

UnityWebGLSpeechDetection

The WebGL For Speech Detection package is available in the [Unity Asset Store](#).

See Also

The WebGL For Speech Synthesis package is available in the [Unity Asset Store](#).

Supported Platforms

- WebGL
- Mac Standalone (using [Speech Proxy](#))
- Mac Unity Editor (using [Speech Proxy](#))
- Windows Standalone (using [Speech Proxy](#))
- Windows Unity Editor (using [Speech Proxy](#))

Target

The **Unity WebGL Speech Detection Package** is created for Unity version **5.3** or better. This package was originally created for the **WebGL** platform and supports other platforms using a **Speech Proxy**. This package requires a browser with the built-in [Web Speech API](#), like Chrome. Detection requires an Internet connection. Check the [browser compatibility](#) to see which browsers implemented the **Speech API**.

Changelog

- 1.0 - Initial creation of the project
- 1.1 - Added support for **Speech Proxy**
- 1.2 - Minor fixes
- 1.3 - Added support for speech detection in edit mode
- 1.4 - Added support for **MacOS** for **play-mode** and **edit-mode**
- 1.5 - Added dictation and command examples without GUI

Demos

[Demo 01 Unity Speech Dictation](#)

[Demo 02 Unity Speech Commands](#)

Documentation

This document can be accessed in **Assets/WebGLSpeechDetection/Readme.pdf** or use the menuitem **GameObject->WebGLSpeechDetection->Online Documentation**

Sample Scenes

- 1 **Assets/WebGLSpeechDetection/Scenes/Example01_Dictation** - Uses WebGLSpeechDetectionPlugin to do speech dictation
- 2 **Assets/WebGLSpeechDetection/Scenes/Example02_SpeechCommands** - Uses WebGLSpeechDetectionPlugin to do speech commands
- 3 **Assets/WebGLSpeechDetection/Scenes/Example03_ProxyCommands** - Uses ProxySpeechDetectionPlugin to do speech commands

- 4 [Assets/WebGLSpeechDetection/Scenes/Example04_ProxyDictation](#) - Uses ProxySpeechDetectionPlugin to do speech dictation
- 4 [Assets/WebGLSpeechDetection/Scenes/Example04_ProxyDictation](#)- Uses ProxySpeechDetectionPlugin to do speech dictation
- 5 [Assets/WebGLSpeechDetection/Scenes/Example05_ProxyManagement](#) - Management methods for launching and modifying the proxy
- 6 [Assets/WebGLSpeechDetection/Editor/Example06PanelDictation.cs](#) - Unity editor panel for speech dictation that works in play mode and edit mode
- 7 [Assets/WebGLSpeechDetection/Editor/Example07PanelCommands.cs](#) - Unity editor panel for speech commands that works in play mode and edit mode
- 8 [Assets/WebGLSpeechDetection/Scenes/Example08_NoGUIDictation](#) - Do dictation without a GUI
- 9 [Assets/WebGLSpeechDetection/Scenes/Example09_NoGUISpeechCommands](#) - Do commands without a GUI

Modes

Detection modes use the same API interface other than where the instance comes from.

WebGL Mode

The [WebGLSpeechDetectionPlugin](#) uses native detection only for the WebGL platform.

```
ISpeechDetectionPlugin speechDetectionPlugin =  
WebGLSpeechDetectionPlugin.GetInstance();
```

WebGL mode requires a [WebGLSpeechDetectionPlugin](#) gameobject in the scene which can be created from the [GameObject->WebGLSpeechDetection->Create WebGLSpeechDetectionPlugin](#) menu item.

