

Copyright © Pixel Crushers

#### **Table of Contents**

Introduction	2
We're Here to Help	2
Quick StartQuick Start	
OpenAI and the Dialogue System for Unity	2
Language Models	3
ElevenLabs Speech Synthesis	
Overtone Speech Synthesis	4
General AI Assistant	4
Welcome Window	5
Main Window	e
Generate Conversation	7
Revise Text	<u>C</u>
Translate Field	11
Translate Database	12
Fine-Tuned Models	13
Freeform Chat	14
AI Assistant Window	16
Generate PortraitsGenerate Portraits	17
ElevenLabs Voiceover Audio Generation	19
Overtone Integration	22
Dialogue Smith Integration	25
Runtime Dialogue	26
Ouestions? Feature Suggestions?	30

### Introduction

Thank you for supporting the Dialogue System for Unity and the Addon for OpenAI! This addon requires the <u>Dialogue System for Unity</u>. Using the Dialogue System Addon for OpenAI, you can use OpenAI's generative AI to write narrative content faster, get suggestions when you're stuck, fix spelling and grammar, and translate your text to other languages. You can also use the addon for freeform chat similar to ChatGPT, generate portraits using DALL-E, and voiceover using ElevenLabs.

We want your project to be a success! If you have any questions or feature requests, please contact us any time at <a href="mailto:support@pixelcrushers.com">support@pixelcrushers.com</a>.

# We're Here to Help

- Email: <a href="mailto:support@pixelcrushers.com">support@pixelcrushers.com</a>
- Forum: <a href="https://pixelcrushers.com/phpbb">https://pixelcrushers.com/phpbb</a>
- Discord: <a href="https://discord.gg/FwUaCNt">https://discord.gg/FwUaCNt</a>
- Web: Tools → Pixel Crushers → Dialogue System → Help → Report a Bug

# **Quick Start**

- Read the documentation and/or watch the tutorial videos.
- Import the Dialogue System for Unity into your project.
- Import the Dialogue System Addon for OpenAI into your project.
- The addon's Welcome window will appear. Configure the addon to proceed.
- Click the OpenAI Addon Window button in the Welcome window or the AI buttons in the Dialogue System's Dialogue Editor window.

# OpenAI and the Dialogue System for Unity

**OpenAI** is an AI research company best known for technology designed to generate human-like language, in particular using a language model called Generative Pre-trained Transformer, or GPT. OpenAI has a public API that applications such as the Dialogue System Addon for OpenAI can use to leverage the power of its language models. Modest charges for the use of the API are handled through an API key that you can create on OpenAI's website. (OpenAI Pricing) The Dialogue System Addon's Welcome window will step you through the process if you don't already have an API key.

The **Dialogue System Addon for OpenAI** is a third party product (i.e., not affiliated with OpenAI) that allows you to leverage the OpenAI API to enhance your content creation. It's designed to work seamlessly with the Dialogue System for Unity.

**Note**: Language models are not sentient. They are essentially just very advanced pattern matchers. Results may contain grammatical or factual errors, so review them carefully before using them.

# **Language Models**

The OpenAI API provides access to several language models and parameters. In the Dialogue System Addon, the UIs to specify language models and parameters look like this:



**Model**: This dropdown allows you to choose a language model for content generation:

Model	Description
GPT_3_5_Turbo	This and GPT-4 Turbo are best for most cases.
GPT_3_5_Turbo_16K	Same as GPT-3.5 Turbo but with 4x the context window for longer responses.
GPT_4	Newest, most powerful language model. Improves on GPT-3.5.
GPT_4_32K	GPT-4 with larger 32k context window that allows for very long responses.
GPT_4_Turbo	GPT-4 Turbo with 128k context window.
Fine-Tuned	Your own fine-tuned model.
Davinci	Powerful model but slow. Good at complex intent and cause & effect.
Curie	Second most powerful model. Good at language translation.
Babbage	Second fastest model. Good at classification.
Ada	Smallest, fastest, and least expensive model, but results may be poor.

**Temperature**: Specifies the amount of "randomness" to include in the content. A value of zero generates plain, straightforward responses. A value of one generates more unexpected or "creative" responses.

**Max Tokens**: Specifies the maximum number of tokens to spend on a response. Lower numbers generate shorter responses; higher numbers can generate longer responses. OpenAI pricing is based on the number of tokens used, so you can use this slider to reduce expenses.

