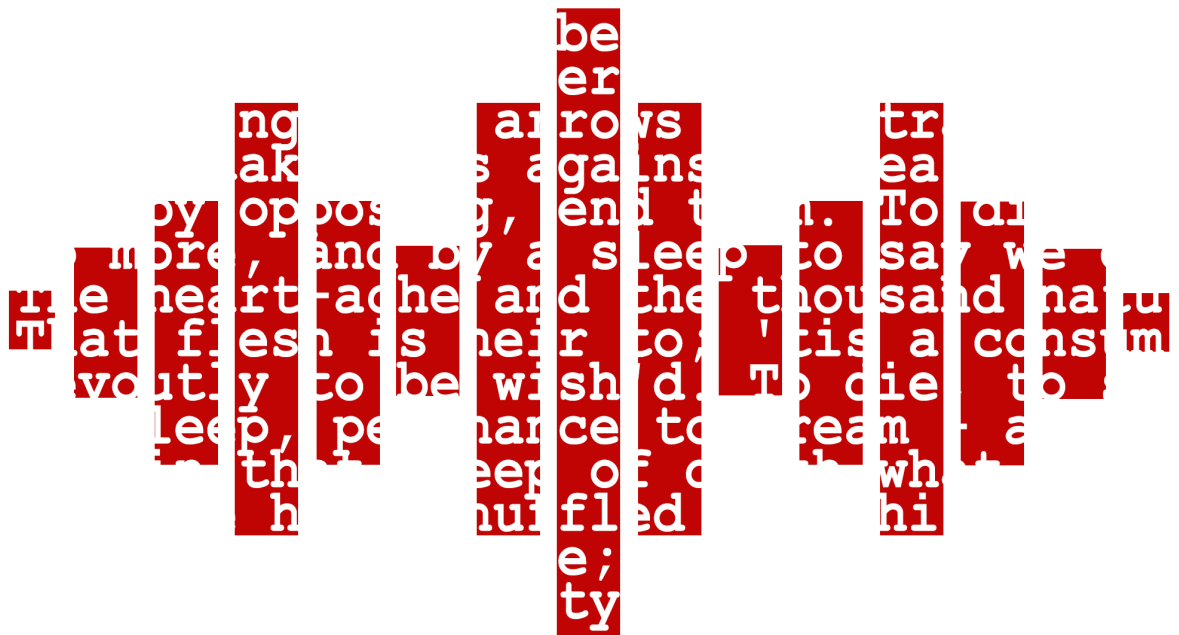


# Speech Recognition System



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## Contents

1. About.....	3
2. Quick start.....	4
3. API overview.....	4
4. How to add the required language .....	7
5. Troubleshooting .....	7
6. Contact us.....	8

## 1. About

Speech Recognition System is the plugin that provides high quality speech recognition offline.

### Features:

- Does not require Internet connection;
- High quality and speed of speech recognition;
- Supports **24** different languages;
- Possibility to work with **Oculus Quest**;
- Multiplatformity;
- Easiness of integration.

### Supported languages:

- English (*Apache 2.0*) ([download small model](#), [download large model](#));
- Indian English (*Apache 2.0*) ([download small model](#), [download large model](#));
- Chinese (*Apache 2.0*) ([download small model](#), [download large model](#));
- Russian (*Apache 2.0*) ([download small model](#), [download large model](#));
- French (*CC-BY-NC-SA 4.0*) ([download small model](#), [download large model](#));
- German (*Apache 2.0*) ([download small model](#), [download large model](#));
- Spanish (*Apache 2.0*) ([download model](#));
- Portuguese (*Apache 2.0*) ([download model](#));
- Greek (*Apache 2.0*) ([download model](#));
- Turkish (*Apache 2.0*) ([download model](#));
- Vietnamese (*Apache 2.0*) ([download model](#));
- Italian (*Apache 2.0*) ([download model](#));
- Dutch (*Apache 2.0*) ([download small model](#), [download large model](#));
- Catalan (*Apache 2.0*) ([download model](#));
- Arabic (*Apache 2.0*) ([download model](#));
- Farsi (*Apache 2.0*) ([download model](#));
- Filipino (*CC-BY-NC-SA 4.0*) ([download model](#));
- Kazakh (*Apache 2.0*) ([download small model](#), [download large model](#));
- Swedish (*MIT*) ([download](#));
- Japanese (*Apache 2.0*) ([download](#));
- Ukrainian (*Apache 2.0*) ([download small model](#), [download large model](#));
- Hindi (*Apache 2.0*) ([download](#));
- Czech (*MIT*) ([download](#));
- Polish (*Apache 2.0*) ([download](#));
- Korean (*Apache 2.0*) ([download](#));
- Uzbek (*Apache 2.0*) ([download](#)).

