes in scripts for legacy reasons) define a set of blendables and bones, and set values for them that create a specific facial pose. PhonemeShapes contain a LipSync.Phoneme variable to identify them, and are limited to the number of Phonemes, 10.
They are used primarily by the LipSync component, and by LipSyncPresets.

API Reference: Shape, PhonemeShape.

BlendSystems

Blend Systems are a core feature of LipSync. Whereas the LipSync component itself works with generic concepts like blendables and shapes, Blend Systems deal with actually updating or modifying the character to create the animation. The BlendSystem class is a base that all Blend Systems inherit from, which defines the basic structure and methods that a Blend System needs to work.

This allows the LipSync component to function the same regardless of whether the character uses a SkinnedMeshRenderer with blend shapes or some kind of 3rd party character system. BlendSystems are actually a seperate component attached to the same GameObject as LipSync, but they are hidden from the

inspector and managed by the LipSync component instead of being added manually.
LipSync comes with the BlendshapeBlendSystem and the SpriteBlendSystem included. Others are available to download (see Extensions) or you can write your own (see Creating Blend Systems).

API Reference: BlendSystem, BlendshapeBlendSystem, SpriteSwapBlendSystem.

Blendables

Blend systems can work in very disparate ways. Because of this, LipSync uses the concept of 'blendables' to refer to any type or object that controls a character's physical appearance, and where that amount of control can be transitioned between none (0) and full (100). An example of a blendable would be a blend shape in the BlendshapeBlendSystem class.

The concept is used in BlendSystem methods such as BlendSystem .SetBlendableValue, which is passed an integer index to reference a certain blendable, and a float value to set the blendable's influence on the character.

The Blendable class in LipSync is used internally by the base BlendSystem class to keep track of the current 'correct' value for a blendable and to prevent issues with other systems changing the underlying values.

API Reference: Blendable, BlendSystem.

Presets

LipSyncPresets are a kind of serialised (saved to disk) asset in LipSync that store metadata about the phoneme (and emotion shapes in LipSync Pro) from a LipSync component. They are used to create easily accessible setups for characters that can be added to any LipSync component in a couple of clicks.

Presets must be placed in a folder called “Presets”, or an immediate subfolder of one, to allow LipSync to find them. They can be loaded or saved from the LipSync component inspector by clicking the presets button to open a dropdown list. They are sorted in this list by subfolder name, so this can be used for categorisation.

Note: From version 1.0 onwards, the LipSyncPreset format has been used, which contains more information for identifying blendables, and also has support for bone transforms. The old BlendshapePreset format still exists for legacy purposes, but LipSync can no-longer use them and they must be updated.