# **ElevenLabs Speech Synthesis**

You can use the API provided by ElevenLabs, a separate company from OpenAI that specializes in speech synthesis, to generate voiceover audio for your dialogue at design time or runtime.

ElevenLabs uses a separate API key. Any charges for using the API are applied to your API key account. (See <u>Pricing</u>.)

# **Overtone Speech Synthesis**

You can also use Least Squares' Overtone for text to speech. See Overtone Integration.

# **General AI Assistant**

The Dialogue System Addon for OpenAI also has a general AI Assistant window that's useful to ask questions in a ChatGPT-like interface.

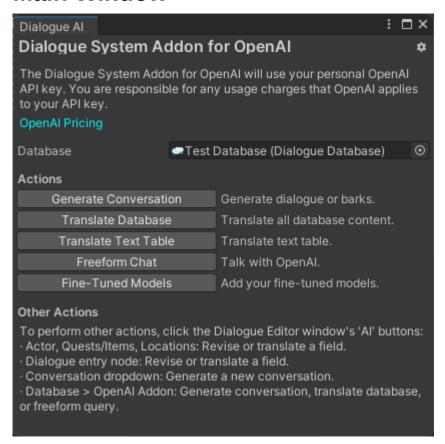
# **Welcome Window**

Use menu item Tools  $\rightarrow$  Pixel Crushers  $\rightarrow$  Dialogue System  $\rightarrow$  Addon for OpenAI  $\rightarrow$  Welcome Window to open the Welcome window.

The Addon for OpenAI will use your OpenAI API key, which you can create on OpenAI's website. You are responsible for any usage charges that OpenAI applies to your API key.

You can use the Welcome window to create and enter an OpenAI API key, and to open the Main Window.

### **Main Window**



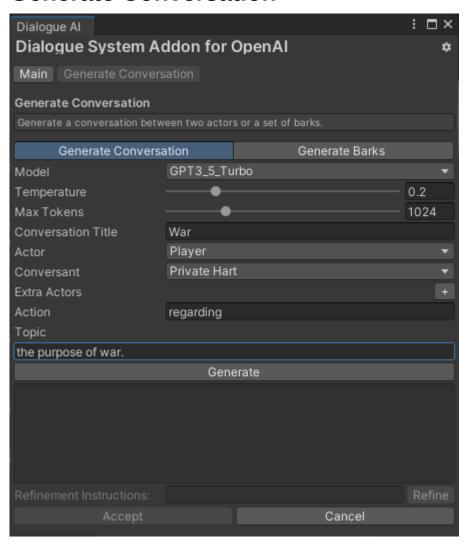
You can access the Main window from the addon's Welcome window or menu item **Tools**  $\rightarrow$  **Pixel Crushers**  $\rightarrow$  **Dialogue System**  $\rightarrow$  **Addon for OpenAI**  $\rightarrow$  **Main Window**.

On the Main Window, you can access these windows:

- Generate Conversation: Generate a new conversation or set of barks.
- **Translate Database**: Translate your database to one or more languages.
- **Translate Text Table**: Translate a text table asset.
- **Freeform Chat:** Talk with OpenAI in a format similar to ChatGPT.
- **Fine-Tuned Models**: Add your own fine-tuned models to the addon.

The Addon for OpenAI also adds **AI** buttons to several locations in the Dialogue System's Dialogue Editor window. You can click these **AI** buttons to access additional features.

### **Generate Conversation**



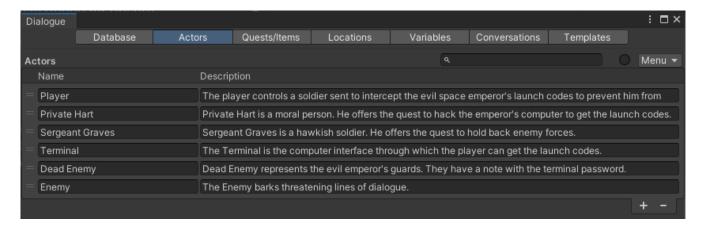
Access the Generate Conversation window from the Main Window. Here, you can create a new linear conversation between two actors or create a bark conversation.

#### **Generate Conversation**

To create a conversation, specify a title, participants, action, and topic. For example, the screenshot above will prompt the GPT\_3\_5\_Turbo language model to generate a conversation titled "War" between Private Hart and Sergeant Graves regarding the purpose of war. Then click **Generate**.