**Supported platforms:**


- Windows 10, Windows 7 Service Pack 1;
- Linux (x86\_64);
- MacOS (x86\_64);
- iOS (ARM64, x64, SDK 9.3 or higher);
- Android (armeabi-v7a, arm64-v8a, x86).

**Links:**

[Video instruction on plug-in usage](#)

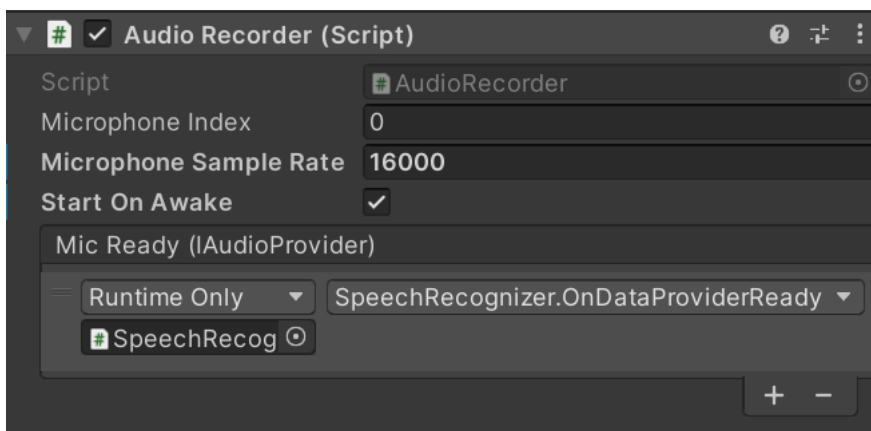
[Demo. Video](#)

## 2. Quick start

- Import package **SpeechRecognitionSystem.unitypackage**.
- Make sure that the microphone is switched on and in working order;
- Enter settings of the microphone and adjust them: sensitivity is to be at zero;
- Load the scene **SampleSceneMicrophone** from folder **Demo**;
- Press button  to load the scene;
- Wait till there appear the words «The SRS plugin is ready to work...» in the top right-hand corner of the screen. Say anything using the microphone (English is recognized by default). In real-time there will appear the Partial Result in the top right-hand corner and there will shortly appear the final result of speech recognition in the top left-hand corner.

## 3. API overview

### 3.1 AudioRecorder



#### Fields of class AudioRecorder:

- **Microphone Index** – the number (index) of the microphone that will be used during the work of the plugin;
- **Microphone Sample Rate** – the required Sample Rate of your microphone (16000, 24000, 48000);
- **Start On Awake** – the record from the microphone starts from the moment the scene is started.

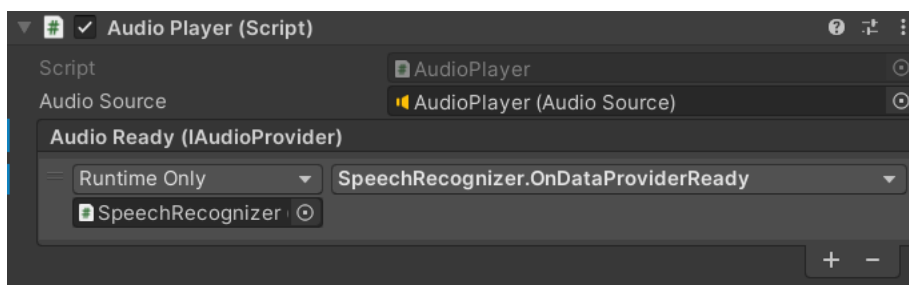
#### Class events of AudioRecorder:

- **MicReady (IAudioProvider)** – event (**UnityEvent<IAudioProvider>**) with results of initialization of the microphone (Unity Microphone). As the parameter the event transmits the object implementing the interface **IAudioProvider**.

#### Methods of class AudioRecorder (implementation of IAudioProvider):

- **GetData** – getting audio data fragment from the microphone;
- **OnStart** – starting to record from the microphone;
- **OnStop** – stopping to record from the microphone.