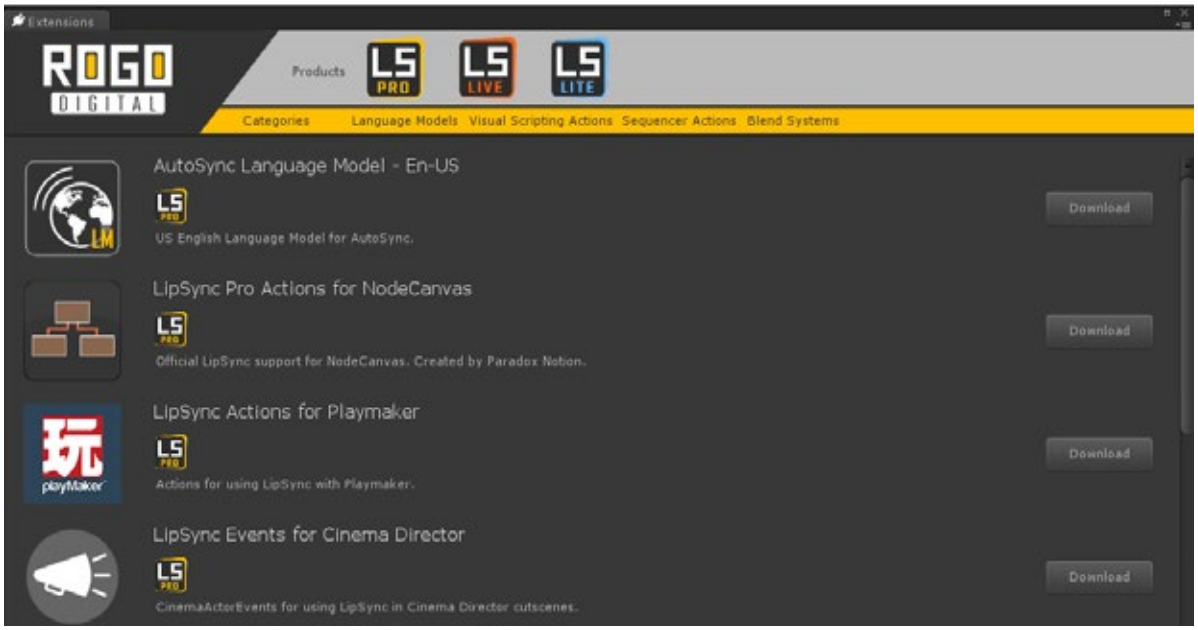
API Reference: LipSyncPreset

Extending LipSync

Extensions were introduced in beta 0.5 as a way to add support for third-party assets to LipSync without having to update the package with code that not all users will have a use for.

The Extensions Window

The extensions window can be opened from the Window > Rogo Digital menu, or from the Help menu in the Clip Editor.



This window can be used to download officially endorsed extensions to LipSync Pro, Lite and other Rogo Digital assets when connected to the internet. Extensions can be filtered by compatible products, or category.
The extension will be downloaded as a standard .unitypackage which Unity will import into your project.

Creating Blend Systems

A key feature of blend systems is the ability for any developer to write their own, which LipSync will detect and use. This makes it possible, with a little work, to use LipSync with almost any rendering/animation system. There are already blend systems available for blendshapes, sprites, Morph3D characters and UMA 2 characters.

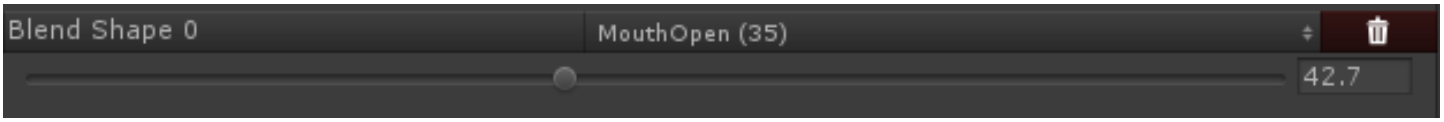
An empty blend system template can be created from the Create menu in Unity, or directly from the project window. You should first have a look at the BlendshapeBlendSystem.cs file as an example of how a working blend system can be set up.

The empty blend system template contains comments detailing what each method does. It is difficult to give exact instructions on creating a blend system, as each will be inherently unique, but the basic requirements are that they be public, not static, inherit from RogoDigital.Lipsync.BlendSystem, and contain the following methods:

```
public override void OnEnable ()
public override void SetBlendableValue (int blendable, float value)
public override string[] GetBlendables ()
public override void OnVariableChanged ()
```

When implemented correctly, this will allow your blend system to act as a bridge between LipSync and your chosen system.

Blend systems show blendables in a dropdown, and the user selects one when adding a blendable to a pose.



The “Reference Blend System” functionality contained in LipSync 0.5 is no longer supported, as it was difficult to use and encouraged blendSystems to be dependent on the LipSync component using them (which is unreliable, as other scripts can also make use of Blend Systems as of 0.6.)

The best replacement for this functionality is to convert your reference Blend System to a standard index-based one, and create your own separate component that has a list of objects you want to use and reports them to the Blend System as blendables. This may seem messier at first, but it allows for much more advanced functionality than reference blend systems could. You can use the RequiresComponent attribute on your Blend System to automatically add your own manager script whenever that Blend System is used.

In addition to the functionality explained in the template’s comments, you can create buttons that show up in the LipSync editor above the tab control. To do this, create a a public method in your blend system without a return value, then mark this method with the `[BlendSystemButton(string displayName)]` attribute.

This will create a button with the value of displayName as a label. The method itself will be called whenever the button is clicked. For example, this is the ToggleWireframe method from BlendshapeBlendSystem.cs:

```
[BlendSystemButton("Toggle Wireframe")]
public void ToggleWireframe () {
	wireframeVisible = !wireframeVisible;
	#if UNITY_EDITOR
	EditorUtility.SetSelectedWireframeHidden(characterMesh ,
!wireframeVisible);
	foreach(SkinnedMeshRenderer renderer in optionalOtherMeshes) {
		EditorUtility.SetSelectedWireframeHidden(renderer ,
!wireframeVisible);
	}
	#endif
}
```

As these buttons are used only in the editor, you may have to make use of some classes in the UnityEditor namespace. The problem here is that this namespace does not get packaged in with your project when it is built. To get around this, you can make use of the #if UNITY_EDITOR preprocessor directive, which will effectively hide that code from the compiler when compiling for anything other than the Unity Editor.