When the Addon receives a response from OpenAI, it will show the generated conversation. If you want to adjust the conversation, enter Refinement Instructions and click **Refine**. To add the conversation to your dialogue database, click **Accept**.

When creating a conversation, the prompt will also include the participants' **Description** fields and any actors mentioned in the topic. Include the actor's name in the Description field, such as:



#### Knowledge & Goals Fields

You can optionally add fields named **Knowledge** and **Goals** to actors to contain additional information to provide in the prompt. To add these fields to all actors, open the Dialogue Editor's **Templates** section > **Actors Template** and click **Add Knowledge and Goals Fields**.

#### **Location Descriptions**

If you tick the Generate Conversation window's **Use Location Descriptions** checkbox (not shown in screenshot above) the prompt will also include the **Description** fields of all Locations in your dialogue database.

## **Branching Dialogue**

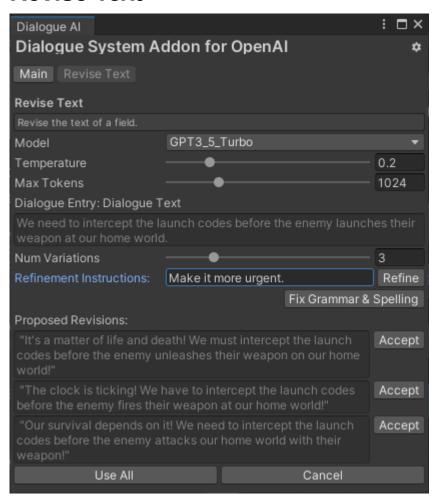
To generate branching dialogue, you can use the addon's Dialogue Smith integration.

## **Generate Barks**

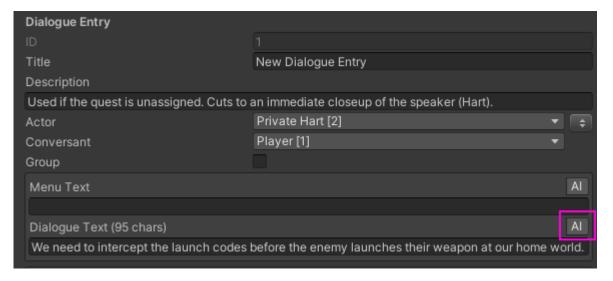
To generate barks, click the Generate Barks toolbar. The UI will appear the same as Generate Conversation with the addition of a Num Barks slider. Set the slider to the number of barks you'd like to generate, and click **Generate Barks**.

When you're satisfied with the results, click **Accept** to add a conversation containing the barks.

## **Revise Text**



Access the Revise Text window by clicking the **AI** button next to a field in the Dialogue Editor such as the Dialogue Text field:

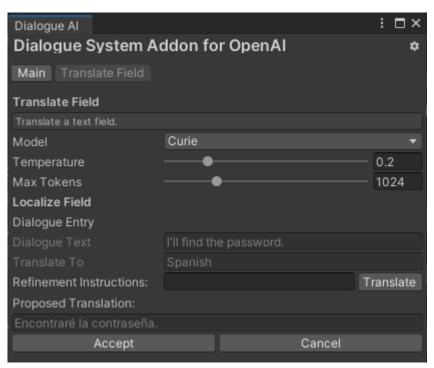


You can specify how you want to refine the text by specifying refinement instructions and clicking **Refine**, or click **Fix Grammar & Spelling** to fix grammar and spelling.

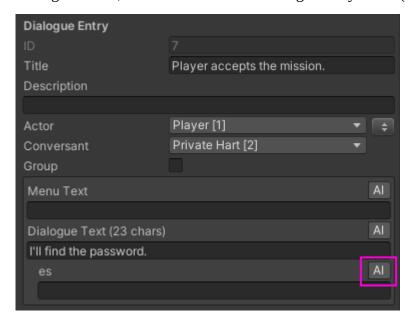
If the **Num Variations** slider is set to 1, you will receive one proposed revision. To accept it, click **Accept**.

If **Num Variations** is greater than 1, you will receive multiple suggestions. To accept one of the suggestions, click the **Accept** button next to it. Or you can click **Use All** to add them all to the conversation, replacing the original dialogue entry node. If the original node was a non-player node, it will be replaced by a group node that calls RandomizeNextEntry() to randomly choose from the variations.