### 3.2 AudioPlayer



#### Fields of class AudioPlayer:

- **AudioSource** – object of the class Unity AudioSource is a representation of audio sources

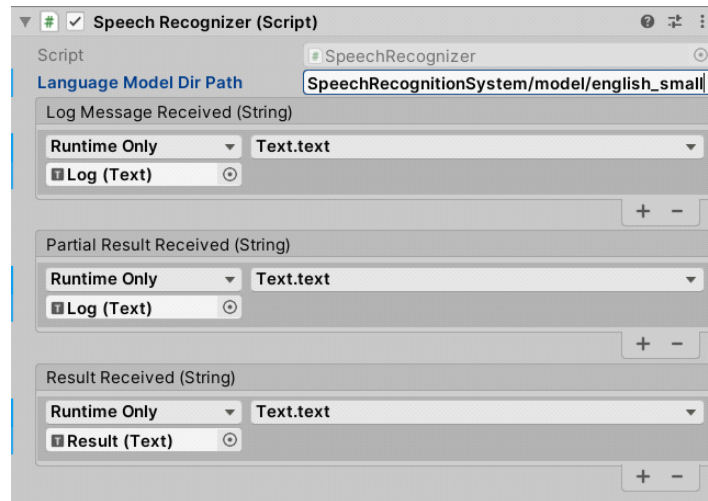
#### Class events of AudioRecorder:

- **AudioReady (IAudioProvider)** – event (**UnityEvent<IAudioProvider>**) with results of initialization of the audio source. As the parameter the event transmits the object implementing the interface **IAudioProvider**.

#### Methods of class AudioRecorder (implementation of IAudioProvider):

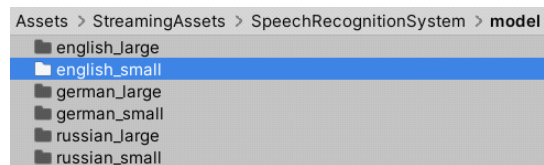
- **GetData** – getting audio data fragment from the audio file;
- **OnStart** – starting to play the audio file;
- **OnStop** – stopping to play the audio file.

### 3.3 SpeechRecognizer



#### Fields of class SpeechRecognizer:

- **Language Model Dir Path** – the path to the directory with the files of the language model (in respect to Streaming Assets).



#### Methods of class SpeechRecognizer:

- **OnDataProviderReady** – event handler **MicReady** of the component **AudioRecorder** (**AudioPlayer**) of the object **Microphone** (**AudioPlayer**). The method receives the object implementing the interface **IAudioProvider** and saves the link to it for the further access to the microphone (audio file) buffer;

#### Class events of SpeechRecognizer:

- **Log Message Received (String)** – event (**UnityEvent<bool>**) with log message.
- **Partial Result Received (String)** – event (**UnityEvent<String>**) with partial results of speech recognition;
- **Result Received (String)** – event (**UnityEvent<String>**) with results of speech recognition;

## 4. How to add the required language

Download the archive with the required language using the corresponding link provided below:

- English (*Apache 2.0*) ([download small model](#), [download large model](#));
- Indian English (*Apache 2.0*) ([download small model](#), [download large model](#));
- Chinese (*Apache 2.0*) ([download small model](#), [download large model](#));
- Russian (*Apache 2.0*) ([download small model](#), [download large model](#));
- French (*CC-BY-NC-SA 4.0*) ([download small model](#), [download large model](#));
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- Korean (*Apache 2.0*) ([download](#));
- Uzbek (*Apache 2.0*) ([download](#)).

For some languages there exist two types of language models: **small** one – for reasonable accuracy and high speed of speech recognition (for example, could be used for the work on mobile devices) and **large** one – for high accuracy and reasonable speed of speech recognition.

Unpack the contents of the downloaded archive to the directory **StreamingAssets/SpeechRecognitionSystem/model**. Specify the path to the language model in respect to **StreamingAssets** in the field **LanguageModelDirPath** of the component **SpeechRecognizer** of the object **SpeechRecognizer**. For example, «**SpeechRecognitionSystem/model/english\_large**». Please pay attention that the line it not to end with </> symbol.

## 5. Troubleshooting

The following libraries need to be installed for the plugin to work on **Linux**: *linux-vdso*, *libatomic*, *libstdc++*, *libm*, *libgcc\_s*, *libc*



## 6. Contact us

Do you meet issues while using this plugin?

Do you have suggestions how to improve API?

Feel free to contact us: [stendhal.syndrome.studio@gmail.com](mailto:stendhal.syndrome.studio@gmail.com)