Proxy Mode

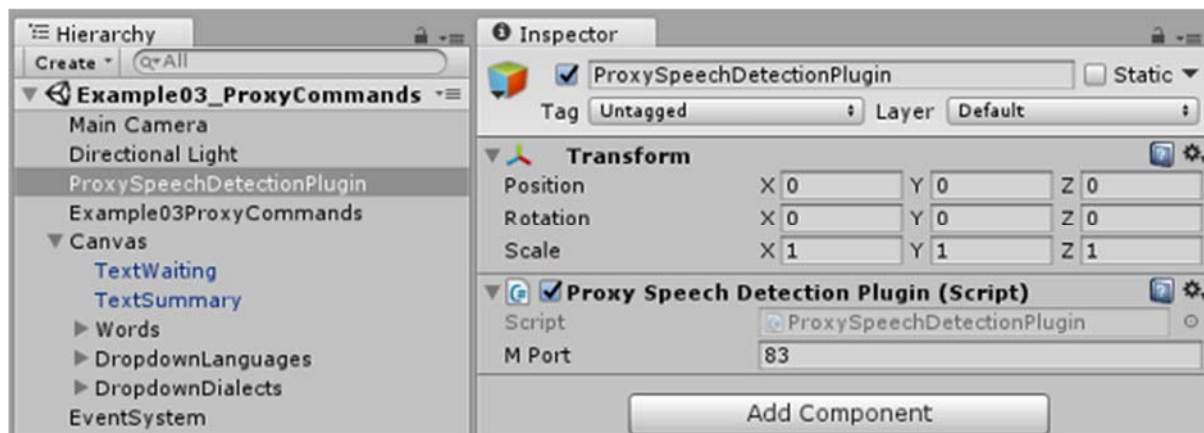
The [ProxySpeechDetectionPlugin](#) uses a [Speech Proxy](#) to do speech detection for non-WebGL platforms.

```
ISpeechDetectionPlugin speechDetectionPlugin =  
ProxySpeechDetectionPlugin.GetInstance();
```

Proxy mode requires a [ProxySpeechDetectionPlugin](#) gameobject in the scene which can be created from the [GameObject->WebGLSpeechDetection->Create ProxySpeechDetectionPlugin](#) menu item.

Also a [Speech Proxy](#) needs to be running for Proxy mode to work.

The [Proxy Port](#) is assigned by the [ProxySpeechDetectionPlugin](#) gameobject with the inspector and needs to match the port used by the [Speech Proxy](#).



Edit Mode

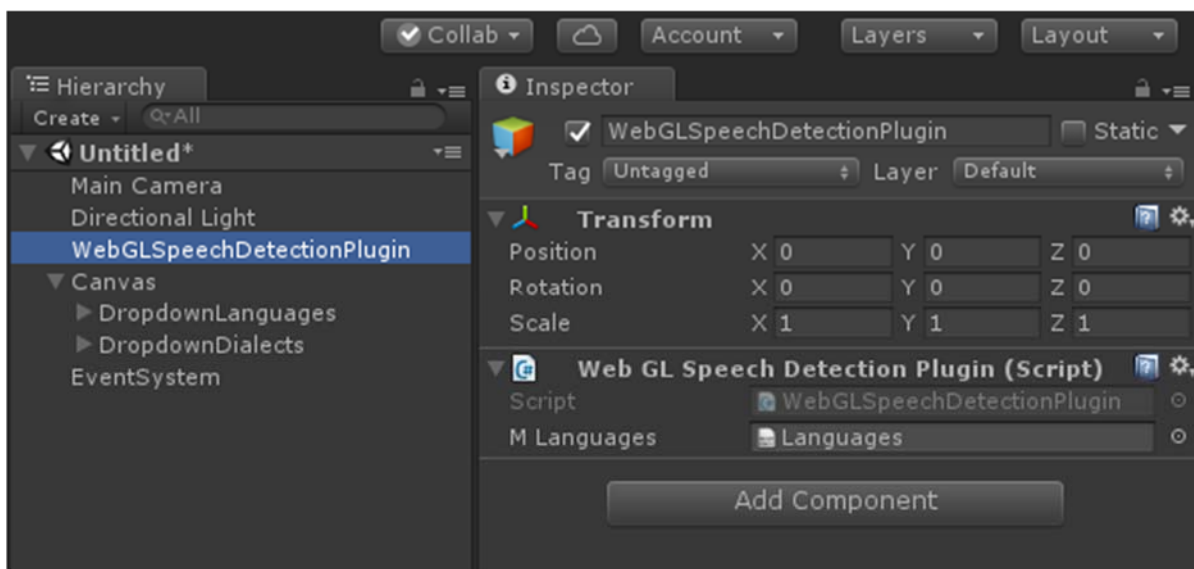
The [EditorProxySpeechDetectionPlugin](#) uses a [Speech Proxy](#) to do speech detection for editor panels in the Unity editor.

```
ISpeechDetectionPlugin speechDetectionPlugin =
EditorProxySpeechDetectionPlugin.GetInstance();
```