## **Translate Field**



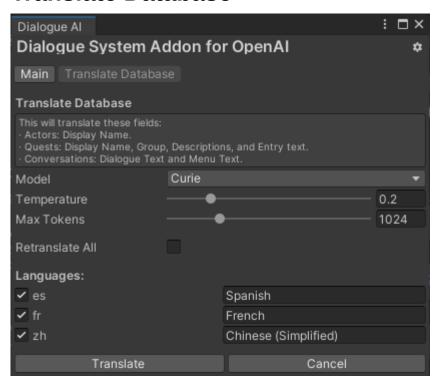
Access the Translate Field window by clicking the **AI** button next to any localization field in the Dialogue Editor, such as this field in a dialogue entry node: (See <u>Localization</u>)



Enter optional refinement instructions, then click **Translate**. To accept the translation, click **Accept**.

Note: Translate Field defaults to the Curie language model, but you can change it to GPT3\_5\_Turbo if you prefer.

### **Translate Database**



Access the Translate Database window from the Main Window. This window allows you to translate the entire database. Define the languages that you want to translate to in the Dialogue Editor first. (See <u>Localization</u>)

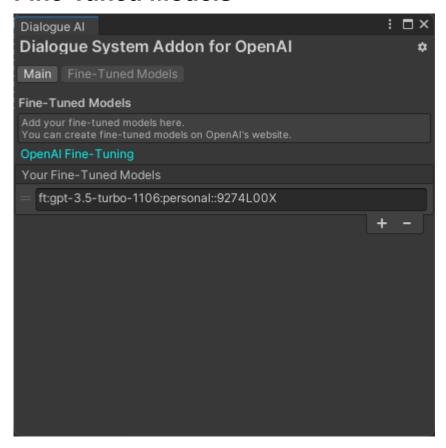
By default, to minimize costs, this window will only translate localization fields that are blank. To retranslate fields that already have content, tick **Retranslate All**.

Then tick the languages that you want to translate to, and click **Translate**.

If you have a medium or large database, this operation will take some time. OpenAI limits API calls to 60 per minute, so the operation will batch several requests and then wait a little before continuing.

Note: Translate Field defaults to the Curie language model, but you can change it to GPT3\_5\_Turbo if you prefer.

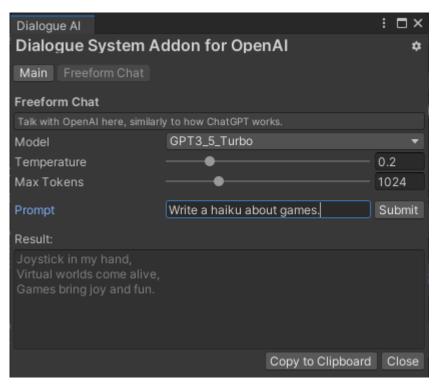
# **Fine-Tuned Models**



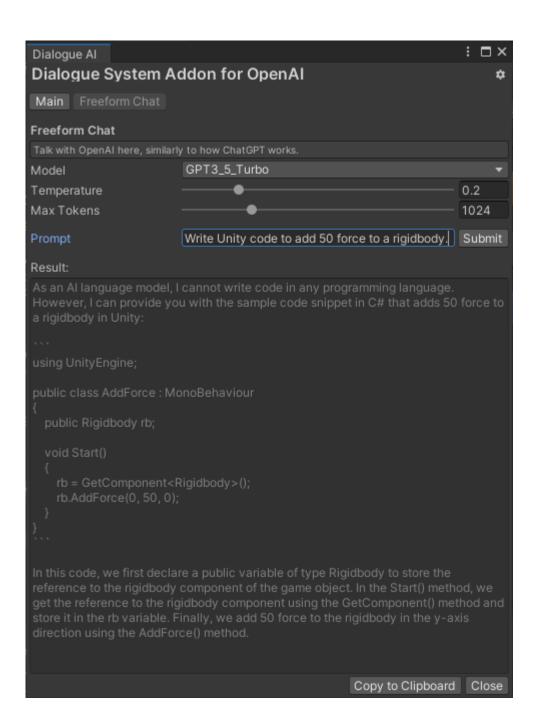
Add your custom fine-tuned models to the Fine-Tuned Models panel to make them available in the Model dropdowns of the addon's text generation panels. To create a fine-tuned model, upload a JSONL file on OpenAI's website:

https://platform.openai.com/finetune

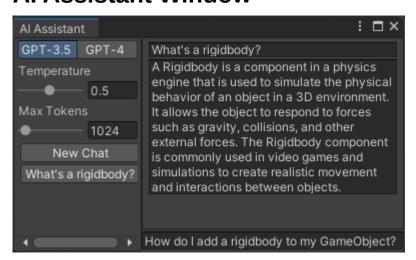
# **Freeform Chat**



Access the Freeform Chat window from the Main Window. This window operates similarly to ChatGPT. You can repeatedly enter text in the **Prompt** field to continue a dialogue with the OpenAI language model. You can then copy this to the clipboard for use elsewhere, such as pasting generated code into a script, such as: (continued on next page)

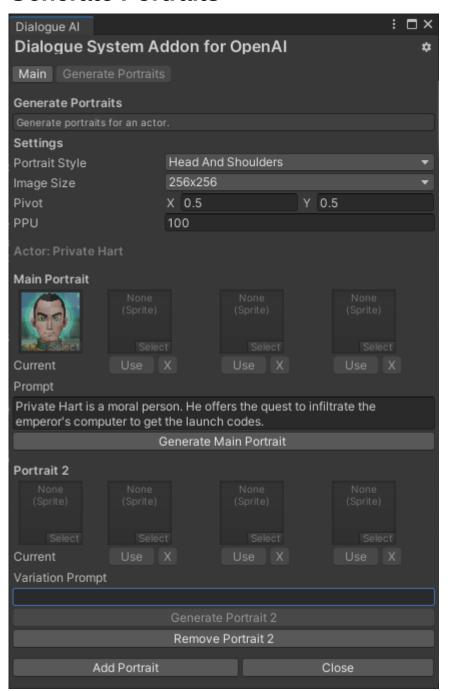


# **AI Assistant Window**

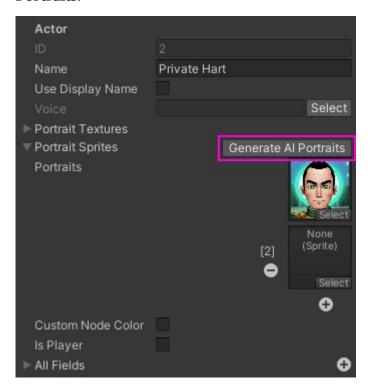


Access the AI Assistant window from the Welcome Window or the Tools menu. This window also operates similarly to ChatGPT and may be handy to dock in your editor alongside other windows, including the Main window.

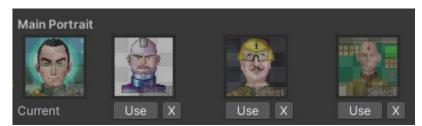
## **Generate Portraits**



To access the Generate Portraits window, inspect an actor in the Dialogue Editor and click **Generate AI Portraits**:



Under **Main Portrait**, the actor's current portrait appears on the left. If you have generated new potential images, they will be shown to the right of the Current image:



To use one of these potential images as the main portrait, click the **Use** button. You can then save the image as an asset in your project, and it will be assigned to the actor.

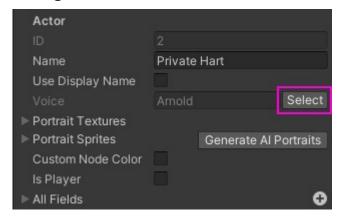
To add more portraits to the actor's Portrait Sprites list, click **Add Portrait**.

For each additional portrait, you can enter a **Variation Prompt**. Then click Generate Portrait to generate a variation of the actor's main portrait image based on the prompt.

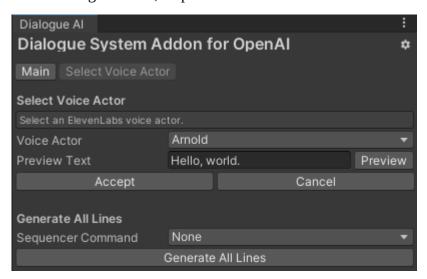
### **ElevenLabs Voiceover Audio Generation**

You can use ElevenLabs' speech synthesis API to generate voiceover audio for your dialogue. First create a profile on <a href="https://elevenlabs.io/">https://elevenlabs.io/</a> and create an API key. Then enter this API key in the addon's Welcome window. Then you can assign voices to actors and generate audio for dialogue entries.