Quick Start

- 1 Switch to the **WebGL** platform in 'Build Settings' [image_1](#)
- 2 Create one **WebGLSpeechDetectionPlugin** GameObject in the scene with the menu **GameObject->WebGLSpeechDetection->Create WebGLSpeechDetectionPlugin** [image_2](#)
- 3 (Optional) You may need a languages dropdown in your UI, use the menuitem **GameObject->WebGLSpeechDetection->Create Languages Dropdown** [image_3](#)
- 4 (Optional) You may need a dialects dropdown in your UI, use the menuitem **GameObject->WebGLSpeechDetection->Create Dialects Dropdown** [image_4](#)
- 5 At this point you should have a scene with the **WebGLSpeechDetectionPlugin**, and (optionally) a couple dropdown controls added to the canvas.



- 6 Create a custom MonoBehaviour script to use the **WebGLSpeechDetection** API

7 Add a using statement to get access to the **WebGLSpeechDetection** namespace

```
using UnityEngine.WebGLSpeechDetection;
```

Speech Detection Quick Setup

8 Add a reference for **WebGLSpeechDetectionPlugin** to the script

```
/// <summary>
/// Reference to the plugin
/// </summary>
private ISpeechDetectionPlugin _mSpeechDetectionPlugin = null;
```

9 In the **start event** check if the plugin is available.

```
// Use this for initialization
IEnumerator Start()
{
    // get the singleton instance
    _mSpeechDetectionPlugin = WebGLSpeechDetectionPlugin.GetInstance();

    // check the reference to the plugin
    if (null == _mSpeechDetectionPlugin)
    {
        Debug.LogError("WebGL Speech Detection Plugin is not set!");
        yield break;
    }

    // wait for plugin to become available
    while (!_mSpeechDetectionPlugin.IsAvailable())
    {
        yield return null;
    }
}
```

10 In the **start event**, if the plugin is available, subscribe to detection events.

```
// wait for plugin to become available
while (!_mSpeechDetectionPlugin.IsAvailable())
{
    yield return null;
}

// subscribe to events

_mSpeechDetectionPlugin.AddListenerOnDetectionResult(HandleDetectionResult);
```

11 Add a handler method to receive speech detection events

```
/// <summary>
/// Handler for speech detection events
/// </summary>
/// <param name="detectionResult"></param>
/// <returns>Return true if the result was handled</returns>
bool HandleDetectionResult(DetectionResult detectionResult)
{
    return false; //not handled
}
```

Language Selection Quick Setup

12 Add a field to hold the available languages and dialects

```
/// <summary>
/// Reference to the supported languages and dialects
/// </summary>
private LanguageResult _mLanguageResult = null;
```

13 Use the plugin to get the available languages and dialects

```
// Get languages from plugin,
_mSpeechDetectionPlugin.GetLanguages((languageResult) =>
{
    _mLanguageResult = languageResult;
})
```

14 Populate the language dropdown using the language result

```
// prepare the language drop down items
SpeechDetectionUtils.PopulateLanguagesDropdown(_mDropDownLanguages,
_mLanguageResult);
```

15 Handle language change events from the dropdown

```
// subscribe to language change events
if (_mDropDownLanguages)
{
    _mDropDownLanguages.onValueChanged.AddListener(delegate {
SpeechDetectionUtils.HandleLanguageChanged(_mDropDownLanguages,
        _mDropDownDialects,
        _mLanguageResult,
        _mSpeechDetectionPlugin);
    });
}
```

16 Handle dialect change events from the dropdown

```
// subscribe to dialect change events
if (_mDropDownDialects)
{
    _mDropDownDialects.onValueChanged.AddListener(delegate {
        SpeechDetectionUtils.HandleDialectChanged(_mDropDownDialects,
            _mLanguageResult,
            _mSpeechDetectionPlugin);
    });
}
```

17 Before a language is selected, disable the dialect dropdown

```
// Disabled until a language is selected
SpeechDetectionUtils.DisableDialects(_mDropDownDialects);
```