#### **Assign Voices To Actors**



In the Dialogue Editor, inspect an actor and click **Select** next to the Voice field.

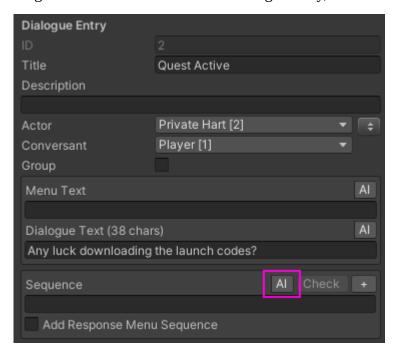


Then select an AI voice actor from the dropdown. To preview what the voice actor sounds like, enter some preview text and click **Preview**. To assign the selection to your actor, click **Accept**.

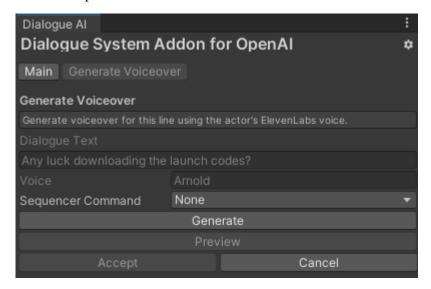
To generate voiceover audio for all of this actor's lines, click **Generate All Lines**. You can also generate voiceover for individual dialogue entries as shown below.

#### **Generate Voiceover Audio**

To generate voiceover audio for a dialogue entry, click the Sequence field's **AI** button:



This will open the Generate Voiceover window:



If you want to add a sequencer command such as AudioWait() or SALSA() to the dialogue entry, set the **Sequencer Command** dropdown. Note: It's more common to leave the Sequence field blank and use the Dialogue Manager's Default Sequence.

Click **Generate** to use the ElevenLabs API to generate voiceover audio. When the operation is done, it will play the audio. If you want to hear it again, click **Preview**. To accept the audio, click **Accept**. Save the audio file as an asset in your project. Some notes on saving audio: (see next page)

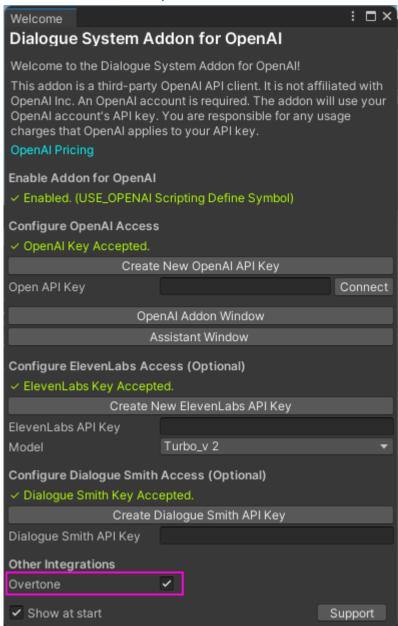
#### Notes on Saving Audio Files

- If the open scene has a Dialogue Manager, the default filename will be entrytag name for the dialogue entry as specified by the Dialogue Manager's Entrytag Format selection. Otherwise it will use the default entrytag format: ActorName\_ConversationID\_EntryID.
- If you've enabled Addressables support by clicking the Dialogue System's Welcome Window > USE\_ADDRESSABLES checkbox, the audio file will be marked Addressable, and the addressable key will be set to the entry's entrytag.
- Otherwise save the file in a Resources folder.
- Clicking **Accept** will *not* add a sequencer command to the entry's Sequence field. To handle it manually for a single entry, you can drag the audio file into the Sequence field. However, a common way to set up voiceover is to set the Dialogue Manager's Default Sequence to something like: AudioWait(entrytag) and leave the Sequence field blank.

# **Overtone Integration**

To enable integration with Least Squares' Overtone:

1. In the Welcome Window, tick the **Overtone** checkbox:



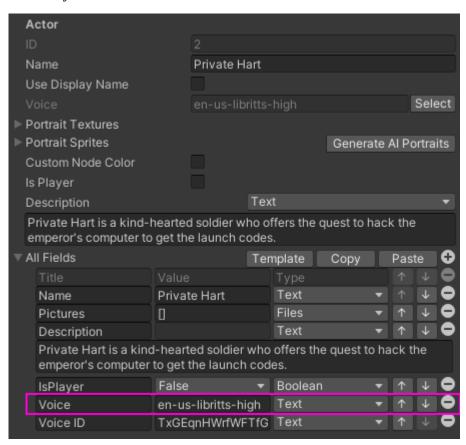
2. From the Third Party Support folder, import the Overtone Integration.unitypackage file. This will add Overtone Integration files to Assets / Pixel Crushers / Dialogue System Addon for OpenAI / Overtone Integration.