18 Use player prefs to default to the last selected language and dialect

```
// set the default language
SpeechDetectionUtils.SetDefaultLanguage(_mDropDownLanguages);

// set the default dialect
SpeechDetectionUtils.SetDefaultDialect(_mDropDownDialects);
```

Proxy Management

19 Launch the **Speech Proxy**

```
// get the singleton instance
```

```
_mSpeechDetectionPlugin = _mSpeechDetectionPlugin.GetInstance();

// check the reference to the plugin
if (null != _mSpeechDetectionPlugin)
{
    // launch the proxy
    _mSpeechDetectionPlugin.ManagementLaunchProxy();
}
```

20 Set Proxy Port

```
int port = 83;
_mSpeechDetectionPlugin.ManagementSetProxyPort(port);
```

21 Open Browser Tab

```
_mSpeechDetectionPlugin.ManagementOpenBrowserTab();
```

22 Close Browser Tab

```
_mSpeechDetectionPlugin.ManagementCloseBrowserTab();
```

23 Close Proxy

```
_mSpeechDetectionPlugin.ManagementCloseProxy();
```

Fonts

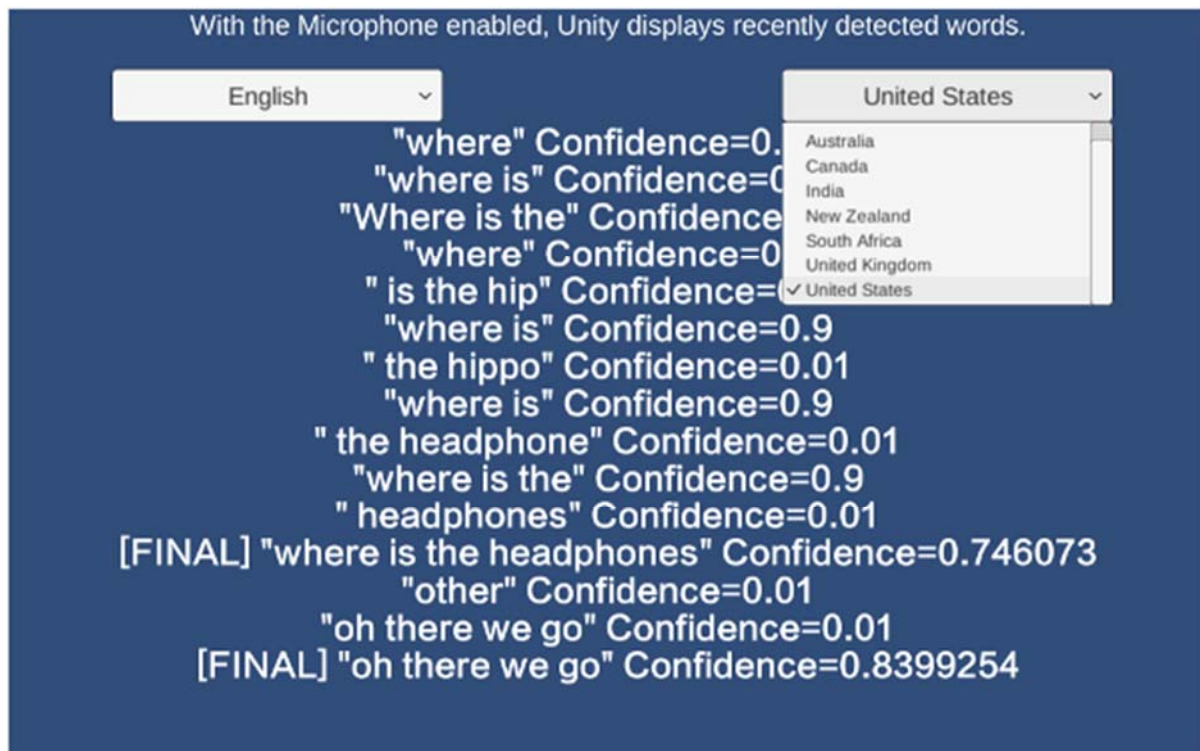
UI text controls need to reference [fonts](#) that contain the entire character range for the selected language and dialect in order to display correctly.

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Scenes

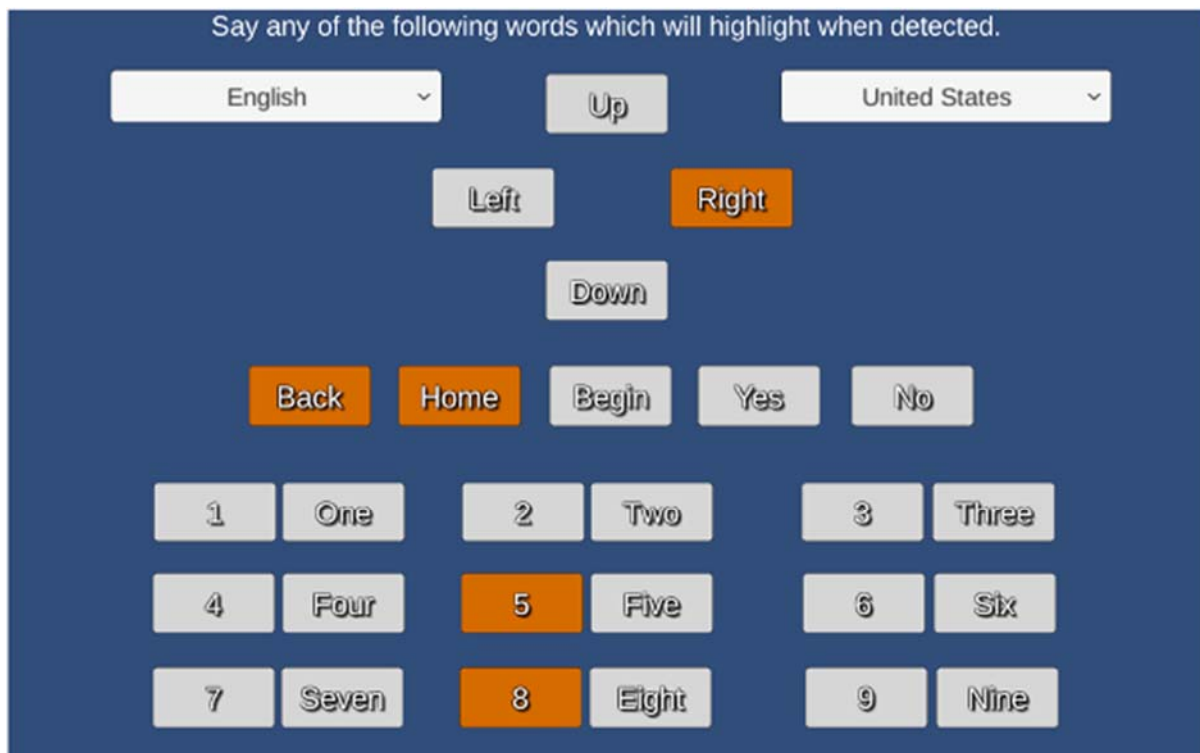
Example01 - Dictation

The scene is located at [Assets/WebGLSpeechDetection/Scenes/Example01_Dictation.unity](#)



Example02 - Speech Commands

The scene is located at [Assets/WebGLSpeechDetection/Scenes/Example02_SpeechCommands.unity](#)



Example03 - Proxy Commands

The scene is located at [Assets/WebGLSpeechDetection/Scenes/Example03_ProxyCommands](#)

The example code is nearly identical to the SpeechCommands example, except for getting the detection instance from [ProxySpeechDetectionPlugin](#).

```
// get the singleton instance
_mSpeechDetectionPlugin = ProxySpeechDetectionPlugin.GetInstance();
```