#### **Overtone Integration Demo**

The Runtime Demo Overtone scene demonstrates a Text Input Conversation and Pirate Adventure CYOA using Overtone. To play it, you must first add your OpenAI API key to the **Runtime AI Conversation Settings** component located on the Dialogue Manager's Canvas > Basic Standard Dialogue UI.

#### **Assign Overtone Voices To Actors**

Overtone voices are located in Overtone's Resources folder. To assign an Overtone voice to an actor, assuming the Welcome Window's **Overtone** checkbox is ticked, use the same Voice button in the Dialogue Editor's Actors inspector that you would for ElevenLabs. Alternatively, expand the actor's All Fields foldout and manually specify the voice name in the actor's **Voice** field. Create the Voice field if necessary.



Note: Overtone does *not* use the Voice ID field. It may be present if you were previously using ElevenLabs, but it will not be used by Overtone.

#### **Overtone Scene Setup**

As required for any scene that uses Overtone, your scene must have a GameObject with Overtone **TTSEngine** and **TTSPlayer** components.

## **Overtone Runtime Text To Speech**

To play Overtone text to speech in runtime conversations, add a **Runtime Overtone** component to the same GameObject as your **Runtime AI Conversation Settings** component (typically the dialogue UI). Dialogue entries will uses the voices assigned to actors in *Assign Overtone Voices To Actors* above.

#### **Overtone Barks**

To play Overtone text to speech with barks, add an **Overtone Barker** component to your barking character. Barks will uses the voices assigned to actors in *Assign Overtone Voices To Actors* above.

#### **Overtone Sequencer Command**

To play Overtone text to speech in dialogue entries, use the sequencer command Overtone(). This sequencer command has no parameters.

#### **Overtone Lua Function**

To use Overtone from a Lua function, add an **Overtone Lua** component to your Dialogue Manager. Then use:

where *actor* is the name of an actor in your dialogue database and *text* is the text to speak.

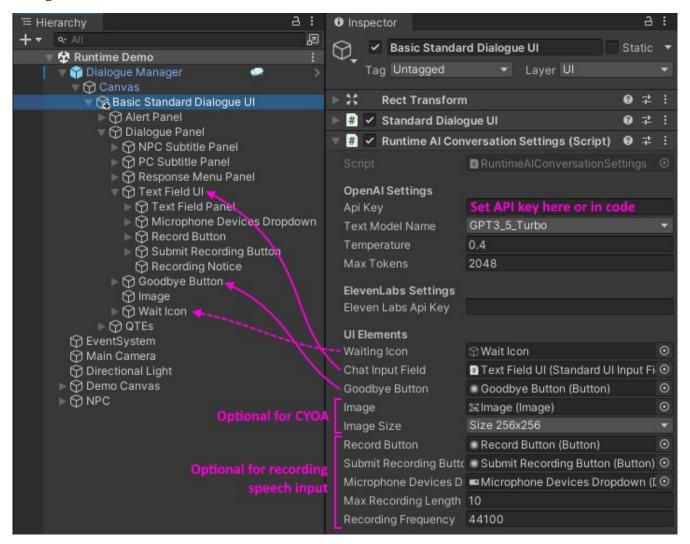
# **Dialogue Smith Integration**

Dialogue Smith has discontinued their service. We plan to implement similar functionality natively in a future version of the Dialogue System Addon for OpenAI.

# **Runtime Dialogue**

The Dialogue System Addon for OpenAI can also use the OpenAI API at runtime to generate conversations and barks. Runtime operation is entirely optional. If you decide to use runtime generation, consider how you will handle API keys. To avoid excessive charges, it's probably best to require end users (e.g., players) to provide their own API keys.