Example04 - Proxy Dictation

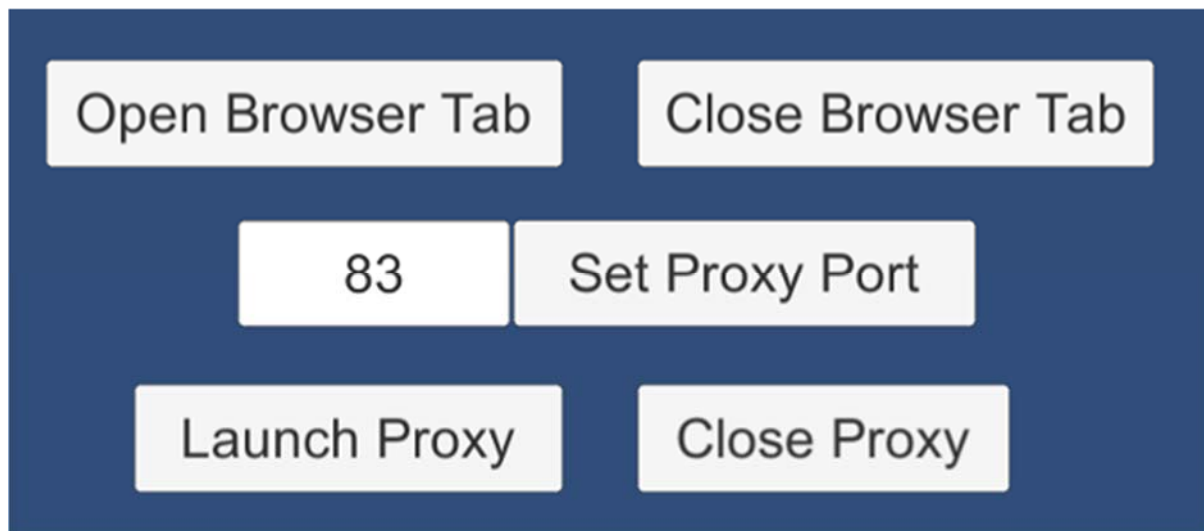
The scene is located at [Assets/WebGLSpeechDetection/Scenes/Example04_ProxyDictation](#)

The example code is nearly identical to the SpeechDictation example, except for getting the detection instance from [ProxySpeechDetectionPlugin](#).

```
// get the singleton instance
_mSpeechDetectionPlugin = ProxySpeechDetectionPlugin.GetInstance();
```

Example05 - Proxy Management

The scene is located at [Assets/WebGLSpeechDetection/Scenes/Example05_ProxyManagement.unity](#)



Example06 - Panel Dictation

The editor panel script is located at [Assets/WebGLSpeechDetection/Editor/Example06PanelDictation.cs](#) and is activated via the [Window->WebGLSpeechDetection->Open Example06PanelDictation](#) menu item.

The example panel shows speech dictation working in edit and play modes.

The panel example uses the [EditorProxySpeechDetectionPlugin](#) to proxy the speech api in [edit](#) mode.

Example07 - Panel Commands

The editor panel script is located at [Assets/WebGLSpeechDetection/Editor/Example07PanelCommands.cs](#) and is activated via the [Window->WebGLSpeechDetection->Open Example07PanelCommands](#) menu item.

The example panel shows speech commands working in edit and play modes.

The panel example uses the [EditorProxySpeechDetectionPlugin](#) to proxy the speech api in [edit](#) mode.

Several menu items are automated with speech in the [Assets/WebGLSpeechDetection/Editor/Menu.cs](#) script.

Menu items are automated with speech using a custom attribute [SpeechDetectionAttribute](#).

The custom attribute takes a [spokenPhrase](#) which when spoken will invoke the [public static](#) method.

The [spokenPhrase](#) can be a single or multiple words separated with a space and need to be spoken in the specified order.

The [spokenPhrase](#) should also be lower cased.


```
[SpeechDetectionAttribute(spokenPhrase: "duplicate")]  
// needs to be public static  
public static void EditDuplicate()  
{  
    ... implementation ...  
}
```

The example panel will detect any C# classes in the project that have **public static** methods with the **SpeechDetectionAttribute** custom attribute.

Example08 - No GUI Dictation

The scene is located at **Assets/WebGLSpeechDetection/Scenes/Example08_NoGUIDictation.unity**

The example source is located at **Assets/WebGLSpeechDictation/Scripts/Example08NoGUIDictation.cs**.

Example09 - No GUI Speech Commands

The scene is located at **Assets/WebGLSpeechDetection/Scenes/Example09_NoGUISpeechCommands.unity**

The example source is located at **Assets/WebGLSpeechDictation/Scripts/Example09NoGUISpeechCommands.cs**.

Support

Send questions and/or feedback to the support@theylovegames.com email.