To configure runtime generation, add a **Runtime AI Conversation Settings** component to your dialogue UI:



Add three UI elements to your dialogue UI, and assign them to the component:

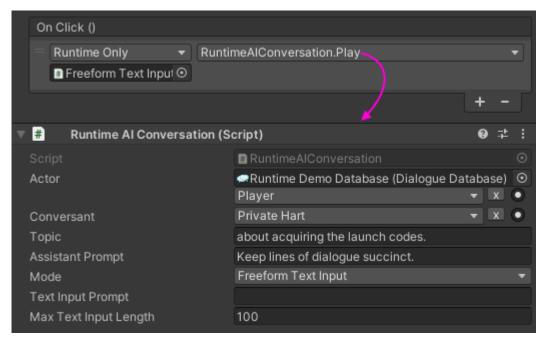
- **Waiting Icon**: A GameObject that will be shown while waiting for a response from OpenAI. For example, this could be an animated hourglass or a spinning ball.
- **Chat Input Field**: Input field where the player will enter freeform text responses if running a freeform text input conversation. You can usually assign the existing Text Field UI here.

• **Goodbye Button**: Button that the player can click to end the conversation instead of entering text into the Chat Input Field. You do not need to assign anything to its OnClick() event.

You can also add these optional elements:

- **Image & Image Size**: Used to show generated images in CYOA (Choose Your Own Adventure) mode.
- **Record Button**: Starts recording speech input.
- **Submit Recording Button**: Stops recording speech input and submits the recording to OpenAI for text transcription.
- **Microphone Devices Dropdown**: Dropdown that lets user select which microphone to record.
- **Max Recording Length**: Limits recorded audio clip size to this length in seconds.
- **Recording Frequency**: Records from microphone at this frequency.

Then add a **Runtime AI Conversation** component to your scene. This component holds the configuration for a single conversation or bark. To activate it at runtime, call its Play() method. For example, you can add it to an NPC with a Usable component, and configure the Usable's OnUse() event to call RuntimeAIConversation.Play. In the screenshot below, the Runtime AI Conversation component's Play() method is invoked by a UI Button's OnClick() event:



#### Set these fields:

- Actor: For conversations, typically the player. For barks, the barking character.
- **Conversant**: The other participant, typically an NPC.
- **Topic**: What the conversation or bark is about.
- Assistant Prompt: Optional guiding instructions for OpenAI.

- **Mode**: Can be:
  - *Freeform Text Input*: Plays a conversation line by line, generating responses to each line of player input. The player can end the conversation by clicking the Goodbye button. The NPC will end the conversation if the conversation history approaches Max Tokens.
  - *Response Menu*: Generates a complete conversation up-front and runs it like a prewritten conversation using the regular player response menu and/or player subtitle panel.
  - o *Bark*: Generates and plays a single bark through the Actor.
- **Text Input Prompt**: Only used in Freeform Text Input mode. The label shown in front of the Chat Input Field.
- **Max Text Input Length**: Only used in Freeform Text Input mode.

## **Adding Runtime Context**

Note: You can use the markup tags [var=variable] and [lua(code)] in your Topic. This allows you to change information in the topic text at runtime based on Dialogue System variable values and/or the values of Lua expressions.

The next page

#### **Runtime Demo**

The Demo folder contains a bare bones scene that demonstrates all five types of runtime dialogue generation:

- **Freeform text input conversing with an NPC**. This conversation is generated line by line. If you've specified an ElevenLabs API key in your dialogue UI's Runtime AI Conversation Settings component, it will also generate voiceover audio immediately after generating each line of dialogue. You can use text input or microphone speech input.
- **Response menu-based conversation**. Demonstrates a conversation between an NPC and the player using the dialogue UI's response menu. The conversation is generated first and then played. Voiceover audio is generated as each line is played.
- NPC-NPC conversation. Demonstrates a conversation involving two NPCs, without player
  interaction. The conversation is generated first and then played. Voiceover audio is generated as
  each line is played.
- Bark. Demonstrates a generated bark.
- **CYOA**. Choose-your-own-adventure story with freeform text input or speech input.

To play the Runtime Demo, you *must* first enter your OpenAI API key in the Runtime AI Conversation Settings component located on Dialogue Manager > Canvas > Basic Standard Dialogue UI.

You may also enter an ElevenLabs API key if you want the demo to generate voiceover audio. If you've entered an ElevenLabs API key, make sure you've assigned voices to the actors in your dialogue database.

CYOA mode can optionally use DALL-E to generate images for each stage of the adventure. To enabled this, add an Image to the Dialogue Panel and assign it to Runtime AI Conversation Settings.



# **Questions? Feature Suggestions?**

If you're stuck or have feature suggestions, please <u>contact us</u>. We're here to help!